

State of Colorado Oil and Gas Conservation Commission

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Report taken by:

BOB CHESSON

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: KERR MCGEE GATHERING LLC | Operator No: 47121 | Phone Numbers |
| Address: PO BOX 173779 | | Phone: (970) 336-3500 |
| City: DENVER | State: CO | Zip: 80217 |
| Contact Person: Sam LaRue | Email: Sam_LaRue@oxy.com | Mobile: (970) 515-1238 |

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 9813 Initial Form 27 Document #: 200440140

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: SPILL OR RELEASE | Facility ID: 446222 | API #: _____ | County Name: ARAPAHOE |
| Facility Name: SPILL/RELEASE POINT | Latitude: 39.665314 | Longitude: -104.453886 | |
| ** correct Lat/Long if needed: Latitude: _____ | | Longitude: _____ | |
| QtrQtr: NENE | Sec: 32 | Twp: 4S | Range: 63W |
| Meridian: 6 | Sensitive Area? | Yes | |

SITE CONDITIONS

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

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? No

Other Potential Receptors within 1/4 mile

A livestock grazing area is located approximately 255 feet north of the release location. A building is located approximately 1,185 feet northeast of the release location.

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 | See attached data | Groundwater sampling and laboratory analysis |
| Yes | SOILS | 125' (N-S) x 70' (E-W) x 35' bgs | Excavation, soil boring, soil sampling, and laboratory 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.

On June 13, 2016, a release from a condensate dump line was discovered during routine operations at the Mitchell Compressor Station. The facility was shut-in, associated infrastructure was repaired, and excavation activities were initiated. Groundwater was not encountered during excavation activities. The COGCC has issued Spill/Release Point ID 446222 for this release.

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 from multiple excavation areas and from eight (8) exploratory soil borings, as described in the Initial Form 27. Following dump line repairs and excavation activities, impacted soil remained in place adjacent to operational equipment. This impacted material is currently inaccessible due to existing facility infrastructure necessary for compressor operations.

Proposed Groundwater Sampling

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

Between June 20, 2016 and August 30, 2018, a total of seventeen (17) temporary monitoring wells (BH02-16 through BH09-16, BH10-18 through BH18-18) were installed to further assess the extent of groundwater impacts and/or for remediation purposes. Quarterly groundwater monitoring was initiated on September 25, 2018 and is ongoing. Light non-aqueous phase liquid (LNAPL) has historically been detected in wells BH02-16 through BH07-16, BH09-16, BH11-18, BH15-18 and BH17-18. Temporary monitoring wells without LNAPL are sampled and submitted for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by USEPA Method 8260. Groundwater analytical data is presented in Table 1, the groundwater sample locations are illustrated on Figure 1, and a potentiometric surface contour map for the Fourth Quarter 2019 is presented as Figure 2. The laboratory analytical report for the Fourth Quarter 2019 groundwater monitoring event is provided as Attachment A.

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):

After conducting subsurface modeling at the site, additional site assessment is required to better understand the relationship of this release to COGCC Remediation Project No. 31. Potential additional site assessment approaches include the use of high-resolution subsurface investigation technologies, and are further discussed in the Remediation Summary section.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 27

Number of soil samples exceeding 910-1 14

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

Approximate areal extent (square feet) 6300

NA / ND

-- Highest concentration of TPH (mg/kg) 3168

NA Highest concentration of SAR

BTEX > 910-1 Yes

Vertical Extent > 910-1 (in feet) 35

Groundwater

Number of groundwater samples collected 54

Was extent of groundwater contaminated delineated? No

Depth to groundwater (below ground surface, in feet) 34'

Number of groundwater monitoring wells installed 17

Number of groundwater samples exceeding 910-1 54

-- Highest concentration of Benzene (µg/l) 29500

-- Highest concentration of Toluene (µg/l) 9440

-- Highest concentration of Ethylbenzene (µg/l) 9460

-- Highest concentration of Xylene (µg/l) 77100

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?

Hydrocarbon impacted soil and groundwater remain at the site. The 17 temporary groundwater monitoring wells will continue to be gauged to monitor LNAPL thickness. The temporary monitoring wells without LNAPL will continue to be sampled on a quarterly basis and submitted for laboratory analysis of BTEX until concentrations remain in full compliance with COGCC standards for four consecutive quarters. Additional temporary groundwater monitoring wells will be installed to obtain point-of-compliance (POC), pending landowner access to the adjacent properties. A figure illustrating the proposed temporary monitoring well locations was provided in a previous Form 27-Supplemental Update (COGCC Document No. 402189342).

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.

On June 13, 2016, approximately 170 cubic yards of impacted soil were excavated and transported to the Republic Services Landfill in Commerce City, Colorado for disposal. Hydrocarbon impacted soil remains at the site, but is currently inaccessible due to existing facility infrastructure necessary for compressor operations.

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.

Laboratory data indicate that hydrocarbon impacted soil and groundwater remain at the site. Following the first groundwater monitoring event on August 9, 2016, bi-weekly LNAPL gauging and recovery events were initiated and are ongoing. Additionally, two solar-powered LNAPL recovery systems (Spill Busters) were installed at the site on October 25, 2018, to supplement LNAPL recovery activities. In order to maximize LNAPL recovery, the Spill Busters have been deployed in temporary monitoring wells BH03-16, BH06-16, BH15-18, and BH17-18, based on the observed product thickness during bi-weekly LNAPL gauging activities. To-date, a total of approximately 1,580 gallons of LNAPL have been removed from wells BH02-16 through BH06-16, BH11-18, BH15-18, BH16-18, and BH17-18 via hand-bailing and Spill Buster recovery activities. Quarterly groundwater monitoring is ongoing and will be continued until concentrations remain in full compliance with COGCC standards for four consecutive quarters. High-resolution site assessment technologies, such as ultraviolet optical screening tool and membrane interface probe (UVOST/MIP), are currently under evaluation to further refine the site conceptual model and identify potential LNAPL source areas at the site. High-resolution site assessment data may also be used for 3D subsurface modeling and evaluation of additional remediation measures, including in-situ and ex-situ technologies, to address remaining soil and groundwater impacts. Estimated time to attain NFA is TBD based on the groundwater concentrations, the extent of remaining soil and groundwater impacts, and the efficacy of selected remedial technologies.

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) 170

Name of Licensed Disposal Facility or COGCC Facility ID #

No Excavate and onsite remediation

Land Treatment

Bioremediation (or enhanced bioremediation)

Chemical oxidation

Other

Groundwater Remediation Summary

No Bioremediation (or enhanced bioremediation)

No Chemical oxidation

No Air sparge / Soil vapor extraction

Yes Natural Attenuation

Yes Other LNAPL Recovery

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.

Between June 20, 2016 and August 30, 2018, a total of 17 temporary monitoring wells (BH02-16 through BH09-16, BH10-18 through BH18-18) were installed to further assess the extent of groundwater impacts and/or for remediation purposes. LNAPL gauging and recovery activities will be continued, and the temporary groundwater monitoring wells without LNAPL will continue to be sampled on a quarterly basis and submitted for laboratory analysis of BTEX until concentrations remain in full compliance with COGCC standards for four consecutive quarters. Additional temporary monitoring wells will be installed to obtain POC, pending landowner access to the adjacent properties. Groundwater sample locations are illustrated on Figure 1, and a potentiometric surface contour map for the Fourth Quarter 2019 is presented as Figure 2. A figure illustrating the proposed temporary monitoring well locations was provided in a previous Form 27-Supplemental Update (COGCC Document No. 402189342). Well completion logs for the temporary monitoring wells are included as Attachment B.

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:

NA

Volume of E&P Waste (solid) in cubic yards 170

E&P waste (solid) description Hydrocarbon impacted soil

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: Republic Services Landfill -
Commerce City, Colorado

Volume of E&P Waste (liquid) in barrels 38

E&P waste (liquid) description LNAPL

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: Licensed 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 site has been restored to its pre-release grade. Kerr-McGee's compressor infrastructure remains on-site.

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). 06/13/2016

Date of commencement of Site Investigation. 06/13/2016

Date of completion of Site Investigation. _____

REMEDIAL ACTION DATES

Date of commencement of Remediation. 06/13/2016

Date of completion of Remediation. _____

SITE RECLAMATION DATES

Date of commencement of Reclamation. _____

Date of completion of Reclamation. _____

OPERATOR COMMENT

This Supplemental Form 27 is being prepared as the First Quarter 2020 update. No additional groundwater sampling has been conducted since the Fourth Quarter 2019 update, and as a result, no additional groundwater monitoring results or analytical data are included herein. First Quarter 2020 groundwater monitoring is scheduled for March 2020. Supplemental Form 27 Updates will continue to be submitted to the COGCC on a quarterly basis, until POC has been established.

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

Signed: Sam LaRue

Title: Staff Environmental Rep

Submit Date: 03/19/2020

Email: Sam_LaRue@oxy.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: BOB CHESSON

Date: 03/20/2020

Remediation Project Number: 9813

COA Type**Description**

| | |
|--|--|
| | |
|--|--|

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**

| | |
|-----------|--------------------------------|
| 402294142 | FORM 27-SUPPLEMENTAL-SUBMITTED |
| 402294150 | LOGS |
| 402294152 | GROUND WATER SAMPLE LOCATION |
| 402294153 | GROUND WATER ELEVATION MAP |
| 402294155 | ANALYTICAL RESULTS |
| 402294163 | ANALYTICAL RESULTS |

Total Attach: 6 Files

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

| | | |
|---------------|--|------------|
| Environmental | Please submit a status report concerning the progress toward obtaining landowner access for POC GW monitoring locations. Please submit via a supplemental F27 within 60 days of this notice. | 03/20/2020 |
|---------------|--|------------|

Total: 1 comment(s)