

State of Colorado
Oil and Gas Conservation Commission

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

SITE INVESTIGATION AND REMEDIATION WORKPLAN

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever applicable. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

received 07/25/2016
Project 9768
Spill 445876
Document 2526607

OGCC Employee:

☐ Spill ☐ Complaint
☐ Inspection ☐ NOAV
Tracking No:

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

☒ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☐ Site/Facility Closure ☐ Other (describe): _____

GENERAL INFORMATION

OGCC Operator Number:		Contact Name and Telephone	
Name of Operator: <u>Kerr-McGee Oil and Gas Onshore LP</u>		Name: <u>Erik Mickelson</u>	
Address: <u>PO Box 173779</u>		No: <u>720-929-4306</u>	
City: <u>Denver</u> State: <u>CO</u> Zip: <u>80217</u>		Fax: _____	
API/Facility No: <u>05-123-21892</u>		County: <u>Weld</u>	
Facility Name: _____		Facility Number: <u>445876</u>	
Well Name: <u>Cannon Land</u>		Well Number: <u>16-3A</u>	
Location: (QtrQtr, Sec, Twp, Rng, Meridian): <u>SESE Sec. 3 2N 65W 6</u>		Latitude: <u>40.161837</u> Longitude: <u>-104.641005</u>	

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): <u>Oil, condensate, and produced water (historical release)</u>		
Site Conditions: Is location within a sensitive area (according to Rule 901e)? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N If yes, attach evaluation.		
Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): <u>Crop land</u>		
Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: <u>Road base</u>		
Potential receptors (water wells within 1/4 mi, surface waters, etc.): <u>2 water wells (one well approx. 730' NNE and one well approx. 1,020' NE) and surface water- irrigation ditch (approx. 700' E)</u>		
Description of Impact (if previously provided, refer to that form or document):		
Impacted Media (check):	Extent of Impact:	How Determined:
<input type="checkbox"/> Soils	_____	_____
<input type="checkbox"/> Vegetation	_____	_____
<input checked="" type="checkbox"/> Groundwater	<u>See attached data</u>	<u>Sampling of GW within the excavation</u>
<input type="checkbox"/> Surface Water	_____	_____

REMEDIALATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document): During construction activities associated with a partially buried produced water sump, which had been displaced by shallow groundwater, stained soils were encountered at the Cannon Land 62N65W/3SESE facility (Location ID 332142). When removed, the sump was intact and there were no signs of active leaking. During excavation activities to remove the stained soils, a hole was discovered in the buried liner. This made it possible for shallow groundwater to infiltrate fill material within secondary containment. A groundwater sample was collected from the base of the excavation, and results from that sample, received on May 25, 2016, indicated that impacts were present above the COGCC Table 910-1 allowable level for benzene. On May 26, an Initial Form 19 was submitted to the COGCC and on June 3, a Supplemental Form 19 was submitted to the COGCC. The COGCC issued Spill Tracking number 445876 for this release. A regional topographic facility location map is provided as Figure 1.
Describe how source is to be removed: Between May 19 and 24, 2016, soil excavation and groundwater extraction activities were conducted. The final extent of the excavation spanned approximately 24 feet (west-east) by 27 feet (north-south). Approximately 20 cubic yards of impacted soil was removed via hydro-vacuum, and transported to the Kerr-McGee Oil & Gas Onshore, LP's Aggregate Recycling Facility in Weld County, Colorado, for disposal. Approximately 160 barrels of groundwater were removed via vacuum truck, and transported to a licensed injection facility for disposal. On May 24, four confirmation soil samples (West 1@3', South 1@3', North 1@3', and East 1@3') were collected at the final extent of the excavation, at 3 feet below ground surface (bgs). Also on May 24, groundwater sample Groundwater 1@3' was collected from the excavation, at 3 feet bgs. All samples were submitted to Origins Laboratory in Denver, Colorado, for analysis. Groundwater samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX), by USEPA Method 8260. Soil samples were analyzed for BTEX and total petroleum hydrocarbons (TPH) - gasoline range organics (GRO) by USEPA 8260, TPH - diesel and residual range organics (DRO and RRO) by USEPA 8015, electrical conductivity (EC), and pH. For the soil samples, laboratory analytical results indicated that BTEX and TPH were below laboratory detection limits and EC and pH were within COGCC allowable levels. Analytical results of sample Groundwater 1@3' indicated that benzene exceeded the applicable COGCC Table 910-1 standard for groundwater, at 146 micrograms per liter (µg/L). The general facility layout, excavation location, and laboratory results are shown in Figure 2. Analytical results are summarized in Table 1 and Table 2, and laboratory reports are provided as Attachment A.
Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oil vegetation, etc.: Impacted soil was excavated and transported to the Kerr-McGee Oil & Gas Onshore, LP's Aggregate Recycling Facility in Weld County, Colorado, for disposal. Impacted groundwater was removed via a vacuum truck and transported to a licensed injection facility for disposal. Groundwater monitoring measures are described hereafter.

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Facility Name & No: _____

OGCC Employee: _____

REMEDIATION WORKPLAN (CONT.)

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

Based on the analytical results from the groundwater sample, a subsurface assessment will be conducted at the facility, to determine if shallow groundwater has been impacted outside of the lined secondary containment. In an attempt to determine the extent and magnitude of impacts, a minimum of four groundwater monitoring wells will be installed. 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 in all wells for four consecutive quarters. If necessary, additional monitoring wells will be installed to characterize the extent of the hydrocarbon plume.

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. Use additional sheet for description if required.

A new secondary containment liner was installed and the excavation was backfilled with clean sand and soil, and graded to match the adjacent topography. Kerr-McGee's tank battery and associated components remain at the facility location. Future reclamation activities at the facility location will be compliant with COGCC regulations.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.

Is further site investigation required? ☒ Y ☐ N If yes, describe:

Groundwater monitoring wells will be installed to delineate the dissolved-phase hydrocarbon plume. Quarterly groundwater monitoring will be conducted to determine the extent and magnitude of dissolved-phase hydrocarbon impacts. The need for future remediation activities will be based on the results from the groundwater assessment activities.

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

Impacted soil was excavated and transported to the Kerr-McGee Oil & Gas Onshore, LP's Aggregate Recycling Facility in Weld County, Colorado, for disposal. Impacted groundwater was removed via a vacuum truck and transported to a licensed injection facility for disposal.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: 5/19/2016	Date Site Investigation Completed: Active	Remediation Plan Submitted: _____
Remediation Start Date: 5/19/2016	Anticipated Completion Date: To be determined	Actual Completion Date: _____

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

Print Name: Erik Mickelson

Signed: Erik Mickelson Title: Senior HSE Representative Date: 7/25/16

OGCC Approved: _____ Title: _____ Date: _____

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.