

RECEIVED

By OCD District 1 at 2:30 pm, Jun 05, 2015

APPROVED

By OCD District 1 at 2:30 pm, Jun 05, 2015

FINAL REPORT SUMMARIZING CLOSURE FOR INCIDENT 1RP-3447 AND 1RP-3474

MADRON SERVICES INC
LUSK DEEP UNIT A #019
API# 30-025-35244
SECTION 17, T19S R32E, NM
LEA COUNTY, NM



Prepared by:
Souder, Miller & Associates
201 S. Halagueno
Carlsbad, NM 88221
575-689-7040

Prepared for:
Madron Services INC.
2859 Pecos HWY
Carlsbad, NM 88220

June 1, 2015
Reference 5B23776 BG1



Table of Contents

1.0 INTRODUCTION

2.0 REGULATORY FRAMEWORK AND SITE CLASSIFICATION

3.0 SOIL SAMPLING RESULTS

4.0 PROJECT SUMMARY

5.0 CONFIRMATION SAMPLES

6.0 SITE CLOSURE

LIST OF FIGURES

FIGURE 1 SITE LOCATION MAP

FIGURE 2 SITE DETAILS AND SAMPLE LOCATION MAP

LIST OF TABLES – SUMMARIES OF LABORATORY ANALYTICAL RESULTS

TABLE 1 PAD AREA

TABLE 2 RESERVE PIT AREA

TABLE 3 CONFIRMATION SAMPLES

LIST OF APPENDICES

APPENDIX A LABORATORY ANALYTICAL REPORTS

APPENDIX B C-141 FINAL

APPENDIX C WASTE MANIFEST

APPENDIX D PHOTO GALLERY

INTRODUCTION

On behalf of Madron Services INC (MSI), Souder Miller & Associates (SMA) has prepared this report of closure activities related to incidents # 1RP-3447 and # 1RP-3474, providing a summary of the releases and spill response efforts at the LUSK DEEP UNIT A #019, a lease held by COG Operating. For #1RP-3447, on November 26, 2014, according to the Release Notification and Corrective Action Form C-141, all standing fluid was recovered by vacuum trucks and disposed of at an NMOCD approved facility. According to the initial C-141, "The spill remained mostly on the pad area. However, a 10'X 20' area of the pasture was impacted" (Appendix B). The total volume of the release was estimated at 20 bbls of oil and 400 bbls of produced water. When Souder, Miller & Associates (SMA) personnel arrived, a vacuum truck had been used to recover 380 bbls of produced water. The second incident, # 1RP-3474 occurred on December 10, 2014. According to the Release Notification and Corrective Action Form C-141, the release resulted from an equipment failure that caused a temporary frac tank to overflow. Any standing fluids were recovered by vacuum trucks and disposed of at an NMOCD approved facility. 40 bbls of produced water was released and 35 bbls was recovered. According to the initial C-141, this spill remained primarily on the pad. However, a 150' x 15' area of the pasture was impacted.

The site is located in Unit N, Section 17, Township 19 South, Range 32 East, Lea County, New Mexico. Figure 1, Site Location Map, illustrates the location of the release.

This document presents the results of the initial assessment and soil sampling performed at the Site, the regulatory framework for existing activities, and a summary of work done at the location to facilitate incident mitigation and closure. Site details, sampling locations and the remedial excavation area are presented in Figure 2. Appendices include the laboratory analytical reports for the initial sampling, New Mexico Oil Conservation Division (NMOCD) form C-141 (final), and the manifest for the transport and disposal of RCRA exempt soils generated from the initial response to the NMOCD approved facility Lea Land Inc.

REGULATORY FRAMEWORK AND SITE CLASSIFICATION

This project was conducted under the regulatory jurisdiction of the NMOCD, which requires the vadose zone to be abated so that water contaminants in the vadose zone will not, with reasonable probability, contaminate groundwater or surface water (toxic pollutants as defined in 20.6.2.7 New Mexico Administration Code shall not be present) through leaching, percolation, or other transport mechanisms (19.15.1.19 NMAC, Subsection B, Paragraphs 1 and 2). The NMOCD hydrocarbon soil remediation levels are determined by ranking criteria on a site-by-site basis, as outlined in the NMOCD "Guidelines for Remediation of Spills, Leaks, and Releases", dated August 13, 1993. The ranking criteria are based on three site characteristics: depth to groundwater, wellhead protection, and distance to surface water.

According to the Office of the State Engineer's records, no water wells are located within 1,000 feet of the well pad and tank battery. The estimated depth to groundwater is greater than 100 feet below ground surface. No surface water bodies are located within 1,000 feet of the well pad and battery. The table below illustrates the ranking criteria, used by the NMOCD, and includes site specific characteristics at the West Brushy 8 location.

Criteria Site Characteristics	Ranking Score	
Depth to Ground Water	>100 feet	0
Wellhead Protection Area	>1000 feet	0
Distance to Surface Water	>1000 feet	<u>0</u>
Total Ranking Score		0

Based on the site characteristics and the NMOCD guidelines, the site has a ranking score of 0. Consequently, Recommended Remediation Action Levels (RRALs) of 10 milligrams per kilogram (mg/Kg) Benzene, 50 mg/Kg total Benzene, Toluene, Ethylbenzene, and total Xylenes (BTEX); and 5000 mg/Kg Total Petroleum Hydrocarbons (TPH) are proposed for remediation at the site.

SOIL SAMPLING RESULTS

Soil samples were taken at depths ranging from 1 foot below surface grade (bsg) to 6 feet bsg. Sample locations Ldd 1 through Ldd 2-2 shown in Table 1 are delineation samples on the well pad. Ldbg1 is the background sample for this location. Specific sample locations for all samples are depicted on Figure 2 (Sample Location Map) along with sampling details. Samples represented in Table 2 are south of the well pad in the pasture. All samples were collected and processed according to NMOCD soil sampling procedures. The samples were sent under chain-of-custody protocols to Hall Environmental Analysis Laboratory for analysis for Benzene and Total BTEX using EPA Method 8021B, DRO and GRO by EPA Method 8015D, and total Chlorides using EPA Method 300.0.

TABLE 1 PAD AREA

Analytical Report- 1503115	Sample Number on Figure 2 Map	Sample Date	Depth	BTEX ppm	Benzene mg/Kg	GRO mg/Kg	DRO mg/Kg	Cl- mg/Kg
1	Ldd1	2/25/2015	3'	150	N/A	N/A	N/A	3300
2	Ldd1-1	2/25/2015	5' 8"	38	N/A	BDL	11	770
3	Ldd2-2	2/25/2015	5'	13	N/A	N/A	N/A	2700
4	Ldd2-2	2/25/2015	6'	N/A	N/A	BDL	BDL	1200

TABLE 2 RESERVE PIT AREA

Analytical Report- 1503115	Sample Number on Figure 2 Map	Sample Date	Depth	BTEX ppm	Benzene mg/Kg	GRO mg/Kg	DRO mg/Kg	Cl- mg/Kg
5	E1	2/25/2015	1'-4'	N/A	N/A	BDL	BDL	BDL
6	E2-2	2/25/2015	3'	2258	N/A	N/A	N/A	BDL
7	E3	2/25/2015	3'	90	N/A	N/A	N/A	50
8	E4	2/25/2015	1'	83	N/A	7.2	150	BDL
9	E5	2/25/2015	3'	270	N/A	BDL	BDL	BDL
10	E6-1	2/25/2015	3' 8"	31	N/A	BDL	40	4200
11	E7	2/25/2015	3'	3	N/A	BDL	BDL	3000
12	Ldbg1	2/25/2015	1'	N/A	N/A	N/A	N/A	BDL

TABLE 3 CONFIRMATION SAMPLES

Analytical Report- 1503774	Sample Number on Figure 2 Map	Sample Date	Depth	BTEX ppm	Benzene mg/Kg	GRO mg/Kg	DRO mg/Kg	Cl- mg/Kg
1503774-001	Ldd1	3/12/2015	3'	BDL	BDL	N/A	N/A	N/A
1503774-002	Ldd3	3/12/2015	2.5'	BDL	BDL	N/A	N/A	N/A
1503774-003	Ldd5	3/12/2015	2'	BDL	BDL	N/A	N/A	N/A
1503774-004	Ldd12	3/12/2015	3'	BDL	BDL	N/A	N/A	38
1503774-005	Ldd13	3/12/2015	3'	BDL	BDL	N/A	N/A	410

N/A – Not Analyzed BDL – Below Detection Limits for the Method. Refer to Analytical Reports Appendix A

All laboratory analytical results are below the site specific NMOCD RRALs based on the ranking criteria.

PROJECT SUMMARY

The initial soil assessment activities performed by SMA effectively delineated the horizontal and vertical extent of Chloride and hydrocarbon affected soils in accordance to NMOCD regulatory guidance. No contaminated soils had been removed from the pad. The excavation was guided by SMA personnel in the field, using EPA Method 4500 titrations along with the PID meter in accordance to the NMOCD Guidelines for Remediation of Leaks, Spills and Releases. MSI equipment and personnel performed the excavation. On the pad, delineation sampling was performed to document the depth and horizontal extent of the spill. The sample results are shown in Table 1.

When mitigating the contaminated soil on the south side off of the pad, precaution was taken to avoid contact with the old buried reserve pit. BLM personnel informed SMA of the buried pit. The southeast and southwest sides off of the well pad were excavated with screening guidance from SMA personnel, using EPA Method 4500 titrations along with the PID meter in accordance to the NMOCD Guidelines. To delineate the 1RP-3447 spill on the southeast side, two holes were dug as depicted on Figure 2. One delineation hole was initially advanced to three foot bsg. At three feet eight inches, a liner for the reserve pit was encountered and digging stopped. The second delineation hole was dug to two feet bsg at which point the reserve pit liner was found. For this area, excavation was limited to two feet bsg in an effort to avoid disturbance of the reserve pit liner. The 1RP-3474 spill, which ran off of the pad on the southwest side, extended 220 feet south from the pad, as shown on Figure 2. This area was excavated between one and a half feet to three feet bsg to removed contaminated soils.

After excavation was completed, secondary sampling in the side walls of the excavation was done. Results are shown in Table 3. This sampling was performed to help confirm that all contaminated soil had been removed in the horizontal plane.

Contaminated soil was excavated using heavy equipment and transported off location to an NMOCD approved disposal facility. Soil samples were taken within the excavation to confirm that remediation goals had been achieved. The samples were sent to Hall Environmental Analysis Laboratory under standard Chain of Custody protocol. The analytical results are summarized in Tables 1, 2 and 3. Since the old reserve pit is located below both spill areas off of the pad, vertical excavation was limited to three feet bsg in an effort to not disturb the historic reserve pit. As a result, some contaminated soils were left in place. A barrier of a one foot thick layer of caliche was placed on top of the remaining contaminated soil in an effort to isolate the contaminated soils from the clean top soil used for backfill.

CONFIRMATION SAMPLING

Side-wall samples were taken to confirm the contaminated soils had been removed to the horizontal extent depicted on Figure 2, with the analytical results shown in Table 3. Bottom-hole samples were taken with to document the characteristics of the soils left in place. Each sample container was labeled, placed on ice in an insulated cooler, and chilled to a temperature of approximately 40°F (4°C). The cooler was sealed for shipment to the laboratory, accompanied by proper chain-of-custody documentation. The soil samples were delivered on 3/12/15 to Hall Environmental Analysis Laboratory, Inc., in Albuquerque, New Mexico for analysis for Benzene and Total BTEX using EPA Method 8021B, DRO and GRO by EPA Method 8015D, and total Chlorides using EPA Method 300.0.

SITE CLOSURE

All excavated impacted soils were transported to an NMOCD approved facility for disposal. The soils remaining were sampled by SMA and tested by a third party laboratory (Table 2, Table 3) confirming that the soil left in place meets the site-specific NMOCD closure levels of 10 mg/Kg Benzene, 50 mg/Kg total BTEX and 5000 mg/Kg TPH (DRO and GRO). A closure request was submitted to the NMOCD as a C-141 final on 06/02/15 (Appendix B).

LIST OF FIGURES

FIGURE 1 SITE LOCATION MAP

FIGURE 2 SITE DETAILS AND SAMPLE LOCATION MAP

APPENDICES

APPENDIX A LABORATORY ANALYTICAL REPORTS

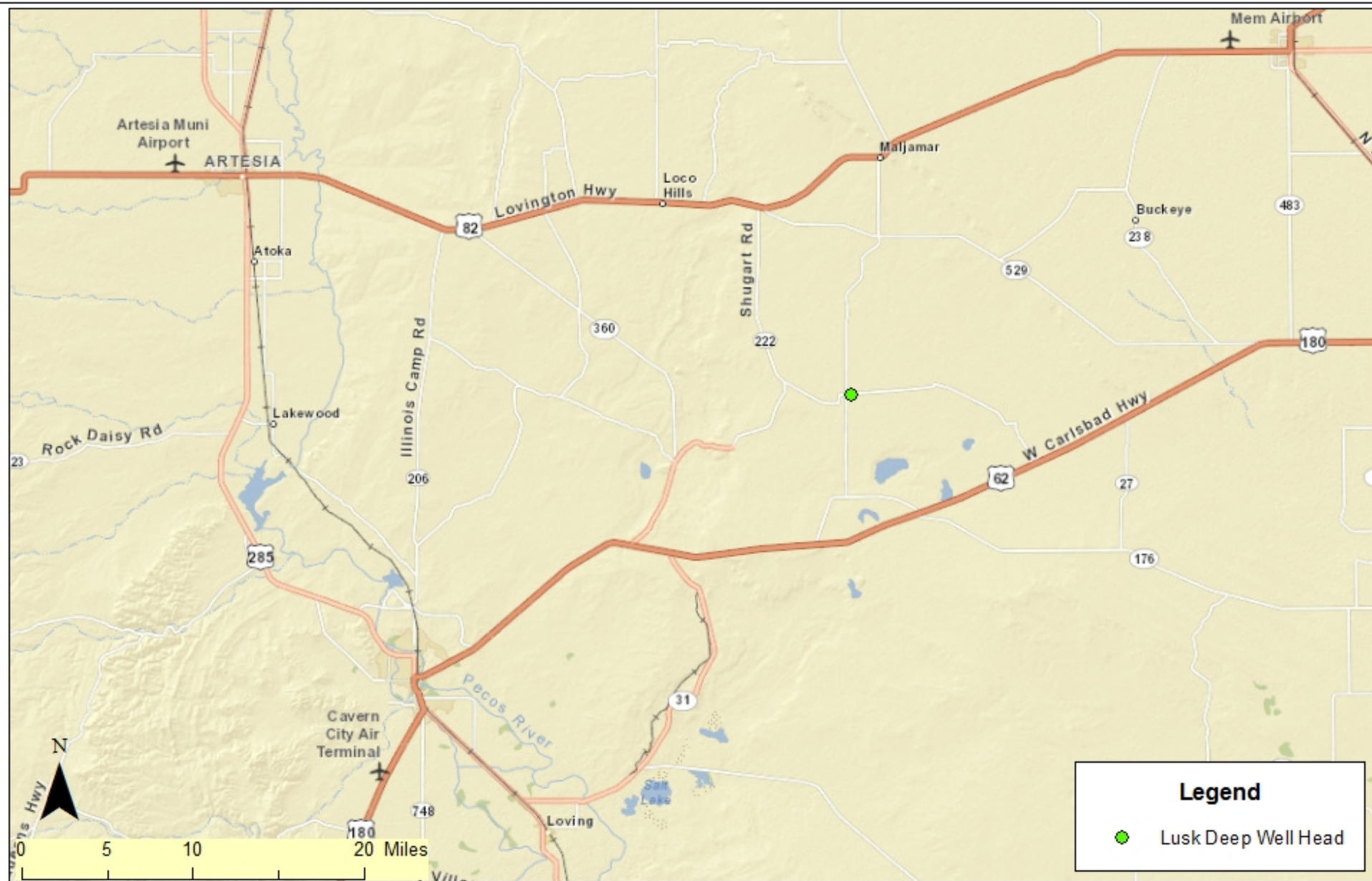
APPENDIX B FORM C141 FINAL

APPENDIX C WASTE MANIFEST

APPENDIX D PHOTO GALLERY

FIGURE 1

SITE LOCATION MAP



Location Map for Lusk Deep SWD
MSI
Carlsbad, New Mexico

Figure 1

Date Saved:
4/1/2015

Revisions	
By: _____	Date: _____
By: _____	Date: _____

Copyright 2014 Souder, Miller & Associates. All Rights Reserved

Drawn	Lucas Middleton
Checked	_____
Approved	_____



201 South Hologuena Street
Carlsbad, New Mexico 88221
(575) 689-7040
www.soudermiller.com
Serving the Southwest & Rocky Mountains

FIGURE 2

SITE DETAILS AND SAMPLE LOCATIONS MAP



Site Map for Lusk Deep SWD
MSI
Carlsbad, New Mexico

Figure 2

Date Saved:
4/10/2015

Revisions		
By: _____	Date: _____	Descr: _____
By: _____	Date: _____	Descr: _____

Copyright 2014 Souder, Miller & Associates - All Rights Reserved

Drawn: Lucas Middleton
Checked: _____
Approved: _____



201 South Hologuena Street
Carlsbad, New Mexico 88221
(575) 689-7040
www.soudermiller.com
Serving the Southwest & Rocky Mountains

APPENDIX A

LABORATORY ANALYTICAL REPORTS



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

March 12, 2015

Lucas Middleton
Souder, Miller & Associates
201 S Halagueno
Carlsbad, NM 88221
TEL: (575) 698-5351
FAX

RE: MSI_Lusk Deep

OrderNo.: 1503115

Dear Lucas Middleton:

Hall Environmental Analysis Laboratory received 12 sample(s) on 3/4/2015 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1503115**

Date Reported: **3/12/2015**

CLIENT: Souder, Miller & Associates

Client Sample ID: D1

Project: MSI_Lusk Deep

Collection Date: 2/25/2015 11:00:00 AM

Lab ID: 1503115-001

Matrix: SOIL

Received Date: 3/4/2015 9:44:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	3300	150		mg/Kg	100	3/12/2015 6:56:44 AM	18045

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 1 of 15
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	
	O	RSD is greater than RSDlimit	P	Sample pH Not In Range	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1503115**

Date Reported: **3/12/2015**

CLIENT: Souder, Miller & Associates

Client Sample ID: D1-1

Project: MSI_Lusk Deep

Collection Date: 2/25/2015 11:00:00 AM

Lab ID: 1503115-002

Matrix: SOIL

Received Date: 3/4/2015 9:44:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	11	9.8		mg/Kg	1	3/6/2015 10:05:55 AM	17992
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	3/6/2015 10:05:55 AM	17992
Surr: DNOP	102	63.5-128		%REC	1	3/6/2015 10:05:55 AM	17992
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	3/5/2015 2:01:49 PM	17990
Surr: BFB	95.8	80-120		%REC	1	3/5/2015 2:01:49 PM	17990
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	770	30		mg/Kg	20	3/9/2015 12:08:58 PM	18045

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
	O	RSD is greater than RSDlimit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1503115**

Date Reported: **3/12/2015**

CLIENT: Souder, Miller & Associates

Client Sample ID: D2

Project: MSI_Lusk Deep

Collection Date: 2/25/2015 11:00:00 AM

Lab ID: 1503115-003

Matrix: SOIL

Received Date: 3/4/2015 9:44:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	2700	150		mg/Kg	100	3/10/2015 6:03:47 PM	18045

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 3 of 15
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	
	O	RSD is greater than RSDlimit	P	Sample pH Not In Range	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1503115**

Date Reported: **3/12/2015**

CLIENT: Souder, Miller & Associates

Client Sample ID: D2-1

Project: MSI_Lusk Deep

Collection Date: 2/25/2015 11:00:00 AM

Lab ID: 1503115-004

Matrix: SOIL

Received Date: 3/4/2015 9:44:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	3/5/2015 7:32:13 PM	17992
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	3/5/2015 7:32:13 PM	17992
Surr: DNOP	104	63.5-128		%REC	1	3/5/2015 7:32:13 PM	17992
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	3/5/2015 2:30:36 PM	17990
Surr: BFB	94.3	80-120		%REC	1	3/5/2015 2:30:36 PM	17990
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	1200	75		mg/Kg	50	3/10/2015 7:05:49 PM	18045

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
	O	RSD is greater than RSDlimit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1503115

Date Reported: 3/12/2015

CLIENT: Souder, Miller & Associates

Client Sample ID: E1

Project: MSI_Lusk Deep

Collection Date: 2/25/2015 11:00:00 AM

Lab ID: 1503115-005

Matrix: SOIL

Received Date: 3/4/2015 9:44:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	3/5/2015 7:53:36 PM	17992
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	3/5/2015 7:53:36 PM	17992
Surr: DNOP	98.3	63.5-128		%REC	1	3/5/2015 7:53:36 PM	17992
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	3/5/2015 2:59:22 PM	17990
Surr: BFB	94.8	80-120		%REC	1	3/5/2015 2:59:22 PM	17990
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	ND	30		mg/Kg	20	3/10/2015 7:18:14 PM	18045

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 5 of 15
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	
	O	RSD is greater than RSDlimit	P	Sample pH Not In Range	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1503115**

Date Reported: **3/12/2015**

CLIENT: Souder, Miller & Associates

Client Sample ID: E2-2

Project: MSI_Lusk Deep

Collection Date: 2/25/2015 11:00:00 AM

Lab ID: 1503115-006

Matrix: SOIL

Received Date: 3/4/2015 9:44:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	ND	30		mg/Kg	20	3/10/2015 4:04:35 AM	18045

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 6 of 15
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	
	O	RSD is greater than RSDlimit	P	Sample pH Not In Range	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1503115**

Date Reported: **3/12/2015**

CLIENT: Souder, Miller & Associates

Client Sample ID: E3

Project: MSI_Lusk Deep

Collection Date: 2/25/2015 11:00:00 AM

Lab ID: 1503115-007

Matrix: SOIL

Received Date: 3/4/2015 9:44:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	50	30		mg/Kg	20	3/10/2015 4:16:59 AM	18045

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 7 of 15
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	
	O	RSD is greater than RSDlimit	P	Sample pH Not In Range	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1503115**

Date Reported: **3/12/2015**

CLIENT: Souder, Miller & Associates

Client Sample ID: E4

Project: MSI_Lusk Deep

Collection Date: 2/25/2015 11:00:00 AM

Lab ID: 1503115-008

Matrix: SOIL

Received Date: 3/4/2015 9:44:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	150	9.9		mg/Kg	1	3/6/2015 10:27:01 AM	17992
Motor Oil Range Organics (MRO)	130	50		mg/Kg	1	3/6/2015 10:27:01 AM	17992
Surr: DNOP	104	63.5-128		%REC	1	3/6/2015 10:27:01 AM	17992
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	7.2	4.8		mg/Kg	1	3/5/2015 3:28:10 PM	17990
Surr: BFB	137	80-120	S	%REC	1	3/5/2015 3:28:10 PM	17990
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	ND	30		mg/Kg	20	3/10/2015 4:29:23 AM	18045

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 8 of 15
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	
	O	RSD is greater than RSDlimit	P	Sample pH Not In Range	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1503115**

Date Reported: **3/12/2015**

CLIENT: Souder, Miller & Associates

Client Sample ID: E5

Project: MSI_Lusk Deep

Collection Date: 2/25/2015 11:00:00 AM

Lab ID: 1503115-009

Matrix: SOIL

Received Date: 3/4/2015 9:44:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	3/5/2015 8:36:28 PM	17992
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	3/5/2015 8:36:28 PM	17992
Surr: DNOP	106	63.5-128		%REC	1	3/5/2015 8:36:28 PM	17992
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	3/5/2015 3:56:53 PM	17990
Surr: BFB	93.3	80-120		%REC	1	3/5/2015 3:56:53 PM	17990
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	ND	30		mg/Kg	20	3/10/2015 4:41:47 AM	18045

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 9 of 15
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	
	O	RSD is greater than RSDlimit	P	Sample pH Not In Range	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1503115**

Date Reported: **3/12/2015**

CLIENT: Souder, Miller & Associates

Client Sample ID: E6-1

Project: MSI_Lusk Deep

Collection Date: 2/25/2015 11:00:00 AM

Lab ID: 1503115-010

Matrix: SOIL

Received Date: 3/4/2015 9:44:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	40	9.8		mg/Kg	1	3/6/2015 10:48:27 AM	17992
Motor Oil Range Organics (MRO)	55	49		mg/Kg	1	3/6/2015 10:48:27 AM	17992
Surr: DNOP	106	63.5-128		%REC	1	3/6/2015 10:48:27 AM	17992
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	3/5/2015 4:25:34 PM	17990
Surr: BFB	95.6	80-120		%REC	1	3/5/2015 4:25:34 PM	17990
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	4200	150		mg/Kg	100	3/10/2015 7:30:38 PM	18045

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 10 of 15
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	
	O	RSD is greater than RSDlimit	P	Sample pH Not In Range	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1503115**

Date Reported: **3/12/2015**

CLIENT: Souder, Miller & Associates

Client Sample ID: E7

Project: MSI_Lusk Deep

Collection Date: 2/25/2015 11:00:00 AM

Lab ID: 1503115-011

Matrix: SOIL

Received Date: 3/4/2015 9:44:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	3000	150		mg/Kg	100	3/10/2015 7:43:02 PM	18045

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 11 of 15
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	
	O	RSD is greater than RSDlimit	P	Sample pH Not In Range	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1503115**

Date Reported: **3/12/2015**

CLIENT: Souder, Miller & Associates

Client Sample ID: BG-1

Project: MSI_Lusk Deep

Collection Date: 2/25/2015 11:00:00 AM

Lab ID: 1503115-012

Matrix: SOIL

Received Date: 3/4/2015 9:44:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	ND	30		mg/Kg	20	3/9/2015 5:06:51 PM	18045

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank	Page 12 of 15
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	
	O	RSD is greater than RSDlimit	P	Sample pH Not In Range	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	Spike Recovery outside accepted recovery limits			

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1503115

12-Mar-15

Client: Souder, Miller & Associates

Project: MSI_Lusk Deep

Sample ID	MB-18045		SampType:	MBLK		TestCode:	EPA Method 300.0: Anions				
Client ID:	PBS		Batch ID:	18045		RunNo:	24729				
Prep Date:	3/9/2015		Analysis Date:	3/9/2015		SeqNo:	728382		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Chloride	ND	1.5									

Sample ID	LCS-18045		SampType: LCS		TestCode: EPA Method 300.0: Anions					
Client ID:	LCSS		Batch ID: 18045		RunNo: 24729					
Prep Date:	3/9/2015		Analysis Date: 3/9/2015		SeqNo: 728383		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	91.5	90	110			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
E Value above quantitation range
J Analyte detected below quantitation limits
O RSD is greater than RSDlimit
R RPD outside accepted recovery limits
S Spike Recovery outside accepted recovery limits

B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1503115

12-Mar-15

Client: Souder, Miller & Associates

Project: MSI_Lusk Deep

Sample ID	LCS-17992		SampType: LCS		TestCode: EPA Method 8015D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 17992		RunNo: 24639					
Prep Date:	3/4/2015		Analysis Date: 3/5/2015		SeqNo: 726447		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	10	50.00	0	88.1	67.8	130			
Surr: DNOP	4.1		5.000		81.2	63.5	128			

Sample ID	MB-17992		SampType: MBLK		TestCode: EPA Method 8015D: Diesel Range Organics					
Client ID:	PBS		Batch ID: 17992		RunNo: 24639					
Prep Date:	3/4/2015		Analysis Date: 3/5/2015		SeqNo: 726448		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.3		10.00		82.6	63.5	128			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
E Value above quantitation range
J Analyte detected below quantitation limits
O RSD is greater than RSDlimit
R RPD outside accepted recovery limits
S Spike Recovery outside accepted recovery limits

B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1503115

12-Mar-15

Client: Souder, Miller & Associates

Project: MSI_Lusk Deep

Sample ID	MB-17990		SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	PBS		Batch ID: 17990		RunNo: 24646					
Prep Date:	3/4/2015		Analysis Date: 3/5/2015		SeqNo: 726620		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	910		1000		91.3	80	120			

Sample ID	LCS-17990		SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	LCSS		Batch ID: 17990		RunNo: 24646					
Prep Date:	3/4/2015		Analysis Date: 3/5/2015		SeqNo: 726621		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	99.8	64	130			
Surr: BFB	970		1000		96.5	80	120			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
E Value above quantitation range
J Analyte detected below quantitation limits
O RSD is greater than RSDlimit
R RPD outside accepted recovery limits
S Spike Recovery outside accepted recovery limits

B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
P Sample pH Not In Range
RL Reporting Detection Limit

Sample Log-In Check List

Client Name: SMA-CARLSBAD

Work Order Number: 1503115

RcptNo: 1

Received by/date:	JA	03/04/15
Logged By:	Celina Sessa	3/4/2015 9:44:00 AM
Completed By:	Celina Sessa	3/4/2015 10:39:33 AM
Reviewed By:	AT 03/04/15	

Chain of Custody

- Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☒
- Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
- How was the sample delivered? Courier

Log In

- Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
- Were all samples received at a temperature of $>0^{\circ}\text{C}$ to 6.0°C ? Yes ☒ No ☐ NA ☐
- Sample(s) in proper container(s)? Yes ☒ No ☐
- Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
- Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
- Was preservative added to bottles? Yes ☐ No ☒ NA ☐
- VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒
- Were any sample containers received broken? Yes ☐ No ☒
- Does paperwork match bottle labels?
(Note discrepancies on chain of custody) Yes ☒ No ☐
- Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
- Is it clear what analyses were requested? Yes ☒ No ☐
- Were all holding times able to be met?
(If no, notify customer for authorization.) Yes ☒ No ☐

of preserved bottles checked for pH: _____
(<2 or >12 unless noted)
Adjusted? _____
Checked by: _____

Special Handling (if applicable)

- Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:	_____	Date:	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.0	Good	Not Present			



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

March 25, 2015

Lucas Middleton
Souder, Miller & Associates
201 S Halagueno
Carlsbad, NM 88221
TEL: (575) 698-5351
FAX

RE: MSI_Lusk Deep

OrderNo.: 1503774

Dear Lucas Middleton:

Hall Environmental Analysis Laboratory received 5 sample(s) on 3/18/2015 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical ReportLab Order: **1503774**Date Reported: **3/25/2015****Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Souder, Miller & Associates
Project: MSI_Lusk Deep**Lab Order:** 1503774**Lab ID:** 1503774-001**Collection Date:** 3/12/2015 10:00:00 AM**Client Sample ID:** LDD1**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Methyl tert-butyl ether (MTBE)	ND	0.095		mg/Kg	1	3/19/2015 8:09:17 PM	18213
Benzene	ND	0.048		mg/Kg	1	3/19/2015 8:09:17 PM	18213
Toluene	ND	0.048		mg/Kg	1	3/19/2015 8:09:17 PM	18213
Ethylbenzene	ND	0.048		mg/Kg	1	3/19/2015 8:09:17 PM	18213
Xylenes, Total	ND	0.095		mg/Kg	1	3/19/2015 8:09:17 PM	18213
Surr: 4-Bromofluorobenzene	108	80-120		%REC	1	3/19/2015 8:09:17 PM	18213

Lab ID: 1503774-002**Collection Date:** 3/12/2015 10:00:00 AM**Client Sample ID:** LDD3**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Methyl tert-butyl ether (MTBE)	ND	0.10		mg/Kg	1	3/19/2015 9:35:24 PM	18213
Benzene	ND	0.050		mg/Kg	1	3/19/2015 9:35:24 PM	18213
Toluene	ND	0.050		mg/Kg	1	3/19/2015 9:35:24 PM	18213
Ethylbenzene	ND	0.050		mg/Kg	1	3/19/2015 9:35:24 PM	18213
Xylenes, Total	ND	0.10		mg/Kg	1	3/19/2015 9:35:24 PM	18213
Surr: 4-Bromofluorobenzene	106	80-120		%REC	1	3/19/2015 9:35:24 PM	18213

Lab ID: 1503774-003**Collection Date:** 3/12/2015 10:00:00 AM**Client Sample ID:** LDD5**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Methyl tert-butyl ether (MTBE)	ND	0.097		mg/Kg	1	3/19/2015 10:04:01 PM	18213
Benzene	ND	0.049		mg/Kg	1	3/19/2015 10:04:01 PM	18213
Toluene	ND	0.049		mg/Kg	1	3/19/2015 10:04:01 PM	18213
Ethylbenzene	ND	0.049		mg/Kg	1	3/19/2015 10:04:01 PM	18213
Xylenes, Total	ND	0.097		mg/Kg	1	3/19/2015 10:04:01 PM	18213
Surr: 4-Bromofluorobenzene	107	80-120		%REC	1	3/19/2015 10:04:01 PM	18213

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

Analytical ReportLab Order: **1503774**Date Reported: **3/25/2015****Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Souder, Miller & Associates
Project: MSI_Lusk Deep**Lab Order:** 1503774**Lab ID:** 1503774-004**Collection Date:** 3/12/2015 10:00:00 AM**Client Sample ID:** LDD12**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Methyl tert-butyl ether (MTBE)	ND	0.10		mg/Kg	1	3/19/2015 10:32:39 PM	18213
Benzene	ND	0.050		mg/Kg	1	3/19/2015 10:32:39 PM	18213
Toluene	ND	0.050		mg/Kg	1	3/19/2015 10:32:39 PM	18213
Ethylbenzene	ND	0.050		mg/Kg	1	3/19/2015 10:32:39 PM	18213
Xylenes, Total	ND	0.10		mg/Kg	1	3/19/2015 10:32:39 PM	18213
Surr: 4-Bromofluorobenzene	105	80-120		%REC	1	3/19/2015 10:32:39 PM	18213
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	38	30		mg/Kg	20	3/24/2015 11:04:13 AM	18295

Lab ID: 1503774-005**Collection Date:** 3/12/2015 10:00:00 AM**Client Sample ID:** LDD13**Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Methyl tert-butyl ether (MTBE)	ND	0.097		mg/Kg	1	3/19/2015 11:01:17 PM	18213
Benzene	ND	0.048		mg/Kg	1	3/19/2015 11:01:17 PM	18213
Toluene	ND	0.048		mg/Kg	1	3/19/2015 11:01:17 PM	18213
Ethylbenzene	ND	0.048		mg/Kg	1	3/19/2015 11:01:17 PM	18213
Xylenes, Total	ND	0.097		mg/Kg	1	3/19/2015 11:01:17 PM	18213
Surr: 4-Bromofluorobenzene	105	80-120		%REC	1	3/19/2015 11:01:17 PM	18213
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	410	30		mg/Kg	20	3/24/2015 11:41:27 AM	18295

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH Not In Range
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1503774

25-Mar-15

Client: Souder, Miller & Associates

Project: MSI_Lusk Deep

Sample ID	MB-18295		SampType:	MBLK		TestCode:	EPA Method 300.0: Anions				
Client ID:	PBS		Batch ID:	18295		RunNo:	25049				
Prep Date:	3/24/2015		Analysis Date:	3/24/2015		SeqNo:	739028		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Chloride	ND	1.5									

Sample ID	LCS-18295		SampType: LCS		TestCode: EPA Method 300.0: Anions					
Client ID:	LCSS		Batch ID: 18295		RunNo: 25049					
Prep Date:	3/24/2015		Analysis Date: 3/24/2015		SeqNo: 739029		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	95.9	90	110			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
E Value above quantitation range
J Analyte detected below quantitation limits
O RSD is greater than RSDlimit
R RPD outside accepted recovery limits
S Spike Recovery outside accepted recovery limits

B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1503774

25-Mar-15

Client: Souder, Miller & Associates

Project: MSI_Lusk Deep

Sample ID	MB-18213		SampType: MBLK		TestCode: EPA Method 8021B: Volatiles					
Client ID:	PBS		Batch ID: 18213		RunNo: 24929					
Prep Date:	3/18/2015		Analysis Date: 3/19/2015		SeqNo: 734804		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.10								
Benzene	ND	0.050								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.1		1.000		107	80	120			

Sample ID	LCS-18213		SampType: LCS		TestCode: EPA Method 8021B: Volatiles					
Client ID:	LCSS		Batch ID: 18213		RunNo: 24929					
Prep Date:	3/18/2015		Analysis Date: 3/19/2015		SeqNo: 734805		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	1.0	0.10	1.000	0	103	69.8	143			
Benzene	1.0	0.050	1.000	0	103	76.6	128			
Toluene	0.98	0.050	1.000	0	97.8	75	124			
Ethylbenzene	0.97	0.050	1.000	0	96.8	79.5	126			
Xylenes, Total	2.9	0.10	3.000	0	96.7	78.8	124			
Surr: 4-Bromofluorobenzene	1.1		1.000		113	80	120			

Sample ID	1503774-001AMS			SampType:	MS		TestCode:	EPA Method 8021B: Volatiles			
Client ID:	LDD1			Batch ID:	18213		RunNo:	24929			
Prep Date:	3/18/2015			Analysis Date:	3/19/2015		SeqNo:	734816		Units:	mg/Kg
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Methyl tert-butyl ether (MTBE)	1.2	0.095	0.9524	0	130	71.8	123			S	
Benzene	1.2	0.048	0.9524	0	128	69.2	126			S	
Toluene	1.2	0.048	0.9524	0	123	65.6	128				
Ethylbenzene	1.2	0.048	0.9524	0	123	65.5	138				
Xylenes, Total	3.5	0.095	2.857	0	123	63	139				
Surr: 4-Bromofluorobenzene	1.1		0.9524		116	80	120				

Sample ID	1503774-001AMSD		SampType:	MSD		TestCode:	EPA Method 8021B: Volatiles				
Client ID:	LDD1		Batch ID:	18213		RunNo:	24929				
Prep Date:	3/18/2015		Analysis Date:	3/19/2015		SeqNo:	734817		Units: mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Methyl tert-butyl ether (MTBE)	1.0	0.095	0.9497	0	110	71.8	123	16.6	21.2		
Benzene	1.1	0.047	0.9497	0	117	69.2	126	9.00	18.5		
Toluene	1.1	0.047	0.9497	0	112	65.6	128	9.17	20.6		
Ethylbenzene	1.1	0.047	0.9497	0	115	65.5	138	7.57	20.1		

Qualifiers:

* Value exceeds Maximum Contaminant Level.
E Value above quantitation range
J Analyte detected below quantitation limits
O RSD is greater than RSDlimit
R RPD outside accepted recovery limits
S Spike Recovery outside accepted recovery limits

B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
P Sample pH Not In Range
RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1503774

25-Mar-15

Client: Souder, Miller & Associates

Project: MSI_Lusk Deep

Sample ID	1503774-001AMSD			SampType:	MSD		TestCode:	EPA Method 8021B: Volatiles			
Client ID:	LDD1		Batch ID:	18213		RunNo:	24929				
Prep Date:	3/18/2015		Analysis Date:	3/19/2015		SeqNo:	734817		Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Xylenes, Total	3.2	0.095	2.849	0	114	63	139	8.01	21.1		
Surr: 4-Bromofluorobenzene	1.1		0.9497		112	80	120	0	0		

Sample ID	MB-18240	SampType:	MBLK	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	PBS	Batch ID:	18240	RunNo:	24945					
Prep Date:	3/19/2015	Analysis Date:	3/20/2015	SeqNo:	735752	Units:	%REC			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.1		1.000		108	80	120			

Sample ID	LCS-18240	SampType:	LCS	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	LCSS	Batch ID:	18240	RunNo:	24945					
Prep Date:	3/19/2015	Analysis Date:	3/20/2015	SeqNo:	735753	Units:	%REC			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.2		1.000		117	80	120			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
E Value above quantitation range
J Analyte detected below quantitation limits
O RSD is greater than RSDlimit
R RPD outside accepted recovery limits
S Spike Recovery outside accepted recovery limits

B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
P Sample pH Not In Range
RL Reporting Detection Limit



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: SMA-CARLSBAD

Work Order Number: 1503774

RcptNo: 1

Received by/date: LM 03/18/15

Logged By: Celina Sessa 3/18/2015 9:30:00 AM

Celina Sessa

Completed By: Celina Sessa 3/18/2015 9:39:41 AM

Celina Sessa

Reviewed By: AG 03/18/15

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☒
2. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
5. Were all samples received at a temperature of $>0^{\circ}\text{C}$ to 6.0°C ? Yes ☒ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☒ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
9. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒
11. Were any sample containers received broken? Yes ☐ No ☒
12. Does paperwork match bottle labels?
(Note discrepancies on chain of custody) Yes ☒ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
14. Is it clear what analyses were requested? Yes ☒ No ☐
15. Were all holding times able to be met?
(If no, notify customer for authorization.) Yes ☒ No ☐

of preserved
bottles checked
for pH: _____
(<2 or >12 unless noted)
Adjusted? _____
Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified: _____ Date: _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.0	Good	Yes			

APPENDIX B

FORM C141 FINAL

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in
accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company: COG Operating LLC	Contact: Robert McNeill	
Address: 600 West Illinois Avenue, Midland TX 79701	Telephone No. 432-230-0077	
Facility Name: Lusk Deep Unit A #19	Facility Type: Battery	
Surface Owner: Federal	Mineral Owner: Federal	API No. 30-025-35244

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
N	17	19S	32E	660'	South	1650	West	Eddy

Latitude 32.655021314435 Longitude -103.791580657662

NATURE OF RELEASE

Type of Release: Oil and Produced Water	Volume of Release: 20 bbls Oil; 400 bbls PW	Volume Recovered: 0 bbls Oil; 380 bbls PW
Source of Release: Fire	Date and Hour of Occurrence: 11/26/2014 2:50 pm	Date and Hour of Discovery: 11/26/2014 2:50 pm
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Mike Bratcher – NMOCD / Jim Amos – BLM	
By Whom? Lupe Carrasco	Date and Hour: 11/26/2014 10:07 pm	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*


Describe Cause of Problem and Remedial Action Taken.*

A fire occurred during a tank repair performed by a third party contractor. Two men of the contractor crew were injured and were transported to medical facilities. This incident is currently under investigation by COG and the contractor. The fire was extinguished by the fire department. Any standing fluids were recovered by vacuum trucks and dispose of at an NMOCD approved facility.

Describe Area Affected and Cleanup Action Taken.*

This spill remained mostly on the pad area however a 10' x 20' area of the pasture was impacted. Souder, Miller & Associates completed the clean-up in accordance with NMOCD and BLM guidance.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: 	<u>OIL CONSERVATION DIVISION</u>	
Printed Name: Amanda Trujillo	Approved by Environmental Specialist:	
Title: Senior Environmental Coordinator	Approval Date:	Expiration Date:
E-mail Address: atrujillo@concho.com	Conditions of Approval:	Attached <input type="checkbox"/>
Date: April 6, 2015 Phone: 575-748-6940		

* Attach Additional Sheets If Necessary

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in
accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company: COG Operating LLC	Contact: Robert McNeill
Address: 600 West Illinois Avenue, Midland TX 79701	Telephone No. 432-230-0077
Facility Name: Lusk Deep Unit A #19	Facility Type: Battery

Surface Owner: Federal	Mineral Owner: Federal	API No. 30-025-35244
------------------------	------------------------	----------------------

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
N	17	19S	32E	660'	South	1650	West	Eddy

Latitude 32.655021314435 Longitude -103.791580657662

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: 40 bbls PW	Volume Recovered: 35 bbls PW
Source of Release: Over run tanks	Date and Hour of Occurrence: 12/10/2014 7:21 pm	Date and Hour of Discovery: 12/10/2014 7:21 pm
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Tomas Oberding – NMOCD / Jim Amos – BLM	
By Whom? Amanda Trujillo	Date and Hour: 12/11/2014 4:44 pm	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*


Describe Cause of Problem and Remedial Action Taken.*

The release was caused by an equipment failure that caused temporary frac tanks to overflow. Any standing fluids were recovered by vacuum trucks and dispose of at an NMOCD approved facility.

Describe Area Affected and Cleanup Action Taken.*

This spill remained mostly on the pad area however a 150' x 15' area of the pasture was impacted. Souder, Miller & Associates completed the clean-up in accordance with NMOCD and BLM guidelines.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: 	OIL CONSERVATION DIVISION		
Printed Name: Amanda Trujillo	Approved by Environmental Specialist:		
Title: Senior Environmental Coordinator	Approval Date:	Expiration Date:	
E-mail Address: atrujillo@concho.com	Conditions of Approval:		Attached <input type="checkbox"/>
Date: December 22, 2014 Phone: 575-748-6940			

* Attach Additional Sheets If Necessary

APPENDIX C

WASTE MANIFEST

APPENDIX D

PHOTO GALLERY

Lusk Deep Incident Closure Report
SMA Ref 5B23776 BG1
06/01/15



Contaminated soil on Southwest side off of pad.
Taken on 02/25/15



Contaminated soil on Southeast side off of pad. taken
on 02/25/15



Historic pit liner. Taken on 02/25/15

Lusk Deep Incident Closure Report
SMA Ref 5B23776 BG1
06/01/15



Excavation activities off pad taken on 03/12/15