



01761419

Supplemental Workplan Rem # 8461

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:(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 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.

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

Spill or Release Plug & Abandon Central Facility Closure Site/Facility Closure Other (describe): Rice Sensitive Area Determination

COGCC Employee: Spill Complaint Inspection NOAV Tracking No: 200399090

OGCC Operator Number: 10352 Name of Operator: CM Production, LLC Address: 390 Union Boulevard, Suite 620 City: Lakewood State: CO Zip: 80228 Contact Name and Telephone: Mr. Curtis Ditzell No: 720.645.2092 Mobile: 303.808.8840 Fax: 303.479.1318

API Number: 075-07216 County: Logan Facility Name: Rice Production Facility Facility Number: 116281 Well Name: Rice #2 Well Number: Location: (QtrQtr, Sec, Twp, Rng, Meridian): SW NW 33 12N 54W Latitude: 40.973494 Longitude: -103.418794

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): Produced Water Pits 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.): Rangeland and Wildlife Habitat Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Badland, Mitchell - Keota loams (Unit #70) Potential receptors (water wells within 1/4 mi, surface waters, etc.): No permitted water wells within one mile of the site. An unnamed intermittent drainage is located to the east of the site. The drainage does not connect to live waters. Description of Impact (if previously provided, refer to that form or document): Impacted Media (check): Soils Extent of Impact: Erosion and historic EC/SAR impacts How Determined: Visual/COGCC Sampling on 01/14/2014

REMEDIALTION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document): On July 23, 2014 Olsson previously installed a temporary piezometer (PZ-1) approximately 3 feet above the base of a drainage located east-southeast of the southeast produced water pit, and the piezometer remained dry on that date, and again when checked on September 3, 2014. A surface water sample was collected from the side drainage from the north pit on 07/23/2014, and a surface water sample was collected from the main drainage on 09/03/2014. Describe how source is to be removed: CM and Olsson propose to drill three borings to be completed as temporary groundwater monitoring wells. The borings will be advanced to a maximum depth of 30 feet bgs, or to auger refusal if a competent, impermeable layer is encountered at shallower depth. The wells will be logged by a geologist and the logs will provide a description of the lithology, presence of staining if observed, soil headspace organic vapor readings, and if water is observed. The wells will be constructed as described in the attached work plan. 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.: This Form 27 is to assess the potential for shallow groundwater impacts and the potential for seepage from produced water pits to impact a drainage to the east of the produced water pits. A description of the assessment is attached.

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Tracking Number: Rem # 8461  
Name of Operator: CM Production, LLC  
OGCC Operator No: 10352  
Received Date: 12/6/14  
Well Name & No: Rice #2  
Facility Name & No: \_\_\_\_\_

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**REMEDIATION WORKPLAN (Cont.)**

OGCC Employee: John Axelson

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

The depth to groundwater is reportedly greater than 100 feet. The bedrock exposed near the surface consists of the Brule Formation of the Tertiary age White River Group. Olsson proposes to install three borings to a maximum of 30 feet bgs, or to auger refusal to assess shallow groundwater conditions at the site. Two of the wells will be downgradient of the south and southeast pits, and the third will be upgradient of the north pit.

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.

N/A

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:

Locations of the three proposed monitoring wells and piezometer are shown on the attached map.

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

The purpose of the limited subsurface assessment is to assess the presence of shallow groundwater and the potential for groundwater to impact surface water in the drainage to the east of the site.

**IMPLEMENTATION SCHEDULE**

Date Site Investigation Began: 07/23/2014 Date Site Investigation Completed: Est. 12/15 - 12/17 Date Remediation Plan Submitted: \_\_\_\_\_  
Remediation Start Date: N/A Anticipated Completion Date: January 2015 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: James Hix as Agent for CM Production, LLC Signed: James Hix as Agent for  
Title: Senior Geologist - Olsson Associates Date: 12/05/2014 CM Production, LLC

OGCC Approved: [Signature] Title: EPS Date: 12/8/14

\* See conditions of approval.