

State of Colorado Oil and Gas Conservation Commission

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Receive Date:

Report taken by:

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 OIL & GAS ONSHORE LP | Operator No: 47120 | Phone Numbers Phone: (970) 336-3500 Mobile: () |
| Address: P O BOX 173779 | | |
| City: DENVER | State: CO Zip: 80217-3779 | |
| Contact Person: Phil Hamlin | Email: Phillip_Hamlin@oxy.com | |

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 14506

Initial Form 27 Document #: 402226562

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 checked="" 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

Y Multiple Facilities (in accordance with Rule 909.c.)

| | | | |
|----------------------------------------|---------------------|----------------------------------------------------|-------------------------------------------|
| Facility Type: LOCATION | Facility ID: 328151 | API #: | County Name: WELD |
| Facility Name: HSR-BANGS-63N66W 17NESE | | Latitude: 40.223398 | Longitude: -104.794674 |
| | | ** correct Lat/Long if needed: Latitude: 40.223938 | Longitude: -104.792027 |
| QtrQtr: NESE | Sec: 17 | Twp: 3N | Range: 66W Meridian: 6 Sensitive Area? No |

| | | | |
|---------------------------------|---------------------|----------------------------------------------------|--------------------------------------------|
| Facility Type: SPILL OR RELEASE | Facility ID: 471061 | API #: | County Name: WELD |
| Facility Name: HSR-Bangs 9-17A | | Latitude: 40.223938 | Longitude: -104.792027 |
| | | ** correct Lat/Long if needed: Latitude: 40.223938 | Longitude: -104.792027 |
| QtrQtr: NESE | Sec: 17 | Twp: 3N | Range: 66W Meridian: 6 Sensitive Area? Yes |

SITE CONDITIONS

General soil type - USCS Classifications SP

Most Sensitive Adjacent Land Use Cropland

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

Wetlands approximately 900 feet (ft) northeast and 1,230 ft southwest.

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 checked="" type="checkbox"/> Oil | <input type="checkbox"/> Tank Bottoms | |
| <input checked="" 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 |
|-----------|----------------|---------------------------------|---------------------------------------------------|
| Yes | GROUNDWATER | To be determined | Groundwater Samples/Laboratory Analytical Results |
| Yes | SOILS | 55' (N-S) x 45' (E-W) x 19' bgs | Soil Samples/Laboratory Analytical Results |

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 January 31, 2020, historical petroleum hydrocarbon impacts were discovered during site decommissioning activities associated with the closure of a partially buried produced water vessel (PWV) at the HSR-Bangs 9-17A production facility. The volume of the release is unknown. A Topographic Site Location Map showing the geographic setting of the release is provided as Figure 1. The general site layout and extent of the excavation is provided as Figure 2.

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):

Between December 20, 2019 and February 12, 2020, following removal of the PWV, 20 soil samples were collected from the sidewalls and base of the excavation. The base soil samples were submitted for laboratory analysis of BTEX, naphthalene, and total petroleum hydrocarbons (TPH)-gasoline range organics (GRO) by United States Environmental Protection Agency (USEPA) Method 8260C, TPH-diesel range organics (DRO) and oil range organics (ORO) by USEPA Method 8015C, pH by USEPA Method 9045D, specific conductance (EC) by USEPA Method 9050A, and sodium adsorption ratio (SAR) by USDA Agricultural Handbook 60 Method 20B. Sidewall soil samples were submitted for laboratory analysis of BTEX, naphthalene, and TPH. Laboratory analytical results for the sidewall samples and all but one base sample (B02@19') are in full compliance with COGCC Table 910-1 allowable levels at the final extent of the excavation. Soil analytical data is presented in Table 1. Soil sample locations are provided in Figure 2.

Proposed Groundwater Sampling

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

On February 5, 2020, one groundwater sample (GW01) was collected from the excavation and submitted to Origins Laboratory in Denver, Colorado, for analysis of BTEX by USEPA 8260. Laboratory analytical results indicate that sample GW01 exceeded the COGCC Table 910-1 allowable levels for benzene at 4060 µg/L, toluene at 3610 µg/L, and total xylenes at 4160 µg/L. Groundwater analytical results are summarized in Table 2.

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):

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 20
Number of soil samples exceeding 910-1 6
Was the areal and vertical extent of soil contamination delineated? No
Approximate areal extent (square feet) 2475

NA / ND

-- Highest concentration of TPH (mg/kg) 6287
-- Highest concentration of SAR 7.21
BTEX > 910-1 Yes
Vertical Extent > 910-1 (in feet) 19

Groundwater

Number of groundwater samples collected 1
Was extent of groundwater contaminated delineated? No
Depth to groundwater (below ground surface, in feet) 17'
Number of groundwater monitoring wells installed 0
Number of groundwater samples exceeding 910-1 1

-- Highest concentration of Benzene (µg/l) 4060
-- Highest concentration of Toluene (µg/l) 3610
-- Highest concentration of Ethylbenzene (µg/l) 302
-- Highest concentration of Xylene (µg/l) 4160
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) Volume of liquid waste (barrels)

☒ Is further site investigation required?

Groundwater monitoring wells will be installed at the site to fully define the extent and magnitude of any remaining petroleum hydrocarbon impacts. Site access for well installation is currently under consideration. Further investigation of potential impacts to soils near B02@19' will be performed during well installation activities.

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.

Approximately 990 cubic yards of soil were taken to the Kerr-McGee Landfarm in Weld County, Colorado. Approximately 400 barrels of groundwater were removed from the excavation and taken to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado.

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.

Due to the presence of buried utilities bounding the perimeter of the site, along with the infiltration of groundwater into the excavation, it was deemed unsafe to excavate any deeper at the base. While backfilling the excavation, 600 pounds of COGAC™, a carbon-based groundwater remediation product, was applied to the clean backfill to mitigate remaining hydrocarbon impacts in soil and groundwater. In order to determine the extent and magnitude of the dissolved-phase hydrocarbon impacts, a minimum of five groundwater monitoring wells will be installed in the source area, cross-gradient, and downgradient of the excavation footprint. Groundwater monitoring will be conducted on a quarterly basis and will continue until BTEX concentrations remain below COGCC Table 910-1 groundwater standards for four consecutive quarters.

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) _____ 990

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

Yes _____ Bioremediation (or enhanced bioremediation)

Yes _____ Chemical oxidation

No _____ Air sparge / Soil vapor extraction

Yes _____ Natural Attenuation

Yes _____ Other Chemically Oxygenated
Granular Activated Carbon
(COGAC™) and groundwater
removal _____

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.

To determine the extent and magnitude of impacts, a minimum of five groundwater monitoring wells will be installed in the source area, cross-gradient, and downgradient of the excavation footprint. Groundwater monitoring will be conducted on a quarterly basis. Collected groundwater samples will be submitted for laboratory analysis of BTEX by USEPA Method 8260. Quarterly groundwater monitoring at the location will continue until BTEX concentrations remain below COGCC Table 910-1 groundwater standards for four consecutive quarters.

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? Yes _____

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

Approximately 990 cubic yards of petroleum hydrocarbon impacted soil were transported to the Kerr-McGee Landfarm in Weld County, Colorado for recycling. Approximately 400 barrels of petroleum hydrocarbon impacted groundwater were transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado for recycling.

Volume of E&P Waste (solid) in cubic yards _____ 990

E&P waste (solid) description _____ Petroleum hydrocarbon impacted soil

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: Kerr-McGee Landfarm in Weld County, Colorado _____

Volume of E&P Waste (liquid) in barrels _____ 400

E&P waste (liquid) description _____ Petroleum hydrocarbon impacted groundwater

COGCC Disposal Facility ID #, if applicable: _____ 434766

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? No _____

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? No _____

Does Groundwater meet Table 910-1 standards? No _____

Is additional groundwater monitoring to be conducted? Yes _____

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 will be reclaimed in accordance with COGCC 1000 Series Reclamation Rules.

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. 01/31/2020

Actual Spill or Release date, if known. _____

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 12/20/2019

Date of commencement of Site Investigation. 12/20/2019

Date of completion of Site Investigation. _____

REMEDIAL ACTION DATES

Date of commencement of Remediation. 12/20/2019

Date of completion of Remediation. _____

SITE RECLAMATION DATES

Date of commencement of Reclamation. _____

Date of completion of Reclamation. _____

OPERATOR COMMENT

This form serves as a quarterly update to the remediation activities performed at this site under Remediation Project # 14506. Site access for well installation is currently under consideration. Once groundwater monitoring wells are installed onsite, groundwater monitoring will be conducted on a quarterly basis and will continue until BTEX concentrations remain below COGCC Table 910-1 groundwater standards for four consecutive quarters. Subsequent Form 27 Supplemental documents will be submitted on a quarterly basis as a groundwater monitoring report update.

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

Signed: Phil Hamlin

Title: Sr. Env. Rep.

Submit Date: _____

Email: Phillip_Hamlin@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: _____

Date: _____

Remediation Project Number: 14506

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

| | |
|-----------|--------------------|
| 402434793 | MAP |
| 402434794 | SITE MAP |
| 402434806 | ANALYTICAL RESULTS |
| 402434807 | ANALYTICAL RESULTS |

Total Attach: 4 Files

General Comments

User Group

Comment

Comment Date

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

Total: 0 comment(s)