

**State of Colorado**  
**Oil and Gas Conservation Commission**

1120 Lincoln Street, Suite 801, Denver, Colorado 80203  
 Phone: (303) 894-2100 Fax: (303) 894-2109



Document Number:

401228335

Receive Date:

03/09/2017

Report taken by:

CHRIS CANFIELD

## 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 INFORMATION

Name of Operator: <u>EXTRACTION OIL &amp; GAS LLC</u>	Operator No: <u>10459</u>	<b>Phone Numbers</b>
Address: <u>370 17TH STREET SUITE 5300</u>		Phone: <u>(720) 481-2362</u>
City: <u>DENVER</u>	State: <u>CO</u>	Zip: <u>80202</u>
Contact Person: <u>Blake Ford</u>	Email: <u>bford@extractionog.com</u>	Mobile: <u>(970) 778-5956</u>

### PROJECT, PURPOSE & SITE INFORMATION

#### PROJECT INFORMATION

Remediation Project #: 9200 Initial Form 27 Document #: 2495263

#### 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 type="checkbox"/> 909.c.(2), Rule 906: Spill/Release Remediation                            | <input checked="" 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 Facilities ( in accordance with Rule 909.c. )

Facility Type: <u>LOCATION</u>	Facility ID: <u>415954</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>Elliot USX S 31-09P</u>		Latitude: <u>40.267040</u>	Longitude: <u>-105.039020</u>
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>NESE</u>	Sec: <u>31</u>	Twp: <u>4N</u>	Range: <u>68W</u>
Meridian: <u>6</u>		Sensitive Area? <u>Yes</u>	

#### SITE CONDITIONS

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

Is domestic water well within 1/4 mile? No Is surface water within 1/4 mile? No

Is groundwater less than 20 feet below ground surface? Yes

Other Potential Receptors within 1/4 mile

NA

## SITE INVESTIGATION PLAN

### TYPE OF WASTE:

☒ E&P Waste

☐ Other E&P Waste

☐ Non-E&P Waste

☒ Produced Water

☐ Workover Fluids

☐ Oil

☐ Tank Bottoms

☐ Condensate

☐ Pigging Waste

☐ Drilling Fluids

☐ Rig Wash

☐ Drill Cuttings

☐ Spent Filters

☐ Pit Bottoms

☐ Other (as described by EPA)

### DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
Yes	GROUNDWATER	20' X 20'	LAB ANALYSIS
Yes	SOILS	31'X45'X8' BGS (#1) & 30'X14'X6' BG	PID FIELD SCREENING & LAB ANALYSIS

### INITIAL ACTION SUMMARY

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

PRODUCTION EQUIPMENT WAS SHUT-IN AND THE FLOW LINE LEAK IDENTIFIED. SEE FORM 19, COGCC DOCUMENT # 2147451

### 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 ):

Soil samples were collected during initial investigation and following excavation.

#### Proposed Groundwater Sampling

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

Groundwater monitoring wells were installed and sampled periodically.

#### 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 ):

NO

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

### Soil

Number of soil samples collected 19

Number of soil samples exceeding 910-1 0

Was the areal and vertical extent of soil contamination delineated? Yes

Approximate areal extent (square feet) 1395

### NA / ND

NA Highest concentration of TPH (mg/kg)

NA Highest concentration of SAR

BTEX > 910-1 No

Vertical Extent > 910-1 (in feet) 8

### Groundwater

Number of groundwater samples collected 5

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet) 3'

Number of groundwater monitoring wells installed 5

Number of groundwater samples exceeding 910-1 0

NA Highest concentration of Benzene (µg/l)

NA Highest concentration of Toluene (µg/l)

NA Highest concentration of Ethylbenzene (µg/l)

NA Highest concentration of Xylene (µg/l)

NA 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?

BASED ON LABORATORY ANALYTICAL CONFIRMATION AND THE LOCATIONS OF THE SOIL SAMPLES COLLECTED, IMPACTED SOIL WAS SUCCESSFULLY REMOVED FROM THE SITE. GROUNDWATER MONITORING WELLS WERE INSTALLED TO MONITOR GROUNDWATER IMPACTS AND ASSESS THE EFFECTIVENESS OF ENHANCED FLUID RECOVERY ACTIVITIES. CONTINUED REMEDIAL ACTION WILL BE PERFORMED AS NECESSARY UNTIL THE SITE HAS MET COGCC CLOSURE CRITERIA.

## 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.

SOIL IMPACTED ABOVE APPLICABLE COGCC TABLE 910-1 STANDARDS WAS REMOVED VIA EXCAVATION FROM TWO SEPERATE LOCATIONS. A PID WAS USED TO GUIDE THE EXCAVATIONS. CONFIRMATION SOIL SAMPLES WERE COLLECTED FROM THE SIDEWALLS AND BASE OF EACH EXCAVATION AND SUBMITTED TO SUMMIT SCIENTIFIC LABORATORY FOR ANALYSES OF BTEX, TPH-DRO, TPH-GRO, AND NAPHTHALENE. LAB CONFIRMATION SOIL SAMPLES WERE BELOW APPLICABLE COGCC TABLE 910-1 STANDARDS.

### REMEDIATION 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.

Remediation of soil and groundwater impacts at the site were accomplished through soil excavation, periodic enhanced fluid recovery (EFR) and air sparging (AS), and natural attenuation of groundwater impacts.

### Soil Remediation Summary

☐ In Situ

\_\_\_\_\_ Bioremediation ( or enhanced bioremediation )

\_\_\_\_\_ Chemical oxidation

\_\_\_\_\_ Air sparge / Soil vapor extraction

\_\_\_\_\_ Natural Attenuation

\_\_\_\_\_ Other \_\_\_\_\_

☒ Ex Situ

Yes \_\_\_\_\_ Excavate and offsite disposal

If Yes: Estimated Volume (Cubic Yards) \_\_\_\_\_ 500

Name of Licensed Disposal Facility or COGCC Facility ID # \_\_\_\_\_

No \_\_\_\_\_ Excavate and onsite remediation

No \_\_\_\_\_ Land Treatment

No \_\_\_\_\_ Bioremediation (or enhanced bioremediation)

No \_\_\_\_\_ Chemical oxidation

No \_\_\_\_\_ Other \_\_\_\_\_

### Groundwater Remediation Summary

No \_\_\_\_\_ Bioremediation ( or enhanced bioremediation )

No \_\_\_\_\_ Chemical oxidation

No \_\_\_\_\_ Air sparge / Soil vapor extraction

Yes \_\_\_\_\_ Natural Attenuation

No \_\_\_\_\_ 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.

GROUNDWATER WAS ENCOUNTERED DURING EXCAVATION ACTIVITIES. AN INITIAL SAMPLE (GW01) WAS COLLECTED AND ANALYZED FOR BTEX. THE SAMPLE EXHIBITED CONCENTRATIONS OF BENZENE ABOVE THE COGCC TABLE 910-1 STANDARDS. SOURCE AND POC WELLS WILL BE INSTALLED AT THE SITE TO ASSESS THE EXTENT OF GROUNDWATER IMPACTS. THESE WELLS WILL BE MONITORED QUARTERLY UNTIL ACCEPTABLE CLOSURE LEVELS HAVE BEEN ACHIEVED.

## REMEDIATION 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? No

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: \_\_\_\_\_

## REMEDIATION COMPLETION REPORT

### REMEDIATION COMPLETION SUMMARY

Is this a Final Closure Request for this Remediation Project? Yes

Do all soils meet Table 910-1 standards? Yes

Does the previous reply indicate consideration of background concentrations? No

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? Yes

Is additional groundwater monitoring to be conducted? No

## 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.

CLEAN FILL SOIL WAS USED TO BACKFILL THE EXCAVATION, AND THE ORIGINAL GRADE WAS RESTORED. RECLAMATION ACTIVITIES AT THE SITE WILL BE COMPLIANT WITH COGCC REGULATIONS. THE OIL AND GAS PRODUCTION FACILITY WILL REMAIN ON SITE. SITE GROUNDWATER WILL BE REMEDIATED INSITU WITH A COMBINATION OF AIR SPARGE AND ENHANCED FLUID RECOVERY TREATMENT TECHNOLOGIES.

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). \_\_\_\_\_

Date of commencement of Site Investigation. 12/10/2013 \_\_\_\_\_

Date of completion of Site Investigation. 01/29/2014 \_\_\_\_\_

### **REMEDIATION ACTION DATES**

Date of commencement of Remediation. 12/10/2013 \_\_\_\_\_

Date of completion of Remediation. \_\_\_\_\_

### **SITE RECLAMATION DATES**

Date of commencement of Reclamation. \_\_\_\_\_

Date of completion of Reclamation. \_\_\_\_\_

**OPERATOR COMMENT**

Following the discovery of a flow line release on December 10, 2013, petroleum-impacted soils were excavated and limited soil and groundwater sampling were conducted at the Elliot USX S31-9 site. Soil samples from the excavation cavity walls did not contain BTEX, naphthalene, DRO, or GRO concentrations greater than their respective COGCC standards; however, a groundwater grab sample from the excavation base exhibited benzene and toluene concentrations greater than COGCC standards.

Subsequently, five groundwater monitoring wells were installed, and preliminary groundwater sampling was conducted in January and April of 2014. AGW has conducted quarterly groundwater monitoring since August 2015.

Groundwater samples from the February 16, 2017 sampling event were non-detect for BTEX. The benzene concentration in MW-1 has remained below COGCC standards for four consecutive sampling events.

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

Signed: Rachel A. Peterson

Title: Senior Project Manager

Submit Date: 03/09/2017

Email: petersonr@agwco.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: CHRIS CANFIELD

Date: 03/20/2017

Remediation Project Number: 9200

**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**

401228335	FORM 27-SUPPLEMENTAL-SUBMITTED
401228389	MONITORING REPORT

Total Attach: 2 Files

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

Environmental	COGCC has reviewed, and is hereby approving, your 03/09/2017 No Further Action request. However, should future conditions at the subject location indicate that contaminant concentrations in soils exceed COGCC standards, or if ground water is found to be impacted, further investigation and/or remediation activities may be required. Remediation Project 9200 will be closed in the COGIS database. Spill/Release 2147451 (referenced in your request) was closed previously with the approval of your Form 27. Note that surface reclamation must meet the COGCC 1004 series rules.	03/20/2017
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Total: 1 comment(s)