

# State of Colorado Oil and Gas Conservation Commission

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Document Number:

401909528

Receive Date:

01/17/2019

Report taken by:

PETER GINTAUTAS

## 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>SRC ENERGY INC</u>  |                  | Operator No: <u>10311</u>           | <b>Phone Numbers</b> |                    |
| Address: <u>1675 BROADWAY SUITE 2600</u> |                  | Phone: <u>(970) 4755220</u>         |                      |                    |
| City: <u>DENVER</u>                      | State: <u>CO</u> | Zip: <u>80202</u>                   |                      | Mobile: <u>( )</u> |
| Contact Person: <u>Dave Castro</u>       |                  | Email: <u>dcastro@srcenergy.com</u> |                      |                    |

### PROJECT, PURPOSE & SITE INFORMATION

#### PROJECT INFORMATION

Remediation Project #: 11384Initial Form 27 Document #: 401654942

#### PURPOSE INFORMATION

- |  |  |
|--|--|
| <input type="checkbox"/> 901.e. Sensitive Area Determination                                       | <input checked="" 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 Facilities ( in accordance with Rule 909.c. )

|   |                            |  |   |
|---|----------------------------|--|---|
| Facility Type: <u>SPILL OR RELEASE</u>  | Facility ID: <u>455228</u> | API #: _____                                   | County Name: <u>WELD</u>  |
| Facility Name: <u>Keto Tank Battery</u> |                            | Latitude: <u>40.321034</u>                     | Longitude: <u>-104.930732</u>                                   |
|   |                            | ** correct Lat/Long if needed: Latitude: _____ | Longitude: _____  |
| QtrQtr: <u>swse</u>                     | Sec: <u>7</u>              | Twp: <u>4n</u>                                 | Range: <u>67w</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u> |

#### SITE CONDITIONS

General soil type - USCS Classifications SMMost Sensitive Adjacent Land Use crop landIs domestic water well within 1/4 mile? NoIs surface water within 1/4 mile? YesIs groundwater less than 20 feet below ground surface? No

Other Potential Receptors within 1/4 mile

## 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    | tank battery     | sampling       |
| Yes       | SOILS          | tank battery     | 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.

7 monitoring wells were installed, per approved document number 401654942. Soil samples were collected and tested for BTEX, DRO, and GRO. Groundwater samples were collected from all 7 MWs and sampled for BTEX. Those results and sample location figures are attached.

### 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 ):

The tank battery facility is going to be demo'd within the next two weeks. Once the surface is clear, SRC and Eagle plan to excavate all contaminated soil from under the current tank battery location excavation sidewall samples will be collected to confirm all contaminated soil is removed. Those soil samples will be sent to Origins Laboratory and analyzed for BTEX/DRO/GRO.

#### Proposed Groundwater Sampling

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

No further MW installation activities are planned at this time. Only quarterly monitoring of the existing 9 MWs will continue.

#### 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 ):

2018Q3 quarterly groundwater monitoring showed impacts in MW-3. Two more MWs were installed, MW-8 and MW-9, to the south and southeast of MW-3. Those MWs were compliant in the 2018Q4 quarterly groundwater monitoring sample.

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

### Soil

Number of soil samples collected 13

Number of soil samples exceeding 910-1 3

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

Approximate areal extent (square feet) 1500

### NA / ND

-- Highest concentration of TPH (mg/kg) 27450

-- Highest concentration of SAR 0.58

BTEX > 910-1 Yes

Vertical Extent > 910-1 (in feet) 15

### Groundwater

Number of groundwater samples collected 24

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet) 20'

Number of groundwater monitoring wells installed 9

Number of groundwater samples exceeding 910-1 6

-- Highest concentration of Benzene (µg/l) 250

-- Highest concentration of Toluene (µg/l) 1400

-- Highest concentration of Ethylbenzene (µg/l) 599

-- Highest concentration of Xylene (µg/l) 5450

NA Highest concentration of Methane (mg/l)

### Surface Water

0 Number of surface water samples collected

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) 100

Volume of liquid waste (barrels) 0

☒ Is further site investigation required?

Once the tank battery facility has been cleared in a couple of weeks, SRC and Eagle plan to excavate all contaminated soils, using previously mentioned sidewall samples for confirmation. Carbon and Gypsum groundwater amendment will be dumped into the exposed groundwater in the excavation before it is backfilled with clean structural fill dirt.

# 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.

Partially buried produced water vault was removed and hauled to North Weld Landfill.

## 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.

Contaminated soil excavated from Eagle's initial investigation was hauled off to North Weld Landfill. The excavation was being backfilled with clean dirt. Eagle has since installed 9 MWs to define the the extents and concentrations of the impacted groundwater. Now that the tank battery facility will be demo'd, SRC and Eagle plan to move forward with excavation and removal of contaminated soil along with groundwater amendment application before excavation backfill.

## 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) \_\_\_\_\_ 100  
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 )  
Yes \_\_\_\_\_ Chemical oxidation  
☐ \_\_\_\_\_ Air sparge / Soil vapor extraction  
☐ \_\_\_\_\_ Natural Attenuation  
Yes \_\_\_\_\_ Other carbon/gypsum groundwater amendment \_\_\_\_\_

## 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.

SRC and Eagle plan to move forward with excavation and removal of contaminated soil along with application of groundwater amendment before excavation backfill in the next few weeks. Quarterly groundwater monitoring sampling occurs the 3rd month of each quarter. The 9 MWs will be sampled quarterly until all MWs have 4 consecutive quarters of compliance with Table 910-1 limits.

## 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? Yes \_\_\_\_\_

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

none

Volume of E&P Waste (solid) in cubic yards \_\_\_\_\_ 100

E&P waste (solid) description \_\_\_\_\_ produced water contaminated soil

COGCC Disposal Facility ID #, if applicable: \_\_\_\_\_

Non-COGCC Disposal Facility: \_\_\_\_\_ North Weld Landfill

Volume of E&P Waste (liquid) in barrels \_\_\_\_\_ 0

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? 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 soil excavation will be backfilled with clean structural fill.

Is the described reclamation complete? No \_\_\_\_\_

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). \_\_\_\_\_ 04/04/2018

Date of commencement of Site Investigation. \_\_\_\_\_ 05/18/2018

Date of completion of Site Investigation. \_\_\_\_\_

### **REMEDIAL ACTION DATES**

Date of commencement of Remediation. \_\_\_\_\_ 02/08/2019

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

### **SITE RECLAMATION DATES**

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

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

**OPERATOR COMMENT**

This SF27 is to provide 2018Q3 and 2018Q4 updates. All 2018Q3 and 2018Q4 figures, tables, and lab analytical reports are attached to this document. It is also to advise that SRC and Eagle plan to move forward with further impacted soil excavation and groundwater amendment application when the tank battery facility has been removed from the surface.

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

Signed: Dave Castro

Title: Sr. Env. Specialist

Submit Date: 01/17/2019

Email: dcastro@srcenergy.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: PETER GINTAUTAS

Date: 01/22/2019

Remediation Project Number: 11384

**COA Type****Description**

|  |   |
|--|---|
|  | Submit reports of site investigation and progress of remediation including results of sampling and analysis on an annual basis or more often until remediation is closed. |
|--|---|

**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**

|           |                                |
|-----------|--------------------------------|
| 401909528 | FORM 27-SUPPLEMENTAL-SUBMITTED |
| 401909618 | SOIL SAMPLE LOCATION MAP       |
| 401909620 | SOIL SAMPLE LOCATION MAP       |
| 401909621 | GROUND WATER SAMPLE LOCATION   |
| 401909623 | GROUND WATER ELEVATION MAP     |
| 401909624 | ANALYTICAL RESULTS             |
| 401909625 | SOIL SAMPLE LOCATION MAP       |
| 401909626 | GROUND WATER SAMPLE LOCATION   |
| 401909627 | GROUND WATER ELEVATION MAP     |
| 401909628 | ANALYTICAL RESULTS             |
| 401909629 | ANALYTICAL RESULTS             |
| 401909630 | ANALYTICAL RESULTS             |

Total Attach: 12 Files

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

|  |  |                     |
|--|--|---------------------|
|  |  | Stamp Upon Approval |
|--|--|---------------------|

Total: 0 comment(s)