

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

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: 69175 | | Contact Name and Telephone | |
| Name of Operator: <u>Petroleum Development Corporation</u> | | Name: <u>Randall Ferguson</u> | |
| Address: <u>1775 Sherman Street, Suite 3000</u> | | No: <u>(303) 860-5800</u> | |
| City: <u>Denver</u> State: <u>CO</u> Zip: <u>80203</u> | | Fax: <u>(303) 860-5838</u> | |
| API/Facility No: <u>05-123-20466</u> | | County: <u>Weld</u> | |
| Facility Name: <u>Heldt 11-18</u> | | Facility Number: _____ | |
| Well Name: <u>Heldt</u> | | Well Number: <u>11-18</u> | |
| Location (QtrQtr, Sec, Twp, Rng, Meridian): <u>NWNW Sec 18 T6N R64W 6th PM</u> | | Latitude: _____ Longitude: _____ | |

TECHNICAL CONDITIONS

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

Site Conditions: Is location within a sensitive area (according to Rule 901e)? Y N If yes, attach evaluation. Groundwater <20 feet below ground surface.

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: Aquolls and Aquepts, flooded

Potential receptors (water wells within 1/4 mi, surface waters, etc.): Surface water is located 40' west of the site; a building is located 485' northwest of the site; a water well is located 480' east of the site; and depth to groundwater is 5' below ground surface (bgs).

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

| Impacted Media (check): | Extent of Impact: | How Determined: |
|---|-----------------------------------|--|
| <input checked="" type="checkbox"/> Soils | <u>20' N-S x 60' E-W x 5' bgs</u> | <u>Laboratory analysis and field screening of soil samples</u> |
| <input type="checkbox"/> Vegetation | _____ | _____ |
| <input checked="" type="checkbox"/> Groundwater | <u>See attached data</u> | <u>Laboratory analysis of groundwater samples</u> |
| <input type="checkbox"/> Surface water | _____ | _____ |

REMEDIATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):

A Form 19 was submitted on October 12, 2010 (Spill #2521760).

Describe how source is to be removed:

During equipment upgrades at the facility, PDC found a leak in the produced water tank and its associated dump line that released an unknown volume of produced water to the subsurface. Once the water tank and dump line were removed, impacted soil above COGCC Table 910-1 Concentration Levels was excavated. Soil samples were collected from the sidewalls of the excavation and were submitted for analysis of BTEX, GRO, and naphthalene by EPA Method 8260B and DRO by EPA Modified Method 8015. Laboratory results indicate BTEX, GRO, DRO, and naphthalene concentrations in soil are in compliance with Table 910-1 Concentration Levels. Impacted groundwater was recovered from the excavation by a vacuum truck and transported to a licensed disposal facility. Groundwater samples were collected from the base of the excavation and from two potholes downgradient of the excavation and were submitted for analysis of BTEX by EPA Method 8260B. A topographic map and a site map are provided as Figures 1 and 2. Soil and groundwater analytical results are summarized in Tables 1 and 2. The laboratory analytical reports are included as an attachment.

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, in situ bioremediation, burning of oily vegetation, etc.:

Approx 440 cubic yards of soil exceeding COGCC Table 910-1 Concentration Levels was transported to the Waste Management landfill in Ault, CO for disposal. Additionally, 3,460 barrels of groundwater exceeding CDPHE WQCC Reg. 41 standards was recovered and disposed of at a licensed facility.



Tracking Number: _____
Name of Operator: Petroleum Development Corporation
OGCC Operator No: 69175
Received Date: _____
Well Name & No: Heldt 11-18
Facility Name & No.: Heldt 11-18

REMEDIATION WORKPLAN (CONT.)

OGCC Employee: _____

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):
Groundwater samples were collected from the base of the excavation on September 13, September 17, September 30, and October 14, 2010 and were submitted for analysis of BTEX by EPA Method 8260B. Groundwater samples were also collected from two pothoes downgradient of the excavation on October 20, 2010 and were submitted for analysis of BTEX. Between each sampling event, PDC utilized a vacuum truck to recover impacted groundwater from the excavation. Lab results for the groundwater samples collected from the base of the excavation on September 13, September 17, and September 30, 2010 indicated the benzene concentration was not in compliance with CDPHE WQCC Reg. 41 standards. Additionally, lab results for the groundwater sample collected from the base of the excavation on September 17, 2010 indicated the total xylenes concentration was not in compliance with Reg. 41 standards. Following groundwater recovery from the excavation, lab results for the groundwater samples collected on October 14, 2010 indicated non-detectable BTEX levels. Lab results of groundwater samples from the two downgradient potholes on October 20, 2010 also indicated non-detectable BTEX levels demonstrating that there was no downgradient migration of BTEX

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.

The site was restored to pre-release grade. PDC's production facility remains at the site.

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:
Lab results indicate BTEX, GRO, DRO, and naphthalene concentrations in soil are in compliance with COGCC Table 910-1 Concentration Levels. Lab results also indicate the BTEX concentrations in groundwater are in compliance with CDPHE WQCC Reg. 41 standards. Based on the laboratory analytical results, PDC is requesting a No Further Action determination for this site.

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

Approx. 440 cubic yards of soil exceeding COGCC Table 910-1 Concentration Levels was transported to the Waste Management landfill in Ault, CO for disposal. Additionally, 3,460 barrels of groundwater exceeding CDPHE WQCC Reg. 41 standards was recovered and disposed of at a licensed facility.

IMPLEMENTATION SCHEDULE

| | | | | | |
|--------------------------------|-----------------|------------------------------------|-------------------|-----------------------------|-------------------|
| Date Site Investigation Began: | <u>9/8/2010</u> | Date Site Investigation Completed: | <u>10/20/2010</u> | Remediation Plan Submitted: | <u>11/18/2010</u> |
| Remediation Start Date: | <u>9/8/2010</u> | Anticipated Completion Date: | <u>NA</u> | Actual Completion Date: | <u>10/20/2010</u> |

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

Print Name: Randall Ferguson

Signed: Randall Ferguson Title: Environmental Supervisor Date: 11/18/2010

OGCC Approved: Nancy Prince for Title: John Axelsson EPS Date: 11/26/2010