FORM 27 Rev 6/99

State of Colorado
Oil and Gas Conservation Commission
1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303) 894-2100 Fax 894-2109

FOR OGCC USE ONLY

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Project 9246
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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 possible. 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.

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: 47120
Name of Operator: Kerr-McGee Oil and Gas Onshore, LP
Address: 1099 18th Street, Suite 1800
City: Denver State: CO Zip: 80202

Contact Name and Telephone
Name: Phillip Hamlin
No: 970-336-3500
Fax: 970-336-3656

API/Facility No: 05-123-07246
Facility Name: Hanks Pooling Unit 1
Well Name: Hanks Pooling Unit
Location (QtrQtr, Sec, Twp, Rng, Meridian): SWSW S34 T2N R67W 6PM

County: Weld
Facility Number: 317562
Well Number: 1
Latitude: 40.0904545 Longitude: -104.8822603

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.): Condensate and Produced Water

Site Conditions: Is location within a sensitive area (according to Rule 901e)? ☒ Y ☐ N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Agriculture

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Silty sand

Potential receptors (water wells within 1/4 mi, surface waters, etc.): Surface water is located approximately 130 feet northeast of the release area and the nearest water well is located approximately 1,240 feet north of the site.

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):	Extent of Impact:	How Determined:
☒ Soils	80' E-W x 55' N-S x 4' bgs	Excavation, soil sampling, and laboratory analysis
☐ Vegetation		
☒ Groundwater	See attached data	Groundwater sampling and laboratory analysis
☐ Surface water		

REMEDIATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):
On April 10, 2014, historical hydrocarbon impacts were encountered beneath the buried produced water sump during facility decommissioning activities. The volume of the release is unknown. The well was shut in and locked out, and petroleum hydrocarbon impacted soil was excavated and transported off-site for disposal. Groundwater was encountered in the excavation at approximately 4 feet below ground surface (bgs). A Form 19 was submitted on April 21, 2014; the COGCC has not yet issued a spill tracking number for this release.

Describe how source is to be removed:
Approximately 140 cubic yards (cy) of impacted soil were removed and transported to the Front Range Landfill in Erie, Colorado. Excavation activities were guided in the field using a photoionization detector (PID) to measure volatile organic compound (VOC) concentrations in soil. Soil samples were collected from the excavation area and submitted to eAnalytics Laboratory in Loveland, Colorado for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), total petroleum hydrocarbons (TPH) - gasoline range organics (GRO) by USEPA Method 8260B, and TPH - diesel range organics and oil range organics (DRO and ORO) by USEPA Method 8015. Laboratory results indicated that BTEX and TPH concentrations were in exceedance of applicable COGCC standards in the soil samples collected from the north, east, and south sidewalls of the excavation extent. Additional soil characterization was performed through the collection of samples from exploratory excavations that were advanced away from the excavation until non-impacted soil was encountered. The final excavation extent, exploratory excavation locations, and soil sample locations are illustrated on Figure 2. Soil analytical results are summarized in Table 1. Groundwater was encountered in the excavation at approximately 4 feet bgs and a sample (GW01) was collected for laboratory analysis of BTEX. Sample GW01 exhibited concentrations of benzene (1,745 µg/L) and total xylenes (1,851 µg/L) exceeding the applicable COGCC groundwater standards. Groundwater analytical results are summarized in Table 2. Three surface water samples, upstream (SW01), midstream (SW02), and downstream (SW03) of the excavation, were collected from a drainage area approximately 130 feet east of the excavation. Samples SW01 - SW03 were submitted for analysis of BTEX and exhibited concentrations below the laboratory reporting limits, and therefore below the applicable COGCC Table 910-1 groundwater standards. Surface water analytical results are summarized in Table 3. Laboratory analytical reports are included as attachments.

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 oily vegetation, etc.:
The impacted soil that was excavated in April 2014 was transported to the Front Range Landfill in Erie, Colorado. Pending landowner and third-party approval, remaining impacted soil will be removed and transported off-site for disposal. Impacted groundwater will be treated by applying granular activated carbon (GAC) to groundwater within the excavation area prior to backfilling. Additional proposed groundwater remediation measures are described on the following page.

Submit Page 2 with Page 1.

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Page 2

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REMEDIATION WORKPLAN (CONT.)

OGCC Employeee:

Tracking Number:
Name of Operator: Kerr-McGee Oil and Gas Onshore, LP
OGCC Operator No: 47120
Received Date:
Well Name & No: Hanks Pooling Unit 1
Facility Name & No.: Hanks Pooling Unit 1

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

Impacted groundwater will be treated using granular activated carbon (GAC), as previously described. Subsequent to the completion of impacted soil excavation activities, temporary monitoring wells will be installed to delineate the lateral extent of remaining dissolved phase hydrocarbon impacts. Groundwater monitoring will be completed on a quarterly basis and groundwater samples will be submitted for laboratory analysis of BTEX by USEPA Method 8260. Following site assessment activities, remedial options will be evaluated to address remaining hydrocarbon impacts to groundwater, if necessary. Groundwater monitoring will continue on a quarterly basis until BTEX concentrations remain below COGCC groundwater standards for four consecutive quarters.

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.

Following remediation activities, the site will be restored to its pre-release grade using clean backfill, and the topsoil will be replaced. Kerr-McGee's tank battery was decommissioned in April 2014.

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? [X] Y [ ] N If yes, describe:

Hydrocarbon impacts in soil and groundwater remain on site. The extent of soil impacts have been defined through sample collection and analysis. Soil samples will be collected during excavation activities to confirm that remaining soil impacts above regulatory standards were successfully removed. The extent of groundwater impacts has not been determined. Consequently, characterization and drilling activities will be completed to delineate and assess remaining dissolved phase hydrocarbon impacts on site. Quarterly groundwater monitoring for BTEX will continue at the temporary well locations until BTEX concentrations remain below COGCC groundwater standards for four consecutive quarters.

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

Impacted soil was transported to the Front Range Landfill in Erie, Colorado for disposal.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began:	4/10/2014	Date Site Investigation Completed:	NA	Remediation Plan Submitted:	
Remediation Start Date:	4/10/2014	Anticipated Completion Date:	4/10/2017	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: Phillip Hamlin

Signed: _____ Title: Senior HSE Representative Date: 7/23/2015

OGCC Approved: _____ Title: _____ Date: _____

Peter Gintautas

Digitally signed by Peter Gintautas
DN: cn=Peter Gintautas, o=COGCC, ou=Environmental Protection Specialist, email=peter.gintautas@state.co.us, c=US
Date: 2015.09.11 09:24:03 -06'00'

Provide documentation of transport of exploration and production wastes to offsite facilities to include the following information:
A. The date of the transport;
B. The identity of the waste generator;
C. The identity of the waste transporter;
D. The location of the waste pickup site;
E. The type and volume of waste; and
F. The name and location of the treatment or disposal site.