



November 18, 2015

NMOCD District II  
Attn. Heather Patterson  
1301 W Grand Ave  
Artesia, NM 88210

SUBJECT: SOIL REMEDIATION WORK PLAN FOR INCIDENT 2RP-3356 BRUTUS 12 FEDERAL COM #002H, EDDY COUNTY, NEW MEXICO

Dear Ms. Patterson:

On behalf of COG Operating (COG), Souder Miller & Associates (SMA) is pleased to submit the attached Work Plan summarizing the planned soil remediation for the release at the Brutus 12 Federal COM #002H in Eddy County, New Mexico. The purpose of the work plan is to obtain approval from the New Mexico Oil Conservation Division for remediation of the release discovered on October 2, 2015.

At the request of COG, SMA assessed and delineated the oil release associated with the Brutus 12 Federal COM #002H well location. The release was initially reported to NMOCD by COG Operating on October 16, 2015 and was the result of a steel flowline leak. The table below summarizes information regarding the release. Results of the assessment and delineation follow in the attached report.

Table 1: Release information and Site Ranking					
Name	Brutus 12 Federal COM 2H				
Location	Incident Number	API Number	Section, Township, Range		
	2RP-3356	30-015-40823	SW/NE (Unit O)	Section 12	T 26S, R 28E NMPM
Estimated Date of Release	Discovered October 2, 2015				
Date Reported to NMOCD	October 16, 2015				
Reported by	Amanda Trujillo, COG Operating LLC				
Land Owner	Federal				
Reported To	NM Oil Conservation Division (NMOCD)				
Source of Release	Steel Flowline Leak				
Released Material	Produced Oil				
Released Volume	0 bbls Produced Water and 85 bbls Produced Oil				
Recovered Volume	0 bbls Produced Water and 59 bbls Produced Oil				
Net Release	0 bbls Produced Water and 26 bbls Produced Oil				
Nearest Waterway	Pecos River is over 1 mile east of the location				

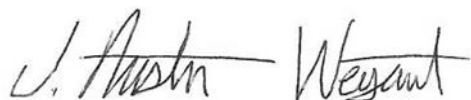


Depth to Groundwater	Estimated to be 76 feet
Nearest Domestic Water Source	Greater than 1,000 feet
NMOCD Ranking	10
SMA Response Dates	Initial: November 2, 2015 Mitigation Activities: Unknown
Subcontractors	TCS
Disposal Facility	Lea Land, LLC
Estimated Yd <sup>3</sup> Contaminated Soil Excavated and Disposed	330

A copy of the C-141 Initial is located in Appendix B. For questions or comments pertaining to the release or the attached Work Plan, please feel free to contact either of us.

Submitted by:

SOUDER, MILLER & ASSOCIATES



Austin Weyant  
Project Scientist

Reviewed by:



Cynthia Gray, CHMM  
Senior Scientist



# SOIL REMEDIATION WORK PLAN FOR INCIDENT 2RP-3356

## COG OPERATING LLC

BRUTUS 12 FEDERAL COM 2H

API# 30-015-40823

UL O SECTION 12, T26S R28E, NMPM

EDDY COUNTY, NM



Prepared for:  
COG Operating LLC  
2407 Pecos Ave  
Artesia, NM 88210

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

November 18, 2015  
SMA Reference  
5B23978 BG8



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## **1.0 Introduction**

On behalf of COG Operating LLC (COG), SMA has prepared this report describing the assessment and initial delineation of the release associated with the Brutus 12 Federal COM #002H well site. The site is located in UL O, Section 12, T 26S, R 28 E NMPM, Eddy County, New Mexico, on federal land administered by the Bureau of Land Management (BLM). Figure 1 illustrates the vicinity and location of the site.

## **2.0 Site Ranking and Land Jurisdiction**

The release site is located approximately 1.4 miles (> 1,000 feet) west of Pecos River, in an area managed by BLM with an elevation of approximately 2,950 feet above sea level. After evaluation of the site using aerial photography and topographic maps, depth to groundwater is estimated to be less than 100 feet but greater than 50 feet below ground surface (bgs). Figure 1 depicts the site vicinity and Figure 2 depicts the site details and sample locations.

SMA searched the New Mexico State Engineer's Office online water well database for water wells in the vicinity of the release. No well is located within a 1000 foot radius of the site. Figure 1 depicts the site vicinity and Figure 2 shows the site itself. The physical location of this release is within the jurisdiction of NMOCD.

This release location has been assigned a NMOCD ranking of 10 which requires a soil remediation standard of 10 parts per million (ppm) benzene, 50 ppm combined benzene, toluene, ethyl-benzene, and total xylenes (BTEX), and 1000 ppm total petroleum hydrocarbons (TPH). Table 1 illustrates site ranking rationale.

## **3.0 Assessment and Initial Results**

On November 2nd, 2015, after receiving 811 clearance, SMA field personnel assessed the release site with hand tools, a Photo Ionization Detector (PID), and a mobile chlorides titration kit. The affected area was found to be 200 feet long and 12 feet wide. Four composite samples (C1-4) and two location specific samples were taken to depths of 2 feet bgs. Using field screening, samples were found to exhibit only background levels of chloride contaminant. Sample locations are noted on Figure 2 "Site Details and Sample Location Map". 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.

## **4.0 Soil Remediation Work Plan**

SMA will begin the excavation of affected soils, with approval from area utilities owners via 811 and NMOCD. The composite sample locations C3 and C4 are within a crude oil pipeline right of way (ROW). SMA will continuously guide the excavation activities by collecting composite soil samples for field screening with a mobile titration unit (EPA 4500) and a calibrated PID. Delineation will occur to depths to sufficient to delineate the plume by NMOCD Division 1 standards. Excavation will be done to affectively remove hydrocarbon contaminated soil. Closure samples will be collected at final depth of excavation and on sidewalls to show that contaminated soil was removed on a vertical and horizontal extent. Approximately 330 cubic yards of contaminated soil will be removed and replaced with clean backfill material to bring the

contours to surface grade. The contaminated soil will be transported for proper disposal at Lea Land, near Carlsbad, NM an NMOCD permitted facility.

## **5.0 Conclusions and Recommendations**

NMOCD Guidelines for Remediation of Leaks, Spills, and Releases have established the following action levels for contaminants of concern with a site ranking of 10: 10 ppm (mg/kg) Benzene, 50 ppm total BTEX, and 1000 ppm TPH. The release consisted of produced and associated petroleum found during the initial assessment and delineation.

After the soil remediation work plan is approved by NMOCD, SMA will begin soil remediation activities on site.

Soil contaminant concentrations found during the initial delineation are illustrated in Figure 2. A summary of the laboratory analyses is included in Table 2. Laboratory reports are included in Appendix A.

## **6.0 Closure and Limitations**

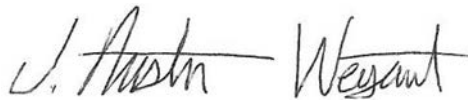
The scope of our services consisted of the performance of a preliminary spill assessment, verification of release stabilization, regulatory liaison, and preparation of this Remediation Work Plan. All work has been performed in accordance with generally accepted professional environmental consulting practices for oil and gas releases in the Permian Basin in New Mexico.

If there are any questions regarding this report, please contact either Austin Weyant at 575-689-7040 or Cindy Gray at 505-325-7535.

Submitted by:

Reviewed by:

SOUDER, MILLER & ASSOCIATES



Austin Weyant  
Project Scientist



Cynthia Gray, CHMM  
Senior Scientist

**Figures:**

Figure 1: Vicinity Map

Figure 2: Site Details and Sample Locations Map

**Tables:**

Table 1: Release Information and Site Ranking

Table 2: Summary of Laboratory Analyses

**Appendices:**

Appendix A: Laboratory Analytical Reports

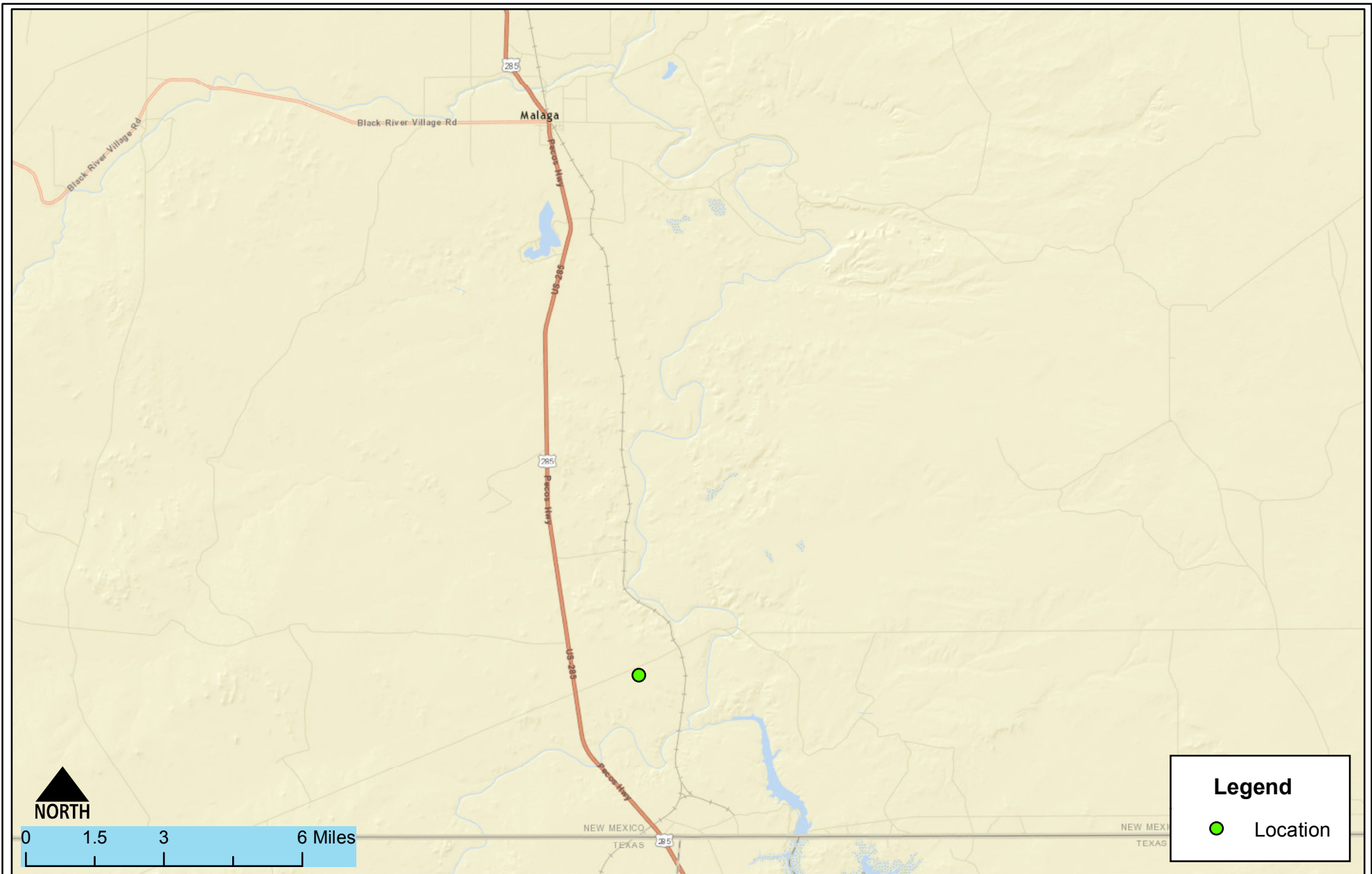
Appendix B: Form C141 Initial

Appendix C: Field Notes

# FIGURE 1

## VICINITY MAP





Vicinity Map  
COG- Brutus 12 Federal Com 2H  
Malaga, New Mexico

Figure 1

Date Saved:  
11/17/2015

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

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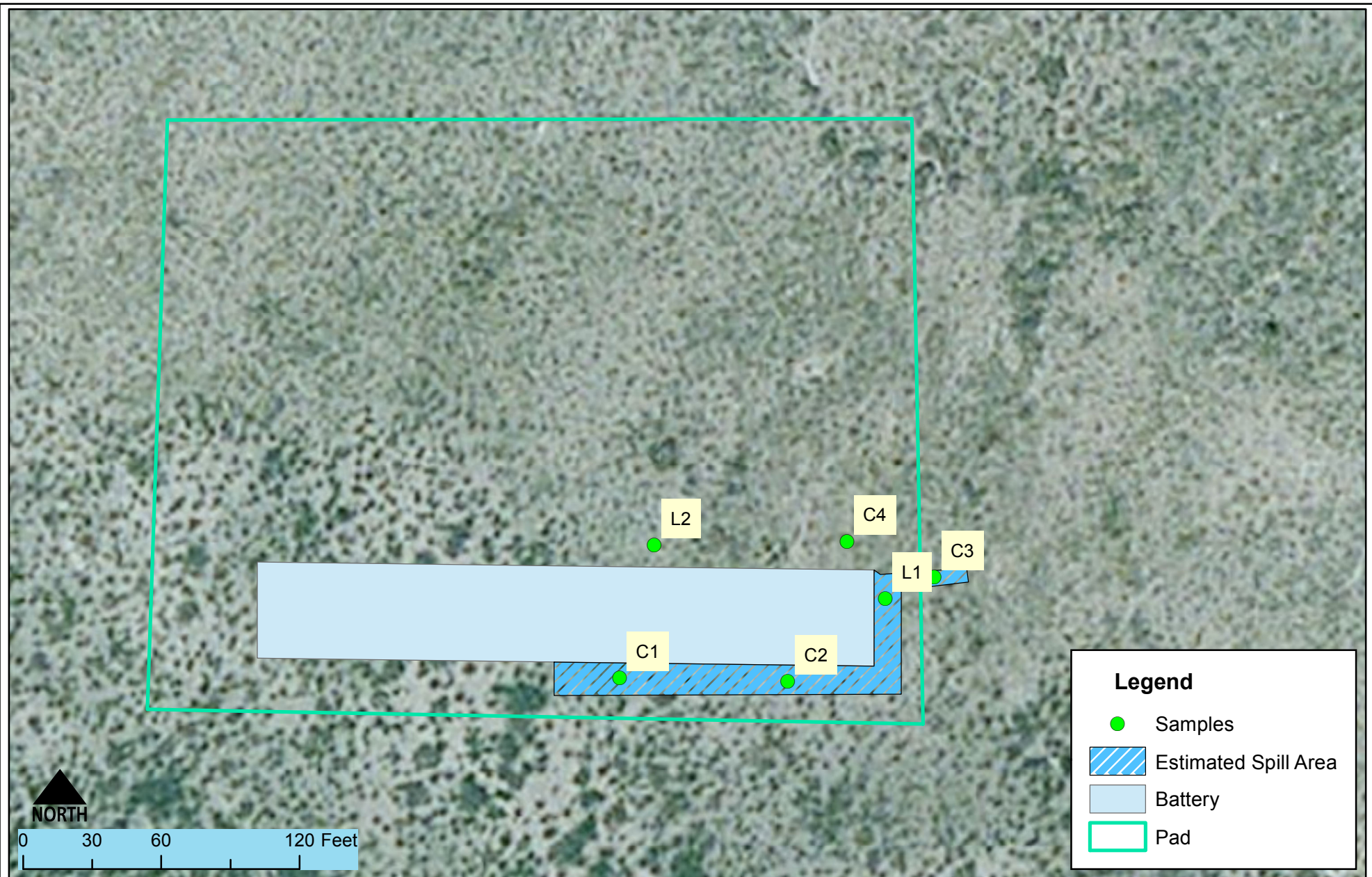
Drawn	Lucas Middleton
Checked	
Approved	



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# FIGURE 2

## SITE DETAILS AND SAMPLE LOCATIONS MAP



Site Detail and Sample Locations  
COG Brutus 12 Federal Com 2H  
Malaga, New Mexico

Figure 2

Date Saved: 11/18/2015	By: _____	Date: _____	Revisions	Descr: _____
	By: _____	Date: _____		Descr: _____
	Copyright 2015 Souder, Miller & Associates - All Rights Reserved			

Drawn	Lucas Middleton
Checked	_____
Approved	_____



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# TABLE 1

## RELEASE INFORMATION AND SITE RANKING



Table 2: Site Ranking

Depth to Groundwater	NMOCD Numeric Rank for this Site	Source for Ranking	Notes
< 50 BGS = 20	10	USGS Topo Maps; Google Earth Elevation Difference from the site and the bobcat draw wash to the west	Bobcat Draw is 0.28 miles to the north of the location. ; Site elevation is approximately 7 feet below Bobcat Draw
50' to 99' = 10			
>100' = 0			
Ranking Criteria for Horizontal Distance to Nearest Surface Water	NMOCD Numeric Rank for this Site	Source for Ranking	Notes
< 200' = 20	0	USGS Topo Maps; Google Earth ; PRCC Mapping Tool	Pecos River is located approximately 1.4 miles to the east release
200' - 1000' = 10			
>1000' = 0			
Ranking Criteria for Horizontal Distance to a Water Well or Water Source	NMOCD Numeric Rank for this Site	Source for Ranking	Notes
<1000' from a water source? <200' from a private domestic water source? YES OR NO to BOTH. YES = 20, NO = 0	0	NM State Engineer Water Well Database	nearest well 2,000ft north of - Easting 627552.22, Northing 3549364.79
<b>Total Site Ranking</b>			
10			
Soil Remedation Standards	0 to 9	10 to 19	>19
Benzene	10 PPM	10 PPM	10 PPM
BTEX	50 PPM	50 PPM	50 PPM
TPH	5000 PPM	1000 PPM	100 PPM



# TABLE 2

## SUMMARY OF LABORATORY ANALYSES

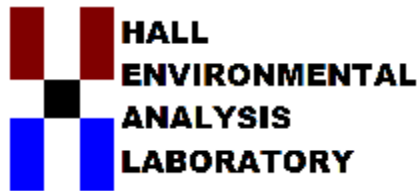
**Table 2: Summary of Laboratory Analyses**

Analytical Report-1506542	Sample Number on Figure 2 Map	Sample Date	Depth	BTEX ppm	Benzene mg/Kg	GRO mg/Kg	DRO mg/Kg	Cl- mg/Kg
1511206-001	C1	11/2/2015	Surface	25.2	BDL	870	26,000	N/A
1511206-002	C2	11/2/2015	Surface	6.6	BDL	310	23,000	N/A
1511206-003	C3	11/2/2015	Surface	BDL	BDL	BDL	28	N/A
1511206-004	C4	11/2/2015	Surface	BDL	BDL	BDL	13	N/A
1511206-005	L1	11/2/2015	2'	324	4.7	3,400	14,000	N/A
1511206-006	L2	11/2/2015	2'	BDL	BDL	BDL	1,700	N/A

# 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](http://www.hallenvironmental.com)

November 11, 2015

Austin Weyant  
Souder, Miller & Associates  
201 S Halagueno  
Carlsbad, NM 88221  
TEL: (575) 689-7040  
FAX

RE: Brutus 12 Fed Com 2H

OrderNo.: 1511206

Dear Austin Weyant:

Hall Environmental Analysis Laboratory received 6 sample(s) on 11/4/2015 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](http://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 1511206

Date Reported: 11/11/2015

**CLIENT:** Souder, Miller & Associates

**Client Sample ID:** C1

**Project:** Brutus 12 Fed Com 2H

**Collection Date:** 11/2/2015 3:13:00 PM

**Lab ID:** 1511206-001

**Matrix:** SOIL

**Received Date:** 11/4/2015 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>KJH</b>
Diesel Range Organics (DRO)	26000	980		mg/Kg	100	11/9/2015 2:47:55 PM	22209
Surr: DNOP	0	70-130	S	%REC	100	11/9/2015 2:47:55 PM	22209
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	870	50		mg/Kg	10	11/6/2015 11:40:23 AM	22214
Surr: BFB	270	75.4-113	S	%REC	10	11/6/2015 11:40:23 AM	22214
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.25		mg/Kg	10	11/6/2015 11:40:23 AM	22214
Toluene	1.2	0.50		mg/Kg	10	11/6/2015 11:40:23 AM	22214
Ethylbenzene	ND	0.50		mg/Kg	10	11/6/2015 11:40:23 AM	22214
Xylenes, Total	24	1.0		mg/Kg	10	11/6/2015 11:40:23 AM	22214
Surr: 4-Bromofluorobenzene	137	80-120	S	%REC	10	11/6/2015 11:40:23 AM	22214

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1511206

Date Reported: 11/11/2015

**CLIENT:** Souder, Miller & Associates

**Client Sample ID:** C2

**Project:** Brutus 12 Fed Com 2H

**Collection Date:** 11/2/2015 3:15:00 PM

**Lab ID:** 1511206-002

**Matrix:** SOIL

**Received Date:** 11/4/2015 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>KJH</b>
Diesel Range Organics (DRO)	23000	930		mg/Kg	100	11/9/2015 3:51:55 PM	22209
Surr: DNOP	0	70-130	S	%REC	100	11/9/2015 3:51:55 PM	22209
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	310	4.9		mg/Kg	1	11/6/2015 12:03:36 PM	22214
Surr: BFB	852	75.4-113	S	%REC	1	11/6/2015 12:03:36 PM	22214
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.049		mg/Kg	1	11/6/2015 12:03:36 PM	22214
Toluene	0.086	0.049		mg/Kg	1	11/6/2015 12:03:36 PM	22214
Ethylbenzene	ND	0.049		mg/Kg	1	11/6/2015 12:03:36 PM	22214
Xylenes, Total	6.6	0.098		mg/Kg	1	11/6/2015 12:03:36 PM	22214
Surr: 4-Bromofluorobenzene	266	80-120	S	%REC	1	11/6/2015 12:03:36 PM	22214

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1511206

Date Reported: 11/11/2015

**CLIENT:** Souder, Miller & Associates

**Client Sample ID:** C3

**Project:** Brutus 12 Fed Com 2H

**Collection Date:** 11/2/2015 3:17:00 PM

**Lab ID:** 1511206-003

**Matrix:** SOIL

**Received Date:** 11/4/2015 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>KJH</b>
Diesel Range Organics (DRO)	28	9.6		mg/Kg	1	11/9/2015 4:55:50 PM	22209
Surr: DNOP	102	70-130		%REC	1	11/9/2015 4:55:50 PM	22209
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	11/6/2015 1:19:09 PM	22214
Surr: BFB	97.3	75.4-113		%REC	1	11/6/2015 1:19:09 PM	22214
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.047		mg/Kg	1	11/6/2015 1:19:09 PM	22214
Toluene	ND	0.047		mg/Kg	1	11/6/2015 1:19:09 PM	22214
Ethylbenzene	ND	0.047		mg/Kg	1	11/6/2015 1:19:09 PM	22214
Xylenes, Total	ND	0.094		mg/Kg	1	11/6/2015 1:19:09 PM	22214
Surr: 4-Bromofluorobenzene	113	80-120		%REC	1	11/6/2015 1:19:09 PM	22214

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1511206

Date Reported: 11/11/2015

**CLIENT:** Souder, Miller & Associates

**Client Sample ID:** C4

**Project:** Brutus 12 Fed Com 2H

**Collection Date:** 11/2/2015 3:19:00 PM

**Lab ID:** 1511206-004

**Matrix:** SOIL

**Received Date:** 11/4/2015 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>KJH</b>
Diesel Range Organics (DRO)	13	9.9		mg/Kg	1	11/9/2015 5:59:37 PM	22209
Surr: DNOP	92.7	70-130		%REC	1	11/9/2015 5:59:37 PM	22209
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	11/6/2015 1:42:28 PM	22214
Surr: BFB	90.2	75.4-113		%REC	1	11/6/2015 1:42:28 PM	22214
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.049		mg/Kg	1	11/6/2015 1:42:28 PM	22214
Toluene	ND	0.049		mg/Kg	1	11/6/2015 1:42:28 PM	22214
Ethylbenzene	ND	0.049		mg/Kg	1	11/6/2015 1:42:28 PM	22214
Xylenes, Total	ND	0.098		mg/Kg	1	11/6/2015 1:42:28 PM	22214
Surr: 4-Bromofluorobenzene	115	80-120		%REC	1	11/6/2015 1:42:28 PM	22214

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1511206

Date Reported: 11/11/2015

**CLIENT:** Souder, Miller & Associates

**Client Sample ID:** L1

**Project:** Brutus 12 Fed Com 2H

**Collection Date:** 11/2/2015 3:21:00 PM

**Lab ID:** 1511206-005

**Matrix:** SOIL

**Received Date:** 11/4/2015 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>KJH</b>
Diesel Range Organics (DRO)	14000	960		mg/Kg	100	11/10/2015 2:39:48 PM	22209
Surr: DNOP	0	70-130	S	%REC	100	11/10/2015 2:39:48 PM	22209
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	3400	250		mg/Kg	50	11/6/2015 11:16:55 AM	22214
Surr: BFB	218	75.4-113	S	%REC	50	11/6/2015 11:16:55 AM	22214
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	4.7	2.5		mg/Kg	50	11/6/2015 11:16:55 AM	22214
Toluene	94	2.5		mg/Kg	50	11/6/2015 11:16:55 AM	22214
Ethylbenzene	26	2.5		mg/Kg	50	11/6/2015 11:16:55 AM	22214
Xylenes, Total	200	5.0		mg/Kg	50	11/6/2015 11:16:55 AM	22214
Surr: 4-Bromofluorobenzene	137	80-120	S	%REC	50	11/6/2015 11:16:55 AM	22214

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1511206**Date Reported: **11/11/2015****CLIENT:** Souder, Miller & Associates**Client Sample ID:** L2**Project:** Brutus 12 Fed Com 2H**Collection Date:** 11/2/2015 3:23:00 PM**Lab ID:** 1511206-006**Matrix:** SOIL**Received Date:** 11/4/2015 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>KJH</b>
Diesel Range Organics (DRO)	1700	97		mg/Kg	10	11/10/2015 3:22:25 PM	22209
Surr: DNOP	0	70-130	S	%REC	10	11/10/2015 3:22:25 PM	22209
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	11/6/2015 2:05:43 PM	22214
Surr: BFB	89.2	75.4-113		%REC	1	11/6/2015 2:05:43 PM	22214
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.047		mg/Kg	1	11/6/2015 2:05:43 PM	22214
Toluene	ND	0.047		mg/Kg	1	11/6/2015 2:05:43 PM	22214
Ethylbenzene	ND	0.047		mg/Kg	1	11/6/2015 2:05:43 PM	22214
Xylenes, Total	ND	0.093		mg/Kg	1	11/6/2015 2:05:43 PM	22214
Surr: 4-Bromofluorobenzene	113	80-120		%REC	1	11/6/2015 2:05:43 PM	22214

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	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	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1511206

11-Nov-15

Client: Souder, Miller &amp; Associates

Project: Brutus 12 Fed Com 2H

Sample ID	MB-22209	SampType: MBLK			TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS	Batch ID: 22209			RunNo: 30094					
Prep Date:	11/5/2015	Analysis Date: 11/9/2015			SeqNo: 916768		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	10		10.00		99.6	70	130			

Sample ID	LCS-22209		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 22209		RunNo: 30094					
Prep Date:	11/5/2015		Analysis Date: 11/9/2015		SeqNo: 917044		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	93.7	57.4	139			
Surr: DNOP	5.2		5.000		104	70	130			

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
R RPD outside accepted recovery limits  
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Detection Limit



# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1511206

11-Nov-15

Client: Souder, Miller &amp; Associates

Project: Brutus 12 Fed Com 2H

Sample ID	MB-22214		SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	PBS		Batch ID: 22214		RunNo: 30084					
Prep Date:	11/5/2015		Analysis Date: 11/6/2015		SeqNo: 916449		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	850		1000		85.1	75.4	113			

Sample ID	LCS-22214		SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	LCSS		Batch ID: 22214		RunNo: 30084					
Prep Date:	11/5/2015		Analysis Date: 11/6/2015		SeqNo: 916450		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	96.6	79.6	122			
Surr: BFB	930		1000		92.6	75.4	113			

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
R RPD outside accepted recovery limits  
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Detection Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1511206

11-Nov-15

**Client:** Souder, Miller & Associates

**Project:** Brutus 12 Fed Com 2H

Sample ID <b>MB-22214</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8021B: Volatiles</b>							
Client ID: <b>PBS</b>	Batch ID: <b>22214</b>		RunNo: <b>30084</b>							
Prep Date: <b>11/5/2015</b>	Analysis Date: <b>11/6/2015</b>		SeqNo: <b>916463</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.050								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.1		1.000		108	80	120			

Sample ID <b>LCS-22214</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8021B: Volatiles</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>22214</b>		RunNo: <b>30084</b>							
Prep Date: <b>11/5/2015</b>	Analysis Date: <b>11/6/2015</b>		SeqNo: <b>916464</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.050	1.000	0	99.1	80	120			
Toluene	0.96	0.050	1.000	0	96.2	80	120			
Ethylbenzene	0.98	0.050	1.000	0	98.1	80	120			
Xylenes, Total	3.0	0.10	3.000	0	99.8	80	120			
Surr: 4-Bromofluorobenzene	1.2		1.000		115	80	120			

Sample ID <b>1511206-002AMS</b>	SampType: <b>MS</b>		TestCode: <b>EPA Method 8021B: Volatiles</b>							
Client ID: <b>C2</b>	Batch ID: <b>22214</b>		RunNo: <b>30084</b>							
Prep Date: <b>11/5/2015</b>	Analysis Date: <b>11/6/2015</b>		SeqNo: <b>916468</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.049	0.9794	0.04442	99.5	69.6	136			
Toluene	1.1	0.049	0.9794	0.08588	99.1	76.2	134			
Ethylbenzene	1.1	0.049	0.9794	0	117	75.8	137			
Xylenes, Total	9.3	0.098	2.938	6.601	92.6	78.9	133			
Surr: 4-Bromofluorobenzene	2.2		0.9794		228	80	120			S

Sample ID <b>1511206-002AMSD</b>	SampType: <b>MSD</b>		TestCode: <b>EPA Method 8021B: Volatiles</b>							
Client ID: <b>C2</b>	Batch ID: <b>22214</b>		RunNo: <b>30084</b>							
Prep Date: <b>11/5/2015</b>	Analysis Date: <b>11/6/2015</b>		SeqNo: <b>916469</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.049	0.9775	0.04442	105	69.6	136	5.08	20	
Toluene	1.1	0.049	0.9775	0.08588	106	76.2	134	6.15	20	
Ethylbenzene	1.2	0.049	0.9775	0	124	75.8	137	5.53	20	
Xylenes, Total	9.7	0.098	2.933	6.601	104	78.9	133	3.63	20	
Surr: 4-Bromofluorobenzene	2.7		0.9775		273	80	120	0	0	S

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
R RPD outside accepted recovery limits  
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Detection Limit

# Sample Log-In Check List

Client Name: **SMA-CARLSBAD**

Work Order Number: **1511206**

RcptNo: **1**

Received by/date:

AT

11/04/15

Logged By: **Lindsay Mangin**

11/4/2015 12:15:00 PM

*Lindsay Mangin*

Completed By: **Lindsay Mangin**

11/5/2015 9:31:31 AM

*Lindsay Mangin*

Reviewed By:

AT

11/04/15

## 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  $6.0^{\circ}\text{C}$ ? 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	5.4	Good	Yes			

# Chain-of-Custody Record

Client: SMA

Mailing Address: Carlsbad

Phone #: \_\_\_\_\_

Mail or Fax#: \_\_\_\_\_

A/QC Package: ☒ Standard ☐ Level 4 (Full Validation) ☐ Other \_\_\_\_\_

Accreditation: ☒ NELAP ☐ Other \_\_\_\_\_

EDD (Type): \_\_\_\_\_

Turn-Around Time: ☒ Standard ☐ Rush

Project Name: Brutus 12 FED Cam 2H

Project #: \_\_\_\_\_

Project Manager: Austin Weyant

Sampler: Lisa

On Ice: ☒ Yes ☐ No

Sample Temperature: 5.4

Container Type and #

Preservative Type

HEAL No.

Date	Time	Matrix	Sample Request ID
12/15	1513	Soil	C1
12/15	1515	Soil	C2
12/15	1517	Soil	C3
12/15	1519	Soil	C4
12/15	1521	Soil	L1
12/15	1523	Soil	L2

Received by: [Signature] Date: 12/15/15 Time: 1215

Relinquished by: [Signature] Date: 12/15/15 Time: 1215



**HALL ENVIRONMENTAL ANALYSIS LABORATORY**

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

## Analysis Request

BTEX + MTBE + TMBs (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAHs (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )	8081 Pesticides / 8082 PCBs	8260B (VOA)	8270 (Semi-VOA)	Air Bubbles (Y or N)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Remarks: Send MRO via email only. Do not include in report.  
Send a copy of results to Lisa.gaston@seviermill.com

# APPENDIX B

## FORM C141 INITIAL

# APPENDIX C

# FIELD NOTES

Brutus 12 FED Com  
Produced Oil  
10/2/2015





Location is burned  
Burn intact - no holes  
Battery is lined

EC RAN AT. CASE  
FOUND NO SALT 0.07mS

