



*EOG Resources, Inc.
Artesia Division Office
104 S. 4th Street
Artesia, N. M. 88210*

EOG Y Resources, Inc.

Characterization Plan

Mucho Luck BBW Federal Com #2H

30-015-39348

Section 27, T16S-R27E

Eddy County, New Mexico

April 4, 2018

2RP-4639

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I. Location

Go East of Artesia on US Highway 82 for approximately 8 miles to Southern Union Road (approximately 0.7 miles past MM 116). Turn left (North) on Southern Union Road and continue for approximately 2.8 miles. Continue Northeast for approximately 1.1 miles to a compressor site and turn left (NE). Continue NE for approximately 2.2 miles, turn left (before crossing cattle guard), and continue SW for approximately 0.7 miles to a 4-way intersection in the lease roads. Turn right (North), continue on lease road going past the Gem Dandy BCG #2H & #3H batteries for approximately 0.5 miles. Road turns to the NW, continue for approximately 0.10 miles to the SWE corner of the well pad.

II. Background

On February 28, 2018, EOG Y Resources, Inc. submitted to the NMOCD District I Office a Form C-141 for the release of 8 B/O with 7.5 B/O recovered (the remaining 0.5 B/O entrained within the gravel). The affected area is approximately 40' X 120' within the containment of the production facility and was contained within the bermed and lined battery. The release was caused by a fire tube gasket that failed. A vacuum truck was dispatched and recovered 94% of the released oil. A roustabout crew was dispatched, excavated the visibly impacted gravel and power washer the liner (after 2/20/2018 photos submitted with the Characterization Plan). The impacted gravel excavated was hauled to an NMOCD approved disposal facility.

III. Surface and Ground Water

Area surface geology is Paleozoic Permian. Based on information regarding this location (Section 27, T16S-R27E) the New Mexico Office of the State Engineer (NMOSE) Point of Diversion Summary indicates the depth to groundwater as follows: (NMOSE-RA02550, DTGW @ 70'). The depth to groundwater is 50 - 99', per NMOSE groundwater level. **Based on this information the Site Ranking is a Ten (10).**

Watercourses in the area are dry except for infrequent flows in response to major precipitation events, with the nearest body of surface water is Flat Lake (7.75 miles, NE of the location).

IV. NMOCD Ranking Criteria

The ranking for this site is Ten (10) based on the following:

Depth to ground water	>100'
Wellhead Protection Area	> 1000'
Distance to surface water body	> 1000'

Based on the ranking criteria, the NMOCD established RRALs for this site are:

Benzene	10 ppm
BTEX	50 ppm
TPH	1000 ppm
Chlorides	No established RRAL

V. Liner Integrity Test

With the battery being bermed and lined with a 20 millimeter liner, a liner integrity test will be performed to determine if there are any leaks, tears, punctures and/or breaches. The battery will be filled with fresh water and the level gauged. After a period of three (3) hours, the water level will be gauged again, based off of the measurements, the SMA Evaporation Formula will be used to determine liner integrity, if intact a Closure Report/Form C-141 Final Report will be submitted to the NMOCD II Office requesting closure. If there is abnormal water loss that would indicate a liner failure, VI. Sampling Procedure will be implemented.

VI. Sampling Procedure

Samples will only be collected if the liner integrity test shows a failure or breach in the liner.

Vertical delineation samples (SP-1, SP-2 & SP-3) will be collected within the release area. Samples will be collected at 1', 2', 3', and 4' below grade surface (bgs) or when auger and or backhoe refusal is encountered. Due to the nature of the release (produced water), the vertical delineation soil samples will be analyzed for Benzene, BTEX, TPH extended (Chlorides for documentation, with no established RRAL's for chlorides). All samples will be sent to a NMOCD approved laboratory for analysis.

Horizontal delineation samples will be collected at the 4 cardinal point (CP1-CP4) at what is believed to be the outer edge of the release area. Samples will be collected at 1' below grade surface (bgs) or when auger and or backhoe refusal is encountered. If a sample point is determined to be impacted by the release, a new sample will be collected moving out further until an area without impaction is located. Once located, samples will be taken to collaborate the impaction path to the next sample point in the sequence. Due to the nature of the release (produced water), the vertical delineation soil samples will be analyzed for Benzene, BTEX, TPH extended (Chlorides for documentation). All samples will be sent to a NMOCD approved laboratory for analysis.

As a baseline for all sampling analytical data, a background sample (BG-1) will be collected east of the battery.

Latitude/Longitude Coordinates for Sample Points

SP-1	32.889371°; -104.258794°
SP-2	32.889262°; -104.258864°
SP-3	32.889216°; -104.259001°
CP-1	32.889393°; -104.258747°
CP-2	32.889173°; -104.259015°
CP-3	32.889247°; -104.258833°
CP-4	32.889309°; -104.258925°
BG-1	32.889150°; -104.258707°

Figure 1

Site Map

Mucho Luck BBW Federal Com #2H

Section 27, T16S-R27E
Eddy County, New Mexico
Site Map

Legend

- Mucho Luck BBW Federal Com #2H

Mucho Luck BBW Federal Com #2H



Figure 2

Vertical Sample Point(s)

Mucho Luck BBW Federal Com #2H

Section 27, T16S-R27E
Mucho Luck BBW Federal Com #2H
Eddy County, New Mexico

Legend

- Mucho Luck BBW Federal Com #2H
- Vertical Sample Points



Figure 3

Horizontal Sample Point(s)

Much Luck BBW Federal Com #2H

Section 27, T16S-R27E
Mucho Luck BBW Federal Com #2H
Eddy County, New Mexico

Legend

- Horizontal Sample Points
- Mucho Luck BBW Federal Com #2H



Figure 4

Background Sample Point(s)

Much Luck BBW Federal Com #2H

Section 27, T16S-R27E
Mucho Luck BBW Federal Com #2H
Eddy County, New Mexico

Legend

- Background Sample Point
- Mucho Luck BBW Federal Com #2H

BG-1

Photos



eog resources (575) 748-1471

MUCHO LUCK "BBW" FEDERAL COM #2H
1100' FSL & 330' FEE

Sec. 27 - T16 S- R27 E UNIT P

Eddy Co., New Mexico

Lse# NMNM-101582

API# 30-015-39348

Com Agreement # NMNM-128081

02/20/2018

02/20/2018



02/20/2018



Appendix A

Water Well Data Site Map

Mucho Luck BBW Federal Com #2H

Section 27, T16S-R27E
Eddy County, New Mexico
Water Well Data
Site Ranking is Ten (0). Depth to Ground Water: 50-99'
(Approximately 70', per NMOSE Groundwater levels).

NMOSE RA02350 (DTGW @ 70')

Legend

- Mucho Luck BBW Federal Com #2H
- NMOSE Water Well

Mucho Luck BBW Federal Com #2H

2000 ft



Appendix B


NMOSE Point of Diversion Summary



New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64 Q16 Q4	Sec	Tws	Rng	X	Y
	RA 02550 REPAR	3 3 1	27	16S	27E	567884	3639835* 

Driller License: 28

Driller Company: SMITH, A.F.

Driller Name: A.F. SMITH

Drill Start Date: 04/15/1963

Drill Finish Date: 04/17/1963

Plug Date:

Log File Date: 05/10/1963

PCW Rcv Date:

Source: Shallow

Pump Type:

Pipe Discharge Size:

Estimated Yield:

Casing Size:

Depth Well: 180 feet

Depth Water: 70 feet

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

Appendix C

Form C-141 Initial

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 April 3, 2017

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 EOG Y Resources, Inc.	Contact Robert Asher
Address 104 S. 4 th Street Artesia NM 88210	Telephone No. 575-748-1471
Facility Name Mucho Luck BBW Federal Com #2H	Facility Type Battery

Surface Owner Federal	Mineral Owner Federal	API No. 30-015-39348
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LOCATION OF RELEASE

Unit Letter P	Section 27	Township 16S	Range 27E	Feet from the 1100	North/South Line South	Feet from the 330	East/West Line East	County Eddy
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Latitude 32.8894043 Longitude -104.2591934 NAD83

NATURE OF RELEASE

Type of Release Crude Oil	Volume of Release 8 B/O	Volume Recovered 7.5 B/O
Source of Release Transfer line	Date and Hour of Occurrence 02/14/18; 2:00 PM	Date and Hour of Discovery 02/14/18; PM
Was Immediate Notice Given? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	If YES, To Whom? N/A	
By Whom? N/A	Date and Hour N/A	
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.* N/A

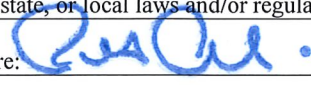
Describe Cause of Problem and Remedial Action Taken. *

Gasket of fire tube failed. Possible failure of a back pressure valve to open, caused the vessel to pressure up and gasket to fail before PRV could be activated.

Describe Area Affected and Cleanup Action Taken. *

The impacted area is approximately 40' X 120' in the lined and bermed. Vacuum truck recovered 94% of the released (the remaining 0.5 B/O was entrained within the gravel and removed/disposed at an NMOCD approved facility. A liner integrity test will be conducted, if results are within the allowable limits to affirm integrity a Final Report, C-141 will be submitted to the NMOCD requesting closure. If the results indicate integrity failure a characterization plan will be submitted to the NMOCD. **Depth to Ground Water: 50-99' (70' per NMOSE, Section 27, T16S-R27E), Wellhead Protection Area: No, Distance to Surface Water Body: >1000', SITE RANKING IS 10.**

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: Robert Asher	Approved by Environmental Specialist:		
Title: Environmental Supervisor	Approval Date:	Expiration Date:	
E-mail Address: robert_asher@eogresources.com	Conditions of Approval:		Attached <input type="checkbox"/>
Date: February 28, 2018	Phone: 575-748-4217		

* Attach Additional Sheets If Necessary

FEB 28 2018

District I
1625 N. French Dr., Hobbs, NM 88240
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Form C-141
Revised April 3, 2017
RECEIVED
Submit 1 Copy to appropriate District Office in
accordance with 19.15.29 NMAC.

**Release Notification and Corrective Action
OPERATOR**

☒ Initial Report ☐ Final Report

NAB1806031311

Name of Company EOG Y Resources, Inc.	25575	Contact Robert Asher
Address 104 S. 4 th Street Artesia NM 88210		Telephone No. 575-748-1471
Facility Name Mucho Luck BBW Federal Com #2H		Facility Type Battery
Surface Owner Federal	Mineral Owner Federal	API No. 30-015-39348

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
P	27	16S	27E	1100	South	330	East	Eddy

Latitude 32.8894043 Longitude -104.2591934 NAD83

NATURE OF RELEASE

Type of Release Crude Oil	Volume of Release 8 B/O	Volume Recovered 7.5 B/O
Source of Release Transfer line	Date and Hour of Occurrence 02/14/18; 2:00 PM	Date and Hour of Discovery 02/14/18; PM
Was Immediate Notice Given? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	If YES, To Whom? N/A	
By Whom? N/A	Date and Hour N/A	
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.* N/A

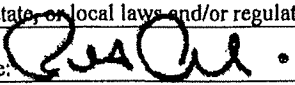
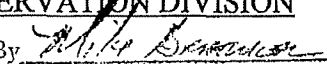
Describe Cause of Problem and Remedial Action Taken. *

Gasket of fire tube failed. Possible failure of a back pressure valve to open, caused the vessel to pressure up and gasket to fail before PRV could be activated.

Describe Area Affected and Cleanup Action Taken. *

The impacted area is approximately 40' X 120' in the lined and bermed. Vacuum truck recovered 94% of the released (the remaining 0.5 B/O was entrained within the gravel and removed/disposed at an NMOC approved facility. A liner integrity test will be conducted, if results are within the allowable limits to affirm integrity a Final Report, C-141 will be submitted to the NMOC requesting closure. If the results indicate integrity failure a characterization plan will be submitted to the NMOC. Depth to Ground Water: 50-99' (70' per NMOSE, Section 27, T16S-R27E), Wellhead Protection Area: No, Distance to Surface Water Body: >1000', SITE RANKING IS 10.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOC 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 NMOC 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, NMOC 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: Robert Asher	Signed By: 	
Title: Environmental Supervisor	Approved by Environmental Specialist:	
E-mail Address: robert.asher@eogresources.com	Approval Date: 3/1/18	Expiration Date: N/A
Date: February 28, 2018	Conditions of Approval: See attached	Attached <input checked="" type="checkbox"/> 2RP-4639
Phone: 575-748-4217		

* Attach Additional Sheets If Necessary

Operator/Responsible Party,

The OCD has received the form C-141 you provided on 2/28/2018 regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number 2RP-4034 has been assigned. **Please refer to this case number in all future correspondence.**

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC. [emphasis added]

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District 2 office in ARTESIA on or before 3/28/2018.** If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

- Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C₆ thru C₃₆), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.
- Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C₆ thru C₃₆), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.
- Nominal detection limits for field and laboratory analyses must be provided.
- Composite sampling is not generally allowed.
- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

- Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

- If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

- Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

Jim Griswold

OCD Environmental Bureau Chief

1220 South St. Francis Drive

Santa Fe, New Mexico 87505

505-476-3465

jim.griswold@state.nm.us

Bratcher, Mike, EMNRD

From: Bob Asher <Bob_Asher@eogresources.com>
Sent: Wednesday, February 28, 2018 4:00 PM
To: Bratcher, Mike, EMNRD; Weaver, Crystal, EMNRD; stucker@blm.gov
Cc: Yvette Moore
Subject: Form C-141 Initial Report (Mucho Luck BBW Federal Com #2H)
Attachments: Form C-141 Initial Report (Mucho Luck BBW Federal Com #2H, 2-14-2018).pdf

Thank you,

Robert C. "Bob" Asher
Environmental Supervisor
Safety & Environmental Department
EOG Resources, Inc.
Artesia Division
Artesia, NM 88210
575-748-4217 (Office)
575-365-4021 (Cell)
EOG Safety Begins With YOUR Safety

