

State of Colorado
Oil and Gas Conservation Commission

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04/13/2017

Report taken by:
CARLOS LUJAN

Site Investigation and Remediation Workplan (Supplemental Form)

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. However, this shall not preclude the Operator from taking immediate action to protect public health or safety, the environment, wildlife, or livestock.

This Form 27 describes site conditions as currently understood by the Operator; approval of this Form 27 by COGCC is based on the site conditions accurately described herein; any changes in site conditions identified during or subsequent to the performance of the approved workplan may necessitate additional investigation or remediation which shall be described on a supplemental Form 27.

This Form 27 is intended to provide basic information regarding the proposed site investigation and remediation actions, but the workplan may be more fully described in attached documentation.

Refer to Rules 340, 905, 906, 907, 908, 909, and 910

OPERATOR INFORMATON

Name of Operator: <u>ENCANA OIL & GAS (USA) INC</u>	Operator No: <u>100185</u>	Phone Numbers
Address: <u>370 17TH ST STE 1700</u>		Phone: <u>(970) 2852925</u>
City: <u>DENVER</u> State: <u>CO</u> Zip: <u>80202-5632</u>		Mobile: <u>(970) 9019007</u>
Contact Person: <u>Matt Kasten</u>	Email: <u>matt.kasten@encana.com</u>	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION
Remediation Project #: 7916 Initial Form 27 Document #: 2145674

PURPOSE INFORMATION

<input type="checkbox"/> 901.e. Sensitive Area Determination	<input type="checkbox"/> 909.c.(5), Rule 910.b.(4): Remediation of impacted ground water
<input type="checkbox"/> 909.c.(1), Rule 905: Pit or PW vessel closure	<input type="checkbox"/> Rule 909.e.(2)A.: Notice completion of remediation in accordance with Rule 909.b.
<input checked="" type="checkbox"/> 909.c.(2), Rule 906: Spill/Release Remediation	<input type="checkbox"/> Rule 909.e.(2)B.: Closure of remediation project
<input type="checkbox"/> 909.c.(3), Rule 907.e.: Land treatment of oily waste	<input type="checkbox"/> Rule 906.c.: Director request
<input type="checkbox"/> 909.c.(4), Rule 908.g.: Centralized E&P Waste Management Facility closure	<input type="checkbox"/> Other _____

SITE INFORMATION N Multiple Facilites (in accordance with Rule 909.c.)

Facility Type: <u>LOCATION</u>	Facility ID: <u>323850</u>	API #: _____	County Name: <u>GARFIELD</u>
Facility Name: <u>GRASS MESA RANCH-66S93W 33NENE</u>	Latitude: <u>39.488140</u>	Longitude: <u>-107.773706</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>NENE</u>	Sec: <u>33</u>	Twp: <u>6S</u>	Range: <u>93W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

SITE CONDITIONS

General soil type - USCS Classifications SM Most Sensitive Adjacent Land Use RANGELAND

Is domestic water well within 1/4 mile? Yes Is surface water within 1/4 mile? Yes

Is groundwater less than 20 feet below ground surface? Yes

Other Potential Receptors within 1/4 mile

4 WELLS: 0.07 M ESE, 0.11 M ENE, 0.22 M SE, AND 0.14 M NE. SEASONAL DRAINAGE 0.12 M ESE.

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- | | | |
|--|--|--|
| <input checked="" type="checkbox"/> E&P Waste | <input type="checkbox"/> Other E&P Waste | <input type="checkbox"/> Non-E&P Waste |
| <input checked="" type="checkbox"/> Produced Water | <input type="checkbox"/> Workover Fluids | _____ |
| <input type="checkbox"/> Oil | <input type="checkbox"/> Tank Bottoms | |
| <input type="checkbox"/> Condensate | <input type="checkbox"/> Pigging Waste | |
| <input type="checkbox"/> Drilling Fluids | <input type="checkbox"/> Rig Wash | |
| <input type="checkbox"/> Drill Cuttings | <input type="checkbox"/> Spent Filters | |
| | <input type="checkbox"/> Pit Bottoms | |
| | <input type="checkbox"/> Other (as described by EPA) | _____ |

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
	SOILS	~30' X 30' X 26' DEEP	SOIL SAMPLING

INITIAL ACTION SUMMARY

Description of initial action or emergency response measures take to abate, investigate, and/or remediate impacts associated with E&P Waste.

On June 26, and July 3, 2013, LTE advanced six soil borings to depths ranging from 12 to 27 feet (ft) below ground surface (bgs). Three of the borings were converted into passive soil vapor extraction (SVE) wells. LTE contracted Site Services Drilling Company of Golden, Colorado, to install the soil borings and wells using a CME-75 drill rig equipped with hollow-stem augers. The soil borings were logged by a LTE geologist and were field screened for potential petroleum hydrocarbon impacts. The soil from each boring was field screened at five foot intervals with a photoionization device (PID) to monitor the soil headspace for the presence of volatile organic vapors. When field screened material indicated hydrocarbon impacts, soil samples were collected and submitted for laboratory analysis of the constituents and allowable levels identified in COGCC Table 910-1. Laboratory analytical results indicate TPH-GRO concentrations of 720 milligrams per kilogram (mg/kg), 850 mg/kg, and 1,200 mg/kg in soil samples 070313 ? A33NW (SPILLNW02), 070313 ? A33NW (SPILLS01), and 062613 ? A33NW (SPILLN01) respectively. Additionally, TPH-DRO concentrations of 600 milligrams per kilogram (mg/kg), 680 mg/kg, and 1,600 mg/kg were detected in soil samples 070313 ? A33NW (SPILLNW02), 070313 ? A33NW (SPILLS02), and 062613 ? A33NW (SPILLN01) respectively. All other analytes were either at concentrations below the laboratory detection limit or were within COGCC allowable concentrations. Soil sample laboratory analytical results are summarized in Table 1. Copies of the laboratory analytical reports are included in the attachments.

PROPOSED SAMPLING PLAN

Proposed Soil Sampling

Will soil samples be collected as part of this investigation? (Number, type (grab/composite), analyses, and locations of samples):

Please see attached

Proposed Groundwater Sampling

Will groundwater samples be collected as part of this investigation? (Number, analyses, and locations of samples):

Proposed Surface Water Sampling

Will surface water samples be collected as part of this investigation? (Number, analyses, and locations of samples):

Additional Investigative Actions

Additional alternative investigative actions described in attached Site Investigation Plan (summary):

Please see attached

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 12

Number of soil samples exceeding 910-1 6

Was the areal and vertical extent of soil contamination delineated? No

Approximate areal extent (square feet) 600

NA / ND

-- Highest concentration of TPH (mg/kg) 9700

-- Highest concentration of SAR 0.53

BTEX > 910-1 Yes

Vertical Extent > 910-1 (in feet) 26

Groundwater

Number of groundwater samples collected 0

Was extent of groundwater contaminated delineated? No

Depth to groundwater (below ground surface, in feet)

Number of groundwater monitoring wells installed

Number of groundwater samples exceeding 910-1

Highest concentration of Benzene (µg/l)

Highest concentration of Toluene (µg/l)

Highest concentration of Ethylbenzene (µg/l)

Highest concentration of Xylene (µg/l)

Highest concentration of Methane (mg/l)

Surface Water

0 Number of surface water samples collected

0 Number of surface water samples exceeding 910-1

If surface water is impacted, other agency notification may be required.

OTHER INVESTIGATION INFORMATION

Were impacts to adjacent property or offsite impacts identified?

Were background samples collected as part of this site investigation?

Was investigation derived waste (IDW) generated as part of this investigation?

Volume of solid waste (cubic yards)

Volume of liquid waste (barrels)

Is further site investigation required?

Laboratory analytical reports are included as an attachment and summarized in Table 1. A site diagram illustrating soil boring and passive SVE well locations is attached as Figure 2. O&M readings from the installed wells will be collected on a monthly basis. When a remediation endpoint is indicated by the O&M readings, confirmation samples will be collected. O&M results and clearance sample data will be provided in the Form 4 (Notification of Completion) at project completion.

REMEDIAL ACTION PLAN

Does this Supplemental Form 27A include changes to a previously approved Remedial Action Plan? No _____

SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

This remediation plan has been prepared to describe an in-situ remediation approach, where impacted material will be remediated in place without removal. In-situ remediation will be utilized with material that exceeds the allowable concentration for the organic constituents of concern.

REMEDICATION SUMMARY

Describe how remediation of existing impacts to soil and groundwater is to be accomplished (i.e. summarize remedial action plan). Provide a brief narrative description including: technical justification, schedule for implementation, estimated time to attain NFA status, plus plans and specifications for the selected remedial action technology.

Please see attached

Soil Remediation Summary

In Situ

_____ Bioremediation (or enhanced bioremediation)
_____ Chemical oxidation
Yes _____ Air sparge / Soil vapor extraction
_____ Natural Attenuation
_____ Other _____

Ex Situ

_____ Excavate and offsite disposal
_____ If Yes: Estimated Volume (Cubic Yards) _____
_____ Name of Licensed Disposal Facility or COGCC Facility ID # _____
_____ Excavate and onsite remediation
_____ Land Treatment
_____ Bioremediation (or enhanced bioremediation)
_____ Chemical oxidation
_____ Other _____

Groundwater Remediation Summary

_____ Bioremediation (or enhanced bioremediation)
 _____ Chemical oxidation
 _____ Air sparge / Soil vapor extraction
 _____ Natural Attenuation
 _____ Other _____

GROUNDWATER MONITORING

If groundwater has been impacted, describe proposed monitoring plan, including # of wells or sample points, monitoring schedule, analytical methods, points of compliance. Attach a groundwater monitoring location diagram.

No groundwater was encountered during the site assessment and passive SVE well installation. Auger refusal was encountered between 12 and 27 ft below ground surface (bgs) where dense sandstone was observed. Groundwater is estimated to be approximately 115 ft bgs.

REMEDATION PROGRESS UPDATE

PERIODIC REPORTING

Frequency: Quarterly Semi-Annually Annually Other _____

Report Type: Groundwater Monitoring Land Treatment Progress Report O&M Report

Other _____

WASTE DISPOSAL INFORMATION

Was E&P waste generated as part of this remediation? _____

Describe beneficial use, if any, of E&P Waste derived from this remediation project:

Volume of E&P Waste (solid) in cubic yards _____

E&P waste (solid) description _____

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: _____

Volume of E&P Waste (liquid) in barrels _____

E&P waste (liquid) description _____

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: _____

REMEDATION COMPLETION REPORT

REMEDATION COMPLETION SUMMARY

Is this a Final Closure Request for this Remediation Project? No _____

Do all soils meet Table 910-1 standards? _____

Does the previous reply indicate consideration of background concentrations? _____

Are the only residual soil impacts pH, SAR, or EC at depths greater than 3 feet below ground surface? _____

Does Groundwater meet Table 910-1 standards? _____

Is additional groundwater monitoring to be conducted? _____

RECLAMATION PLAN

RECLAMATION PLANNING

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing.

The impacted material and in situ remediation system installation occurred on the well pad working surface. No reclamation activities will be undertaken as part of this remediation project. Following COGCC approval of the Notification of Completion, the SVE wells will be removed and the disturbed surface will be returned to working grade.

Is the described reclamation complete? _____

Does the reclamation described herein constitute interim or final reclamation of the Oil and Gas Location?

Interim? Final?

Did the Surface Owner approve the seed mix? _____

If NO, does the seed mix comply with local soil conservation district recommendations? _____

IMPLEMENTATION SCHEDULE

PRIOR DATES

Date of Surface Owner notification/consultation, if required. _____

Actual Spill or Release date, if known. _____

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 06/26/2013

Date of commencement of Site Investigation. 06/26/2013

Date of completion of Site Investigation. 07/03/2013

REMEDIAL ACTION DATES

Date of commencement of Remediation. 07/03/2013

Date of completion of Remediation. _____

SITE RECLAMATION DATES

Date of commencement of Reclamation. _____

Date of completion of Reclamation. _____

OPERATOR COMMENT

ATTN: Carlos Lujan

REM: 7916
Rem Update

I hereby certify all statements made in this form are to the best of my knowledge true, correct, and complete.

Signed: ` Matt Kasten

Title: Env. Consultant

Submit Date: ` 04/13/2017

Email: matt.kasten@encana.com

Based on the information provided herein, this Application for Site Investigation and Remediation Workplan complies with COGCC Rules and applicable orders and is hereby approved.

COGCC Approved: CARLOS LUJAN

Date: 04/26/2017

Remediation Project Number: 7916

COA Type**Description**

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Attachment Check List

Upon approval, the approved Form 27 and all listed attachments will be indexed to the Remediation Project file. Only the approved Form 27 will also be indexed to the related Facilities.

Att Doc Num**Name**

401258106	FORM 27-SUPPLEMENTAL-SUBMITTED
401258139	REMEDATION PROGRESS REPORT
401258159	ANALYTICAL RESULTS

Total Attach: 3 Files

General Comments**User Group****Comment****Comment Date**

Environmental	The attached Remediation Plan update proposes to drill and collect samples when PID readings fall below 500 ppm. No sampling has been conducted since 2014 (3 years ago). The release occurred in 2013. Although high PID readings indicate that the SVE system is removing effectively volatile hydrocarbons, there is no information about current (or recent) HC concentrations in soil. The COGCC considers that a round of sampling should be conducted in 2017 to determine remediation progress and overall effectiveness, and to evaluate potential change of remediation technology (if no significant progress has been obtained).	04/26/2017
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Total: 1 comment(s)