

State of Colorado  
**Oil and Gas Conservation Commission**



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

FOR OGCC USE ONLY	
<b>#6731</b>	
OGCC Employee: _____	
Spill Inspection	Complaint NOAV
Tracking No: _____	

**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): \_\_\_\_\_

OGCC Operator Number: _____	Contact Name and Telephone: _____
Name of Operator: _____	_____
Address: _____	No: _____
City: _____ State: _____ Zip: _____	Fax: _____

API Number: _____	County: _____
Facility Name: _____	Facility Number: _____
Well Name: _____	Well Number: _____
Location: (QtrQtr, Sec, Twp, Rng, Meridian): _____	Latitude: _____ Longitude: _____

**TECHNICAL CONDITIONS**

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

**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.): \_\_\_\_\_

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

Potential receptors (water wells within 1/4 mi, surface waters, etc.): \_\_\_\_\_

\_\_\_\_\_

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

Impacted Media (check):	Extent of Impact:	How Determined:
Soils	_____	_____
Vegetation	_____	_____
Groundwater	_____	_____
Surface Water	_____	_____

**REMEDIALTION WORKPLAN**

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

\_\_\_\_\_

**Describe how source is to be removed:**

\_\_\_\_\_

**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.:**

\_\_\_\_\_

FORM  
27  
Rev 6/99

State of Colorado  
Oil and Gas Conservation Commission  
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(303)894-2100 Fax: (303)894-2109



Tracking Number: \_\_\_\_\_  
Name of Operator: \_\_\_\_\_  
OGCC Operator No: \_\_\_\_\_  
Received Date: \_\_\_\_\_  
Well Name & No: \_\_\_\_\_  
Facility Name & No: \_\_\_\_\_

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**REMEDIATION WORKPLAN (Cont.)**

OGCC Employee: \_\_\_\_\_

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

See attached.

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.

See attached.

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:

See attached.

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

See attached.

**IMPLEMENTATION SCHEDULE**

Date Site Investigation Began: TBD Date Site Investigation Completed: TBD Date Remediation Plan Submitted: 11/15/2011  
Remediation Start Date: TBD Anticipated Completion Date: TBD Actual Completion Date: TBD

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

Print Name: Blake Ford Signed: Blake Ford  
Title: Environmental Field Coordinator Date: 11/15/2011

OGCC Approved: Chris Camfield Title: FOR Chris Camfield Date: 12/02/2011  
EPS NW Region

# NARRATIVE ATTACHMENT FORM 27 (SITE INVESTIGATION AND REMEDIATION WORKPLAN)

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## Culvert Pit Closure (1321)

Document Date – 11/15/2011

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### TECHNICAL CONDITIONS

#### Is location within a sensitive area (according to Rule 901e)?

Based on the distance to surface water this location is found in a sensitive area.

#### Potential receptors (water wells within ¼ mi, surface waters, etc.):

According to the COGCC GIS OnLine mapping service, there is one unnamed tributary 430 feet to the east, but no monitoring wells or no permitted water wells within ¼ mile of the well pad.

### REMEDIATION WORKPLAN

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

This Form 27 is being submitted to initiate the document trail for closure of the historical culvert pit on Encana's 1321 well pad. "Culvert pits" were installed historically as containment for well blow down liquids and consist of a 6 to 8 foot diameter steel ring (vertical corrugated culvert) approximately 4 to 8 feet deep placed in the ground with a cement bottom. The culvert pit will be replaced with an above ground storage tank set in a lined secondary containment. A topographic location map is included with this submittal. All activities conducted in support of this pit closure project will be carried out in accordance with COGCC Rules 905, 907, and 909 for conducting a site investigation in support of pit closures.

The following discussion was prepared to present general procedures for Encana's approach to pit closures and any associated remediation and documentation. This form is being submitted prior to the initiation of pit closure activities on this location. All subsequent data gathered in support of this project will be submitted to the COGCC as required in a Form 19 (Spill/Release Report), Notification of Completion, or Form 4 (Sundry Notice), and will reference the COGCC assigned Remediation Project number.

With approval of this Form 27, and in compliance with COGCC rules governing the closure of pits, Encana will initiate the pit closure project with the following activities:

- 905.b(2) & 905.b(4) – All fluids and/or solids will be removed from the pit and will be reused or disposed of at a permitted disposal facility or Encana owned injection well.
- 905.b(4) – Discrete representative samples will be collected from below the culvert pit following removal of the tank ring and cement, and will be analyzed for compliance with COGCC Table 910-1.
  - One full suite (Table 910-1) discrete sample will be collected from the soil directly below the culvert pit. Additional discrete samples will be collected from the pit bottom, and if necessary pit walls, and analyzed for the organic constituents listed



# NARRATIVE ATTACHMENT

## FORM 27 (SITE INVESTIGATION AND REMEDIATION WORKPLAN)

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- in Table 910-1. The number of additional samples collected will be adequate to represent the size and/or impacts present below the culvert pit.
- Sample results will be provided to the COGCC in supplementary submission(s) for this remediation project.
  - 905.c – In the event that levels of the constituents of concern found below the culvert pit are in excess of Table 910-1 allowable concentrations and above background concentrations, a Form 19 (Spill/Release Report) will be submitted to document the failure of the pit and subsequent release of fluids.
    - If below pit concentrations are above Table 910-1 allowable concentrations, but below background no Form 19 will be submitted. However, a Form 4 (Sundry Notice) will be submitted to document the onsite disposal of material in excess of the allowable concentrations identified in Table 910-1.

#### Describe how source is to be removed:

Any impacted material identified below the culvert pit will be evaluated upon discovery and depending upon severity would be removed using heavy equipment and remediated onsite, or disposed of offsite at a permitted disposal facility. The effectiveness of excavation efforts and removal of impacts will be verified through sample collection and laboratory analysis conducted in accordance with COGCC Rule 910, and to reflect the procedures described above. These activities would be described in the Notification of Completion for this remediation project.

Any impacts identified below the culvert pit would be documented and reported on a Form 19 (Spill/Release Report).

#### 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.:

In the event that below pit impacts are identified, a Form 19 would be prepared and submitted to the COGCC, and the following approaches to remediation would be utilized:

- In most cases impacted material would be removed and remediated onsite through blending and natural attenuation, and then returned to the excavation upon successful remediation of impacts. Complete removal of impacted materials and successful remediation of impacts will be demonstrated through sample collection and laboratory analysis.
  - Occasionally due to operational considerations the pit may need to be closed after impacted material has been removed. Excavated material would then need to be remediated and disposed of independently of the pit closure, and any onsite disposal of that material would be carried out in accordance with COGCC Rule 907 and documented on a Form 4 (Sundry Notice)



# NARRATIVE ATTACHMENT

## FORM 27 (SITE INVESTIGATION AND REMEDIATION WORKPLAN)

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### Culvert Pit Closure (1321)

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- In the event that groundwater contamination is identified, or the depth of contamination makes removal of impacted material through conventional excavation impractical, the vertical and lateral extent of contamination would be determined by a third party contractor and an appropriate insitu remediation and monitoring plan would be developed and submitted to the COGCC for prior approval.

All remediation activities are verified with sample collection and laboratory analysis, conducted in accordance with COGCC Rule 910, and when necessary under an approved monitoring plan and analytical suite. These activities would be described in the Notification of Completion for this remediation project.

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

In the event that impacts to groundwater are identified, a vertical and lateral extent would be determined by a third party contractor and an appropriate insitu remediation and monitoring plan would be prepared and submitted to the COGCC for prior approval.

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 footprint for the backfilled culvert pit occurs within the pad boundary for this producing well pad. The backfilled pit will become part of the pad's working surface.



# NARRATIVE ATTACHMENT

## FORM 27 (SITE INVESTIGATION AND REMEDIATION WORKPLAN)

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### Culvert Pit Closure (1321)

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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? If yes, describe:

The site investigation for this project will be carried out as described above. All analytical data collected in support of this remediation project will be provided to the COGCC in the Notification of Completion. A site diagram showing the location of collected samples will also be provided in the notification of completion.

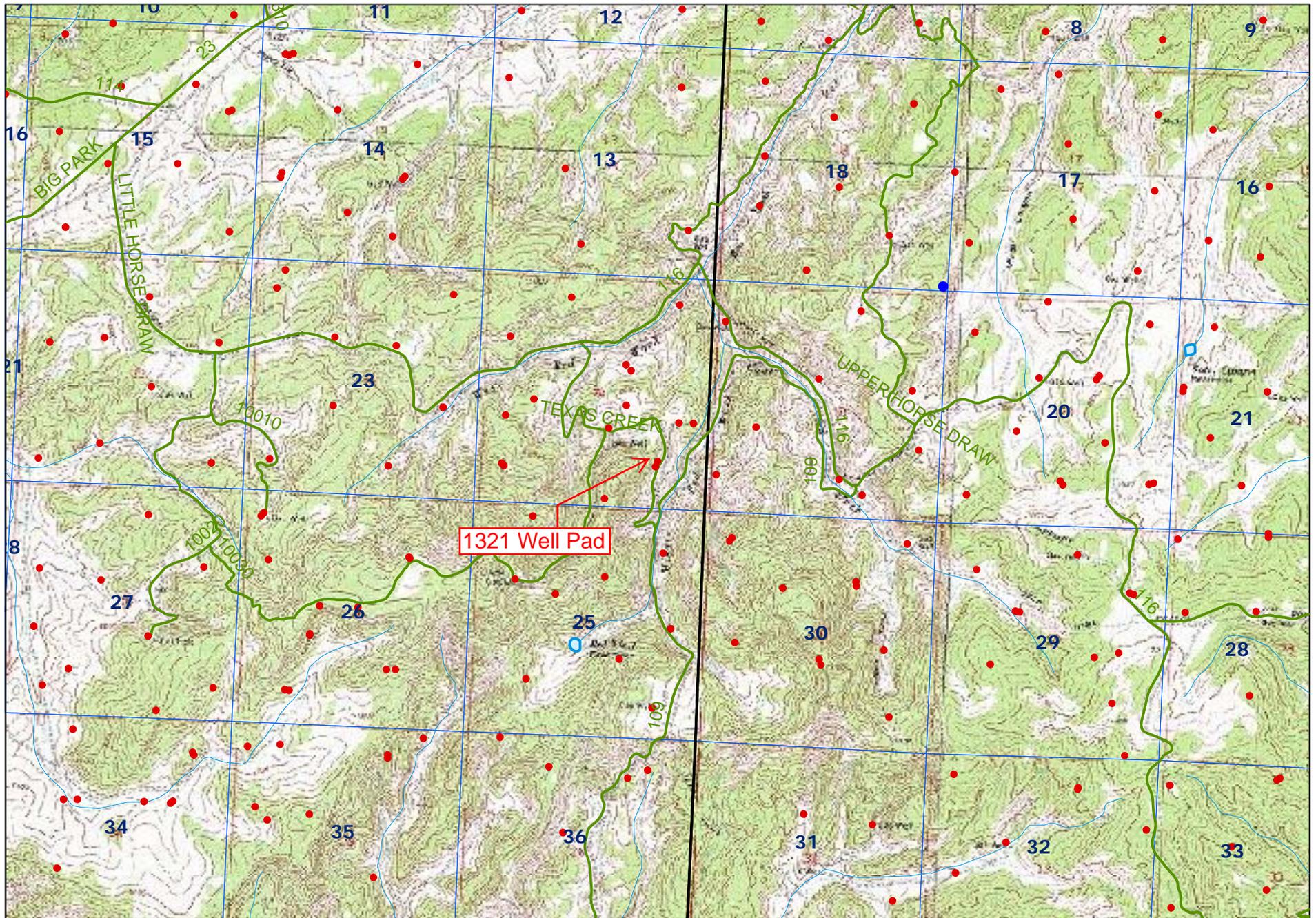
In the event that groundwater contamination is identified, or the depth of contamination makes removal of impacted material through conventional excavation impractical, the vertical and lateral extent of contamination would be determined by a third party contractor and an appropriate insitu remediation and monitoring plan would be developed and submitted to the COGCC for prior approval.

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

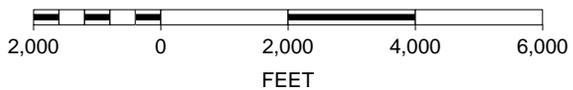
Final onsite disposition of E&P waste would be detailed in the Notification of Completion, and if necessary in a Form 4 (Sundry Notice). Documentation of offsite disposal of E&P waste generated during this project would be kept on record at Encana's Parachute Field Office and would be available upon request.



# 1321 Topographic Map



SCALE 1 : 36,000



# 1321 Aerial Map



SCALE 1 : 1,244

