

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
1301 W. Grand Avenue, 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 to  
accordance with 19.15.29 NMAC.

**Release Notification and Corrective Action**

**OPERATOR**

Initial Report  Final Report

Name of Company <b>Burlington Resources, a Wholly Owned Subsidiary of ConocoPhillips Company</b>	Contact
Address <b>3401 East 30<sup>th</sup> St, Farmington, NM</b>	Telephone No.
Facility Name: <b>Rawson 2</b>	Facility Type: Gas well

Surface Owner <b>Fed</b>	Mineral Owner <b>Fed</b>	API No. <b>3004525024</b>
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**LOCATION OF RELEASE**

Unit Letter <b>B</b>	Section <b>35</b>	Township <b>31</b>	Range <b>12</b>	Feet from the <b>995</b>	North/South Line <b>North</b>	Feet from the <b>1520</b>	East/West Line <b>East</b>	County <b>San Juan</b>
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Latitude 36.86038 Longitude -108.06382

**NATURE OF RELEASE**

Type of Release <b>Hydrocarbon</b>	Volume of Release <b>Unknown</b>	Volume Recovered <b>None</b>
Source of Release <b>BGT</b>	Date and Hour of Occurrence	Date and Hour of Discovery <b>12-13-16</b>
Was Immediate Notice Given? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
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.\*

**OIL CONS. DIV DIST. 3**

Describe Cause of Problem and Remedial Action Taken.\*

**During BGT pit reset and upgrade historical hydrocarbon impacted soil was found for the subject well.**

**MAR 13 2017**

Describe Area Affected and Cleanup Action Taken.\*

**The excavation was 22'x 20' x 9' and app. 140 yds of soil was transported to JFJ land farm and 140 yds of clean soil was transported from Four Corners Material and placed in the excavation site.**

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: <i>R Spearman</i>	<b>OIL CONSERVATION DIVISION</b>	
Printed Name: <b>Bobby Spearman</b>	Approved by Environmental Specialist: <i>[Signature]</i>	
Title: <b>Field Environmental Specialist</b>	Approval Date: <b>3/29/2017</b>	Expiration Date:
E-mail Address: <b>robert.e.spearman @cop.com</b>	Conditions of Approval: <b>NCS1701039363</b>	Attached <input type="checkbox"/>
Date: <b>12-14-15</b> Phone: <b>505-324-6131</b>		

\* Attach Additional Sheets If Necessary

OIL CONS. DIV DIST. 3

MAR 13 2017

## **Rawson #2 Release Report**

Unit Letter B, Section 35, Township 31 North, Range 12 West  
San Juan County, New Mexico

March 7, 2017

Prepared for:  
ConocoPhillips  
5525 Highway 64  
Farmington, New Mexico 87401

Prepared by:  
Rule Engineering, LLC  
501 Airport Drive, Suite 205  
Farmington, New Mexico 87401

# ConocoPhillips Rawson #2 Release Report

Prepared for:

ConocoPhillips  
5525 Highway 64  
Farmington, New Mexico 87401

Prepared by:

Rule Engineering, LLC  
501 Airport Drive, Suite 205  
Farmington, New Mexico 87401



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Heather M. Woods, P.G., Area Manager

Reviewed by:



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**Russell Knight, PG, Principal Hydrogeologist**

March 7, 2017

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## 1.0 Introduction

The ConocoPhillips Rawson #2 release site is located in Unit Letter B, Section 35, Township 31 North, Range 12 West, in San Juan County, New Mexico. A historical release was discovered on December 13, 2016, during below grade tank (BGT) reset and upgrade activities.

A topographic map of the location reproduced from the United States Geological Society quadrangle map of the area is included as Figure 1 and an aerial site map is included as Figure 2.

## 2.0 Release Summary

<b>Site Name</b>	Rawson #2		
<b>Site Location Description</b>	Unit Letter B, Section 35, Township 31 North, Range 12 West		
<b>Wellhead GPS Location</b>	N36.86017 and W108.06390	<b>Release GPS Location</b>	N36.86038 and W108.06382
<b>Land Jurisdiction</b>	Private	<b>Discovery Date</b>	December 13, 2016
<b>Release Source</b>	Unknown/Historical		
<b>NMOCD Site Rank</b>	10		
<b>Distance to Nearest Surface Water</b>	A small, ephemeral tributary to the wash of Barton Canyon is located approximately 425 feet southwest of the location.		
<b>Estimated Depth to Groundwater</b>	Greater than 100 feet below ground surface (bgs)	<b>Distance to Nearest Water Well or Spring</b>	Greater than 1,000 feet

## 3.0 NMOCD Site Ranking

In accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills, and Releases (August 1993), this site was assigned a ranking score of 10 (Table 1).

Depth to groundwater at the site is greater than 100 feet bgs based on the elevation differential between the location and local drainages and the depths to groundwater reported on local cathodic well reports.

A review was completed of the New Mexico Office of the State Engineer (NMOSE) online New Mexico Water Rights Reporting System (NMWRRS) and no water wells were identified within a 1,000 foot radius of the location. No water wells were observed within a 1,000 foot radius of the location during a visual inspection.

A small, ephemeral tributary to the wash of Barton Canyon is located approximately 425 feet southwest of the location.

Based on the ranking score of 10, action levels for remediated soils at the site are as follows: 10 milligrams per kilogram (mg/kg) benzene, 50 mg/kg total benzene, toluene, ethylbenzene, and total xylenes (BTEX), and 1,000 mg/kg total petroleum hydrocarbons (TPH).

## **4.0 Site Assessment**

### **4.1 Field Activities**

On January 13, 2017, a site assessment was conducted to determine the approximate horizontal and vertical extents of the release. Rule personnel provided guidance and field analysis of soil samples collected from five backhoe test pits (TP-1 through TP-5). Test pits were advanced to depths ranging from approximately 5 to 9 feet bgs where refusal was encountered on sandstone. Test pit locations are illustrated on Figure 2.

### **4.2 Soil Sampling**

Rule collected soil samples from the test pits at selected intervals or at changes in lithology or contamination. The lithology encountered at the site included interbedded clayey sand and poorly graded sand underlain by clayey sandstone to the maximum depths of the test pits.

A portion of each sample was field screened for VOCs and selected samples were also field analyzed for TPH. Field screening for VOC vapors was conducted with a MiniRAE 3000 photoionization detector (PID). Prior to field screening, the PID was calibrated with 100 parts per million (ppm) isobutylene gas. Field analysis for TPH was conducted for selected samples per United States Environmental Protection Agency (USEPA) Method 418.1, utilizing a Buck Scientific HC-404 total hydrocarbon analyzer. Prior to field analysis, the analyzer was calibrated following the manufacturer's procedure which includes calculation of a calibration curve using known concentration standards. Rule's practical quantitation limit for USEPA Method 418.1 is 20 mg/kg.

Site assessment field screening results are summarized in Table 2.

### **4.3 Field Screening Results**

Field screening results for samples collected from test pits TP-1 through TP-5 indicated VOC concentrations ranging from 0.0 ppm to 4,499 ppm. Field screening results for samples collected from test pits TP-1 through TP-5 indicated TPH concentrations ranging from below the reporting limit of 20 mg/kg to greater than 2,500 mg/kg. Field screening results for VOCs and TPH indicated limited horizontal impacts and vertical impacts diminishing to below NMOCD action levels around 9 feet bgs.

## **5.0 Excavation Confirmation Sampling**

### **5.1 Field Activities**

Hydrocarbon impacted soils were excavated the same day as assessment activities and Rule personnel collected confirmation samples from the resultant excavation which measured approximately 22 feet by 20 feet by 7 to 9 feet in depth. Excavated hydrocarbon impacted soils and rock were transported to a local NMOCD approved landfarm for disposal/remediation and the excavation was backfilled with clean, imported material. A depiction of the final excavation with sample locations is included on Figure 3.

### **5.2 Soil Sampling**

Rule collected five composite confirmation soil samples (SC-1 through SC-5) on December 13, 2016. Each confirmation soil sample is a representative composite comprised of five equivalent portions of soil collected from the sampled area.

A portion of each sample was field screened for VOCs and field analyzed for TPH utilizing the same methods as described in Section 4.2.

Soil samples collected for laboratory analysis were placed into laboratory supplied glassware, labeled, and maintained on ice until delivery to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico. All excavation confirmation samples were analyzed for BTEX per USEPA Method 8021B, and TPH per USEPA Method 8015M/D.

Field screening and laboratory analytical results are summarized in Table 3. The analytical laboratory reports are included in Appendix A.

### **5.3 Field Screening Results**

Field screening results for soil confirmation samples SC-1 through SC-5 indicated VOC concentrations ranging from 5.4 ppm to 121 ppm. Field TPH concentration results for these samples ranged from below the reporting limit of 20 mg/kg to 230 mg/kg.

### **5.4 Laboratory Analytical Results**

Laboratory analytical results for final excavation confirmation samples SC-1 through SC-5 reported benzene and total BTEX concentrations below the laboratory reporting limits for all samples except for SC-1 with a total BTEX concentration of 0.11 mg/kg. These concentrations and reporting limits below benzene and total BTEX NMOCD action levels. Laboratory analytical results for the final excavation samples reported TPH concentrations ranging from below the laboratory reporting limits to 338 mg/kg, which are below the NMOCD action level of 1,000 mg/kg for a site rank of 10.

## 6.0 Conclusions

Hydrocarbon impacted soils associated with a historical release discovered during BGT reset and upgrade activities at the ConocoPhillips Rawson #2 have been excavated and transported to an NMOCD approved landfarm for disposal/remediation. Field screening and laboratory analytical results for samples collected from the final excavation sidewalls and base indicate that concentrations of benzene, total BTEX, and TPH are below NMOCD action levels for a site rank of 10. Therefore, no further work is recommended at this time.

## 7.0 Closure and Limitations

This report has been prepared for the exclusive use of ConocoPhillips and is subject to the terms, conditions, and limitations stated in Rule's report and Service Agreement with ConocoPhillips. All work has been performed in accordance with generally accepted professional environmental consulting practices. No other warranty is expressed or implied.

## Tables

**Table 1. NMOCD Site Ranking Determination**  
**ConocoPhillips**  
**Rawson #2**  
**San Juan County, New Mexico**

Ranking Criteria	Ranking Score	Site-Based Ranking Score	Basis for Determination	Data Sources
<b>Depth to Groundwater</b>				
<50 feet	20	0	Depth to groundwater is estimated to be greater than 100 feet below ground surface based on elevation differential between location and local drainages and the depths to groundwater reported on local cathodic well reports.	NMOCD Online database, Flora Vista Quadrangle, Google Earth, and Visual Inspection
50-99 feet	10			
>100 feet	0			
<b>Wellhead Protection Area</b>				
<1,000 feet from a water source, or <200 feet from private domestic water source	20 (Yes)	0	No water source or recorded water wells within 1,000 foot radius of location.	NMOSE NMWRRS, Flora Vista Quadrangle, Google Earth, and Visual Inspection
	0 (No)			
<b>Distance to Surface Water Body</b>				
<200 horizontal feet	20	10	A small, ephemeral tributary to the wash of Barton Canyon is located approximately 425 feet southwest of the location.	Flora Vista Quadrangle, Google Earth, and Visual Inspection
200 to 1,000 horizontal feet	10			
>1,000 horizontal feet	0			
<b>Site Based Total Ranking Score</b>		<b>10</b>		

**Table 2. Site Assessment Field Screening Results  
 ConocoPhillips  
 Rawson #2  
 San Juan County, New Mexico**

Sample Name	Date	Approximate Sample Depth (ft bgs)	Field Results	
			Field VOCs by PID (ppm)	Field TPH by 418.1 (mg/kg)
NMOCD Action Level*			100	1,000**
TP-1	12/13/2016	3	4,285	--
		6	4,499	>2,500
		9	8.5	44.5
TP-2	12/13/2016	3	0.0	--
		5	0.0	--
TP-3	12/13/2016	2.5	0.0	--
		4.5	0.0	--
		8	0.0	--
TP-4	12/13/2016	3	0.3	--
		5	0.0	--
		7	0.0	--
TP-5	12/13/2016	8	107	<20

Notes: VOCs - volatile organic compounds  
 PID - photoionization detector  
 ft bgs - feet below grade surface  
 ppm - parts per million  
 mg/kg - milligrams per kilogram  
 TPH - total petroleum hydrocarbons  
 NMOCD - New Mexico Oil Conservation Division  
 \*Based on the NMOCD *Guidelines for Remediation of Leaks, Spills and Releases* (  
 \*\*Based on a site ranking of 10.

**Table 3. Excavation Confirmation Field Screening and Laboratory Analytical Results  
ConocoPhillips  
Rawson #2  
San Juan County, New Mexico**

Sample Name	Date	Approximate Sample Depth (ft bgs)	Sample Location	Field VOCs by PID (ppm)	Field TPH by 418.1 (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH as GRO (mg/kg)	TPH as DRO (mg/kg)	TPH as MRO (mg/kg)
<b>NMOCD Action Level*</b>				<b>100</b>	<b>1,000**</b>	<b>10</b>	<b>NE</b>	<b>NE</b>	<b>NE</b>	<b>50</b>	<b>1,000**</b>		
SC-1	12/13/2016	7 to 9	Base	121	230	<0.025	<0.049	<0.049	0.11	0.11	26	92	220
SC-2	12/13/2016	0 to 9	South Wall	5.4	<20	<0.025	<0.049	<0.049	<0.098	ND	<4.9	<10	<50
SC-3	12/13/2016	0 to 9	East Wall	24.7	<20	<0.024	<0.049	<0.049	<0.098	ND	<4.9	<9.5	<48
SC-4	12/13/2016	0 to 9	West Wall	34.2	<20	<0.023	<0.047	<0.047	<0.094	ND	<4.7	<9.4	<47
SC-5	12/13/2016	0 to 9	North Wall	8.3	59.3	<0.024	<0.049	<0.049	<0.098	ND	<4.9	15	52

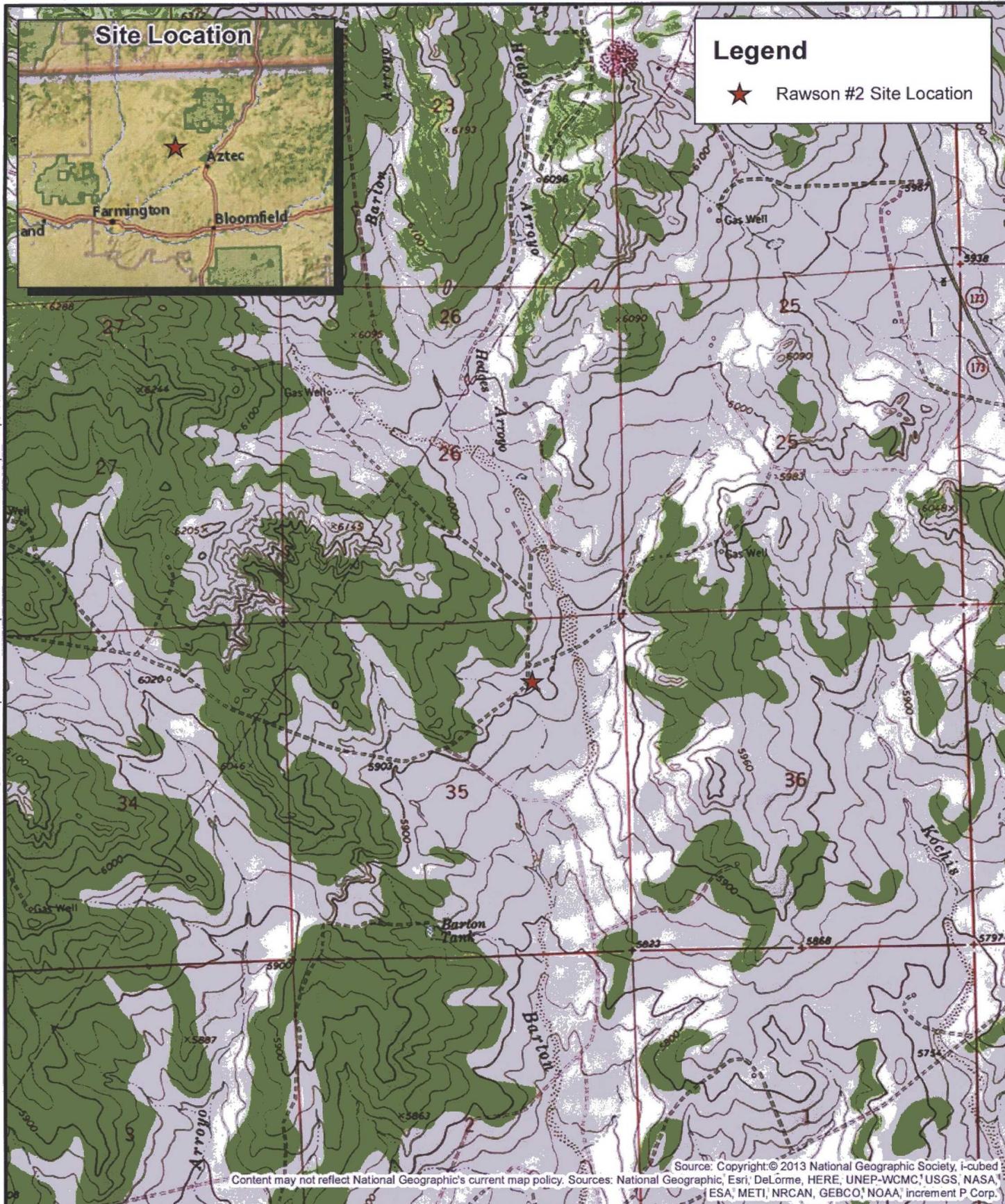
Notes: VOCs - volatile organic compounds  
 PID - photoionization detector  
 ft bgs - feet below grade surface  
 ppm - parts per million  
 mg/kg - milligrams per kilogram  
 NE - not-established

ND - not detected above laboratory reporting limits  
 BTEX - benzene, toluene, ethylbenzene, and xylenes  
 TPH - total petroleum hydrocarbons  
 GRO - gasoline range organics  
 DRO - diesel range organics  
 NMOCD - New Mexico Oil Conservation Division

\*Based on the NMOCD *Guidelines for Remediation of Leaks, Spills and Releases (August 1993)*

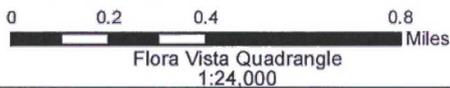
\*\*Based on a site ranking of 10.

Document Path: U:\ConocoPhillips\ConocoPhillips\Rawson #2\Rawson #2 Topo Map.mxd



Source: Copyright © 2013 National Geographic Society, i-cubed  
Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

**Rule Engineering, LLC**  
Solutions to Regulations for Industry



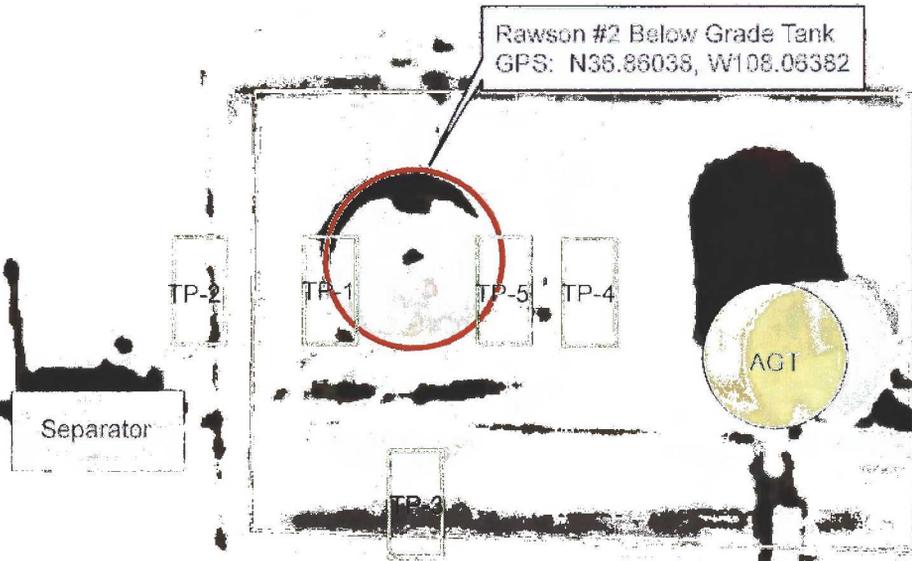
**ConocoPhillips**

B-S35-T31N-R12W  
N36.86038, W108.06382  
San Juan County, NM  
API: 30-045-25024

**Figure 1**  
**Topographic Site Map**  
Rawson #2

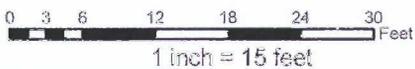
### Legend

-  Berm
-  Test Pit Excavation
-  Below Grade Tank (BGT)
-  Separator
-  Above Grade Tank (AGT)



(Source: Google Earth Imagery)

**Rule** Engineering, LLC  
Solutions to Regulations for Industry



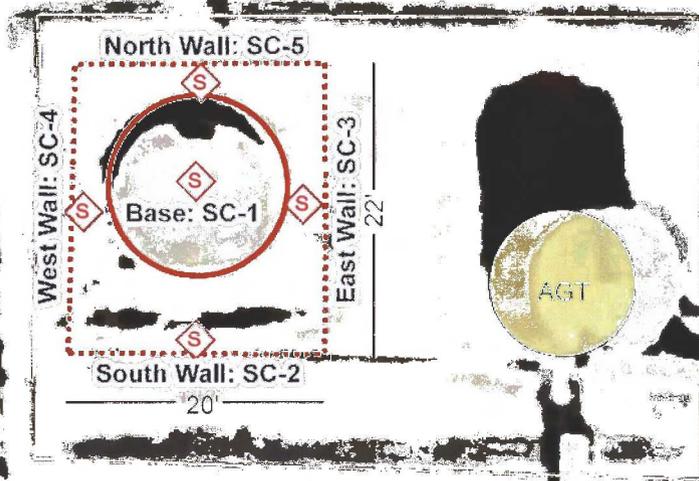
B-S35-T31N-R12W  
 N36.86038, W108.06382  
 San Juan County, NM  
 API: 30-045-25024

**Figure 2**  
**Site Assessment Map**  
 Rawson #2

### Legend

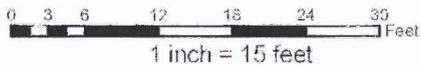
-  Soil Sample Locations
-  Berm
-  Below Grade Tank (BGT)
-  Excavation Extent
-  Separator
-  Above Grade Tank (AGT)

Separator



Source: Google Earth Imagery

**Rule** Engineering, LLC  
Solutions in Regulations for Geobility



 ConocoPhillips

B-S35-T31N-R12W  
N36.86038, W108.06382  
San Juan County, NM  
API: 30-045-25024

**Figure 3**  
**Excavation Confirmation**  
**Sample Location Map**  
Rawson #2

Appendix A  
Analytical Laboratory 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)

December 20, 2016

Heather Woods  
Rule Engineering LLC  
501 Airport Dr., Ste 205  
Farmington, NM 87401  
TEL: (505) 325-1055  
FAX

RE: CoP Rawson #2

OrderNo.: 1612743

Dear Heather Woods:

Hall Environmental Analysis Laboratory received 5 sample(s) on 12/14/2016 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', with a stylized flourish at the end.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

**Hall Environmental Analysis Laboratory, Inc.**

CLIENT: Rule Engineering LLC

Client Sample ID: SC-1

Project: CoP Rawson #2

Collection Date: 12/13/2016 12:35:00 PM

Lab ID: 1612743-001

Matrix: SOIL

Received Date: 12/14/2016 8:05:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: TOM
Diesel Range Organics (DRO)	92	9.3		mg/Kg	1	12/19/2016 8:22:16 PM	29233
Motor Oil Range Organics (MRO)	220	47		mg/Kg	1	12/19/2016 8:22:16 PM	29233
Surr: DNOP	101	70-130		%Rec	1	12/19/2016 8:22:16 PM	29233
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: NSB
Gasoline Range Organics (GRO)	26	4.9		mg/Kg	1	12/16/2016 2:26:20 PM	29188
Surr: BFB	276	68.3-144	S	%Rec	1	12/16/2016 2:26:20 PM	29188
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: NSB
Benzene	ND	0.025		mg/Kg	1	12/16/2016 2:26:20 PM	29188
Toluene	ND	0.049		mg/Kg	1	12/16/2016 2:26:20 PM	29188
Ethylbenzene	ND	0.049		mg/Kg	1	12/16/2016 2:26:20 PM	29188
Xylenes, Total	0.11	0.099		mg/Kg	1	12/16/2016 2:26:20 PM	29188
Surr: 4-Bromofluorobenzene	110	80-120		%Rec	1	12/16/2016 2:26:20 PM	29188

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
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	W	Sample container temperature is out of limit as specified

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Rule Engineering LLC

**Client Sample ID:** SC-2

**Project:** CoP Rawson #2

**Collection Date:** 12/13/2016 1:45:00 PM

**Lab ID:** 1612743-002

**Matrix:** SOIL

**Received Date:** 12/14/2016 8:05:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	12/19/2016 9:26:39 PM	29233
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	12/19/2016 9:26:39 PM	29233
Surr: DNOP	96.4	70-130		%Rec	1	12/19/2016 9:26:39 PM	29233
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/16/2016 2:49:51 PM	29188
Surr: BFB	97.0	68.3-144		%Rec	1	12/16/2016 2:49:51 PM	29188
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	12/16/2016 2:49:51 PM	29188
Toluene	ND	0.049		mg/Kg	1	12/16/2016 2:49:51 PM	29188
Ethylbenzene	ND	0.049		mg/Kg	1	12/16/2016 2:49:51 PM	29188
Xylenes, Total	ND	0.098		mg/Kg	1	12/16/2016 2:49:51 PM	29188
Surr: 4-Bromofluorobenzene	97.5	80-120		%Rec	1	12/16/2016 2:49:51 PM	29188

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	W	Sample container temperature is out of limit as specified

**Hall Environmental Analysis Laboratory, Inc.**

CLIENT: Rule Engineering LLC

Client Sample ID: SC-3

Project: CoP Rawson #2

Collection Date: 12/13/2016 12:20:00 PM

Lab ID: 1612743-003

Matrix: SOIL

Received Date: 12/14/2016 8:05:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	12/19/2016 9:48:08 PM	29233
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/19/2016 9:48:08 PM	29233
Surr: DNOP	97.3	70-130		%Rec	1	12/19/2016 9:48:08 PM	29233
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/16/2016 3:13:22 PM	29188
Surr: BFB	91.3	68.3-144		%Rec	1	12/16/2016 3:13:22 PM	29188
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	12/16/2016 3:13:22 PM	29188
Toluene	ND	0.049		mg/Kg	1	12/16/2016 3:13:22 PM	29188
Ethylbenzene	ND	0.049		mg/Kg	1	12/16/2016 3:13:22 PM	29188
Xylenes, Total	ND	0.098		mg/Kg	1	12/16/2016 3:13:22 PM	29188
Surr: 4-Bromofluorobenzene	94.4	80-120		%Rec	1	12/16/2016 3:13:22 PM	29188

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
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	W	Sample container temperature is out of limit as specified

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Rule Engineering LLC

**Client Sample ID:** SC-4

**Project:** CoP Rawson #2

**Collection Date:** 12/13/2016 12:30:00 PM

**Lab ID:** 1612743-004

**Matrix:** SOIL

**Received Date:** 12/14/2016 8:05:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	12/19/2016 10:09:39 PM	29233
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	12/19/2016 10:09:39 PM	29233
Surr: DNOP	97.0	70-130		%Rec	1	12/19/2016 10:09:39 PM	29233
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	12/16/2016 4:47:33 PM	29188
Surr: BFB	91.2	68.3-144		%Rec	1	12/16/2016 4:47:33 PM	29188
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	12/16/2016 4:47:33 PM	29188
Toluene	ND	0.047		mg/Kg	1	12/16/2016 4:47:33 PM	29188
Ethylbenzene	ND	0.047		mg/Kg	1	12/16/2016 4:47:33 PM	29188
Xylenes, Total	ND	0.094		mg/Kg	1	12/16/2016 4:47:33 PM	29188
Surr: 4-Bromofluorobenzene	96.1	80-120		%Rec	1	12/16/2016 4:47:33 PM	29188

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	W	Sample container temperature is out of limit as specified

**Hall Environmental Analysis Laboratory, Inc.**

**CLIENT:** Rule Engineering LLC

**Client Sample ID:** SC-5

**Project:** CoP Rawson #2

**Collection Date:** 12/13/2016 12:40:00 PM

**Lab ID:** 1612743-005

**Matrix:** SOIL

**Received Date:** 12/14/2016 8:05:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	15	9.2		mg/Kg	1	12/19/2016 10:31:02 PM	29233
Motor Oil Range Organics (MRO)	52	46		mg/Kg	1	12/19/2016 10:31:02 PM	29233
Surr: DNOP	99.1	70-130		%Rec	1	12/19/2016 10:31:02 PM	29233
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/16/2016 5:11:08 PM	29188
Surr: BFB	88.1	68.3-144		%Rec	1	12/16/2016 5:11:08 PM	29188
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	12/16/2016 5:11:08 PM	29188
Toluene	ND	0.049		mg/Kg	1	12/16/2016 5:11:08 PM	29188
Ethylbenzene	ND	0.049		mg/Kg	1	12/16/2016 5:11:08 PM	29188
Xylenes, Total	ND	0.098		mg/Kg	1	12/16/2016 5:11:08 PM	29188
Surr: 4-Bromofluorobenzene	93.6	80-120		%Rec	1	12/16/2016 5:11:08 PM	29188

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	Page 5 of 8
	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	W Sample container temperature is out of limit as specified	

# QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1612743

20-Dec-16

Client: Rule Engineering LLC

Project: CoP Rawson #2

Sample ID	1612743-001AMS	SampType:	MS	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	SC-1	Batch ID:	29233	RunNo:	39485					
Prep Date:	12/16/2016	Analysis Date:	12/19/2016	SeqNo:	1237656	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	110	9.7	48.54	91.88	47.3	51.6	130			S
Surr: DNOP	4.8		4.854		98.6	70	130			

Sample ID	1612743-001AMSD	SampType:	MSD	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	SC-1	Batch ID:	29233	RunNo:	39485					
Prep Date:	12/16/2016	Analysis Date:	12/19/2016	SeqNo:	1237657	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	130	9.7	48.31	91.88	80.2	51.6	130	12.9	20	
Surr: DNOP	4.9		4.831		102	70	130	0	0	

Sample ID	LCS-29233	SampType:	LCS	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS	Batch ID:	29233	RunNo:	39485					
Prep Date:	12/16/2016	Analysis Date:	12/19/2016	SeqNo:	1237666	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	42	10	50.00	0	84.3	63.8	116			
Surr: DNOP	4.3		5.000		86.8	70	130			

Sample ID	MB-29233	SampType:	MBLK	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS	Batch ID:	29233	RunNo:	39485					
Prep Date:	12/16/2016	Analysis Date:	12/19/2016	SeqNo:	1237667	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	8.9		10.00		89.0	70	130			

## Qualifiers:

- |   |   |
|---|---|
| * 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 | W Sample container temperature is out of limit as specified |

# QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1612743

20-Dec-16

**Client:** Rule Engineering LLC

**Project:** CoP Rawson #2

Sample ID: <b>MB-29188</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>29188</b>	RunNo: <b>39451</b>								
Prep Date: <b>12/14/2016</b>	Analysis Date: <b>12/16/2016</b>	SeqNo: <b>1235878</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	880		1000		88.1	68.3	144			

Sample ID: <b>LCS-29188</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>29188</b>	RunNo: <b>39451</b>								
Prep Date: <b>12/14/2016</b>	Analysis Date: <b>12/16/2016</b>	SeqNo: <b>1235879</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	100	74.6	123			
Surr: BFB	960		1000		95.8	68.3	144			

**Qualifiers:**

- |   |   |
|---|---|
| * 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 | W Sample container temperature is out of limit as specified |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1612743

20-Dec-16

**Client:** Rule Engineering LLC

**Project:** CoP Rawson #2

Sample ID: <b>MB-29188</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBS</b>	Batch ID: <b>29188</b>	RunNo: <b>39451</b>								
Prep Date: <b>12/14/2016</b>	Analysis Date: <b>12/16/2016</b>	SeqNo: <b>1235892</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.96		1.000		96.4	80	120			

Sample ID: <b>LCS-29188</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>29188</b>	RunNo: <b>39451</b>								
Prep Date: <b>12/14/2016</b>	Analysis Date: <b>12/16/2016</b>	SeqNo: <b>1235893</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	110	75.2	115			
Toluene	1.0	0.050	1.000	0	103	80.7	112			
Ethylbenzene	0.98	0.050	1.000	0	98.3	78.9	117			
Xylenes, Total	3.0	0.10	3.000	0	98.9	79.2	115			
Surr: 4-Bromofluorobenzene	1.0		1.000		102	80	120			

**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
- W Sample container temperature is out of limit as specified



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: **RULE ENGINEERING LL**      Work Order Number: **1612743**      RcptNo: **1**

Received by/date:	<u>AT</u>	<u>12/14/16</u>
Logged By:	<u>Andy Jansson</u>	<u>12/14/2016 8:05:00 AM</u> <i>anj/ajc</i>
Completed By:	<u>Andy Jansson</u>	<u>12/14/16</u>
Reviewed By:	<u>TO</u>	<u>12/14/16</u>

**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° 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	1.0	Good	Yes			

# Chain-of-Custody Record

Client: Rule Engineering, LLC

Mailing Address: 501 Airport Dr, Ste 205  
Farmington, NM 87401

Phone #: (505) 716-2787

email or Fax#: hwoods@ruleengineering.com

QA/QC Package:  
 Standard       Level 4 (Full Validation)

Accreditation  
 NELAP       Other \_\_\_\_\_

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

Turn-Around Time:  
 Standard       Rush \_\_\_\_\_

Project Name: COP Rawson # 2

Project #:

Project Manager: Heather Woods

Sampler: Heather Woods

On Ice:  Yes       No

Sample Temperature: 1.0



## HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

### Analysis Request

HEAL No.	BTEX + MTBE + TPH's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (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 PCB's	8260B (VOA)	8270 (Semi-VOA)	Air Bubbles (Y or N)
1612743	X	X	X									
-001	X	X	X									
-002	X	X	X									
-003	X	X	X									
-004	X	X	X									
-005	X	X	X									

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
12/13/16	1235	Soil	SC-1	(1) 4oz Glass	cold	-001
12/13/16	1345	Soil	SC-2	(1) 4oz Glass	cold	-002
12/13/16	1220	Soil	SC-3	(1) 4oz Glass	cold	-003
12/13/16	1230	Soil	SC-4	(1) 4oz Glass	cold	-004
12/13/16	1240	Soil	SC-5	(1) 4oz Glass	cold	-005

Date: 12/13/16 Time: 1656 Relinquished by: Heather Woods

Date: 12/13/16 Time: 1156 Received by: Christina Walker

Date: 12/12/16 Time: 1846 Relinquished by: Christina Walker

Date: 12/14/16 Time: 0805 Received by: Christina Walker

Remarks: Direct Bill to ConocoPhillips

WB: \_\_\_\_\_

User ID: \_\_\_\_\_

Ordered by: Bobby Spearman

If necessary samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly noted on the analytical report.