

State of Colorado Oil and Gas Conservation Commission

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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: Phil.Hamlin@anadarko.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 4351

Initial Form 27 Document #: 1984442

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: LOCATION	Facility ID: 445878	API #:	County Name: WELD
Facility Name: NISHIMOTO 7-36/CHARL O SA 34003657		Latitude: 40.182701	Longitude: -104.834926
		** correct Lat/Long if needed: Latitude: 40.183160	Longitude: -104.835133
QtrQtr: SWNE	Sec: 36	Twp: 3N	Range: 67W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SM Most Sensitive Adjacent Land Use Agriculture and South Platte River

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

Water well approximately 800 feet (ft) north, surface water (South Platte River) approximately 300 ft east, and groundwater approximately 5 ft below ground surface (bgs).

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 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	See Attached Data	Groundwater Samples/Lab Analysis
Yes	SOILS	130' N-S x 190' E-W x 10' bgs (max)	Soil Samples/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.

In 2008, based on data collected by the previous operator of this facility (Amoco), the Colorado Oil and Gas Conservation Commission (COGCC) requested that Kerr-McGee conduct additional subsurface assessment activities at the tank battery to determine the extent and magnitude of any potential historical soil and/or groundwater petroleum hydrocarbon impacts. LT Environmental, Inc. (LTE) was contracted by Kerr-McGee to conduct the subsurface assessment.

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):

In April 2008, two assessment soil borings (SB01 and SB02) were advanced near the vicinity of the tank battery and submitted for laboratory analysis of total petroleum hydrocarbons (TPH). Laboratory analytical results indicated that the TPH concentrations were in full compliance with the COGCC sensitive area allowable level of 1,000 milligrams per kilogram (mg/kg). The soil samples were not analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) as the samples were collected prior to the April 1, 2009, COGCC rule changes.

Following the deconstruction of the tank battery facility in 2014, the impacted soil was excavated. Between January 14 and 27, 2015, 19 soil samples were collected from the excavation sidewalls. Analytical results indicated that TPH and BTEX were in full compliance with COGCC Table 910-1 allowable levels at the lateral extent of the excavation. The soil sample locations are depicted on Figure 1. The soil sample results are summarized in Table 1.

Proposed Groundwater Sampling

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

Groundwater monitoring has been conducted on a quarterly basis since May 2008.

Between January 16 and 22, 2015, three groundwater samples (GWEX01 through GWEX03) were collected from the base of the 2015 excavation and submitted for laboratory analysis of BTEX. Laboratory analytical results indicated that sample GWEX02 exceeded the COGCC Table 910-1 allowable level for total xylenes at a concentration of 1,440 micrograms per liter (µg/L), and sample GWEX03 exceeded the COGCC Table 910-1 allowable level for benzene at 22.1 µg/L. The excavation groundwater sample locations are depicted on Figure 1. The groundwater sample 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 21

Number of soil samples exceeding 910-1 2

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

Approximate areal extent (square feet) 22330

NA / ND

-- Highest concentration of TPH (mg/kg) 5800

NA Highest concentration of SAR

BTEX > 910-1 No

Vertical Extent > 910-1 (in feet) 4

Groundwater

Number of groundwater samples collected 203

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet) 5'

Number of groundwater monitoring wells installed 22

Number of groundwater samples exceeding 910-1 67

-- Highest concentration of Benzene (µg/l) 2500

-- Highest concentration of Toluene (µg/l) 27.1

-- Highest concentration of Ethylbenzene (µg/l) 1200

-- Highest concentration of Xylene (µg/l) 4500

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?

Soil and groundwater impacts were encountered in the agricultural field to the west of the former tank battery.

☐ 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?

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.

Following the deconstruction of the tank battery facility in 2014, the impacted soil was excavated. Approximately 560 barrels of petroleum hydrocarbon impacted groundwater were removed from the 2015 excavation using a vacuum truck and transported in a licensed disposal facility. The soil excavation and treatment activities are summarized in the Remediation Summary section below. The general site layout and excavation footprint are depicted on the Site Map provided as Figure 1.

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 refer to the attached Remediation Summary Attachment.

Soil Remediation Summary

☒ **In Situ**

Yes Bioremediation (or enhanced bioremediation) _____

Yes Chemical oxidation _____

No Air sparge / Soil vapor extraction _____

Yes Natural Attenuation _____

No 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

Yes Bioremediation (or enhanced bioremediation) _____

Yes Chemical oxidation _____

No Air sparge / Soil vapor extraction _____

Yes Natural Attenuation _____

Yes Other COGAC® application and groundwater removal (2015) _____

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.

Monitoring wells AMW01, AMW02, and MW01 through MW10, replacement monitoring wells AMW01R, MW01R, MW02R, MW09R, and MW09R2, and temporary monitoring wells AMW01T and MW06T were installed at the site between May 2008 and October 2018. Soil borings SB01 and SB02 were completed as groundwater monitoring wells MW01 and MW02, respectively. Groundwater and surface water monitoring continued on a quarterly basis. The monitoring well and surface water sample locations are depicted on Figure 2. Boring logs with monitoring well completion diagrams are attached.

On November 15, 2013, monitoring wells AMW01, AMW02, MW01, and MW02 were surveyed to obtain the relative groundwater and top-of-casing well elevation data. The survey data indicated the groundwater flow direction at the site is to the north. On August 25, 2015, October 26, 2016, November 20, 2017, March 7, 2018, and October 16, 2018, additional monitoring wells MW03 through MW10, AMW01R, MW01R, MW02R, MW09R, and MW09R2, and temporary monitoring wells AMW01T and MW06T were tied into the survey data. The survey data indicated the groundwater flow direction at the site is to the northeast to east. Relative groundwater elevations are provided in Table 2. Groundwater Elevation Contour Maps for the second quarter 2018 through first quarter 2019 monitoring events are provided as Figures 3A through 3D, respectively.

As of the January 2019 quarterly monitoring event, BTEX concentrations in monitoring wells MW01R, MW02R, MW09R2, and MW10 and temporary monitoring wells AMW01T and MW06T were in full compliance with COGCC Table 910-1 allowable levels for four consecutive quarterly monitoring events. The groundwater analytical results are summarized in Table 2, and the groundwater analytical reports are attached.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Frequency: ☐ Quarterly ☐ Semi-Annually ☐ Annually ☒ Other Final Report

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

☒ Other NFA Status Request

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 0

E&P waste (solid) description _____

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: _____

Volume of E&P Waste (liquid) in barrels 560

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

COGCC Disposal Facility ID #, if applicable: 159443

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.

The Kerr-McGee facility was deconstructed in February 2014 and the site was restored to its pre-release grade.

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. 04/09/2008

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 04/09/2008

Date of commencement of Site Investigation. 04/09/2008

Date of completion of Site Investigation. 08/18/2015

REMEDIAL ACTION DATES

Date of commencement of Remediation. 04/09/2008

Date of completion of Remediation. 01/08/2019

SITE RECLAMATION DATES

Date of commencement of Reclamation. _____

Date of completion of Reclamation. _____

OPERATOR COMMENT

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

Signed: Phil Hamlin

Title: Senior Environmental Rep.

Submit Date: _____

Email: Phil.Hamlin@anadarko.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: 4351

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

401924107	LOGS
401945127	GROUND WATER ELEVATION MAP
401945130	SITE MAP
401945132	SOIL SAMPLE LOCATION MAP
401952198	ANALYTICAL RESULTS

Total Attach: 5 Files

General Comments

User Group

Comment

Comment Date

		Stamp Upon Approval
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Total: 0 comment(s)