

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

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



#7251

FOR OGCC USE ONLY

**RECEIVED**  
**6/27/2012**

**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 Employee: \_\_\_\_\_

Spill                      Complaint  
Inspection              NOAV

Tracking No: \_\_\_\_\_

OGCC Operator Number: \_\_\_\_\_

Name of Operator: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Contact Name and Telephone: \_\_\_\_\_

No: \_\_\_\_\_

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                      \_\_\_\_\_                      \_\_\_\_\_

**REMEDIAL 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.:

Produced Water Pits

2254  
PB15  
PD 21

PH 16  
PI 20  
PP 20

FORM  
27  
Rev 6/99

State of Colorado  
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REMEDATION WORKPLAN (Cont.)

Tracking Number: \_\_\_\_\_  
Name of Operator: ENCANA  
OGCC Operator No: \_\_\_\_\_  
Received Date: 06/27/2012  
Well Name & No: South Picance Pits (5)  
Facility Name & No: See attached list.

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: <u>See attached</u>	Date Site Investigation Completed: <u>See attached</u>	Date Remediation Plan Submitted: <u>06/27/2012</u>
Remediation Start Date: <u>See attached</u>	Anticipated Completion Date: <u>See attached</u>	Actual Completion Date: <u>See attached</u>

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

Print Name: Christopher C. Hines

Signed: [Signature]

Title: Environmental Field Coordinator | Natural Resources Specialist

Date: 06/27/2012

OGCC Approved: [Signature]

Title: FOR

Date: 08/07/2012

Chris Camfield  
Linda Spry O'Rourke } EPS NW Region

# NARRATIVE ATTACHMENT

## FORM 27 (SITE INVESTIGATION AND REMEDIATION WORKPLAN)

### South Piceance – Pit Closures

Document Date – 06/26/2012

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This Form 27 (Site Investigation and Remediation Workplan) was prepared for the purpose of generating remediation project numbers for multiple pit closures in Encana Oil & Gas (USA) Inc. (Encana's) South Piceance area of operations. The document includes a spreadsheet listing the pit locations with applicable facility and site-specific information. Also included are topographic location maps illustrating the locations covered by this form.

This multi-location submittal is intended to start the document trail for each identified location, and provide an overview of Encana's general approach to remediation of potential below-liner impacts identified during pit closure activities. Site-specific information related to pit dimensions, associated impacts, and remediation activities will be provided in the required Form 19 (Spill / Release Report), Notification of Completion, and Form 4 (Sundry Notice).

## REMEDIATION WORKPLAN

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

All activities conducted in support of this pit closure project were carried out in accordance with COGCC Rules 905, 907, and 909 for conducting a site investigation in support of pit closures.

The following activities have, or will be carried out in support of pit closure activities conducted in support of this project:

- 905.b(2) & 905.b(4) – All above-liner fluids and solids will be removed from the pit and will be reused or disposed of at a permitted disposal facility under manifest.
- 905.b(3) – Liners will be removed, and reused/recycled or disposed of at a permitted disposal facility under manifest.
- 905.b(4) – Representative samples will be collected from the pit bottom following removal of the pit liner and will be analyzed for compliance with COGCC Table 910-1.
  - 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 liner 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 liner and subsequent release of fluids.
  - If below-liner 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.



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

## **South Piceance – Pit Closures**

Document Date – 06/26/2012

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

Any impacted material identified below the liner would 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 Sundry Notice and Notification of Completion for this remediation project.

Any impacts identified below the liner 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-liner 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, and 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) and Notification of Completion.
  - If cuttings are present on location, an effort will be made to utilize the below-grade capacity of the pit and dispose of the cuttings during the pit closure. Any disposal of cuttings in this fashion would be conducted in accordance with Rule 907 and demonstrated through sample collection and laboratory analysis carried out in accordance with Rule 910. Utilization of this disposal option would be identified in the Form 4 (Sundry Notice) and 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.

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 Sundry Notice (Form 4) and 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.



# NARRATIVE ATTACHMENT

## FORM 27 (SITE INVESTIGATION AND REMEDIATION WORKPLAN)

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### South Piceance – Pit Closures

Document Date – 06/26/2012

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**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 pit occurs within the pad boundary for this location. During reclamation the backfilled pit may be part of the pad's working surface and/or covered by recontoured and reseeded slopes installed to meet reclamation objectives. Interim and final reclamation activities will be carried out in accordance with COGCC 1000 Series requirements, and will be documented accordingly.

**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 a Form 19, if applicable, and/or in the Sundry Notice (Form 4) and Notification of Completion. A site diagram showing the location of collected samples will also be provided.

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 Sundry Notice(s) (Form 4) and Notification(s) of Completion. 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 / is available upon request.





# Form 27 (Site Investigation Remediation Workplan)

## Multi-Location Form Submittal

### Site Specific Information

06/27/2012

Encana Location	CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED (p1)								
	API Number:	County:	Facility Name:	Facility Number:	Well Name:	Well Number:	Location: (QtrQtr, Sec, Twp, Rng, Meridian):	Latitude:	Longitude:
J25W	425761 (Facility ID)	Garfield	J25W	25	N/A (J25W Well Pad)	334270 (Location ID)	NWSE, Sec 25, T7s, R93W, 6th PM	39.4142	-107.7207
PB15	418329 (Facility ID)	Garfield	PB-15	-	N/A (PB15 Well Pad)	334653 (Location ID)	NWNE, Sec 15, T7S, R95W, 6th PM	39.44281	-107.9824
PD21	425753 (Facility ID)	Garfield	PD	21	N/A (PD21 Location)	334732 (Location ID)	NWNW, Sec 21, T7S, R95W, 6th PM	39.42928	-108.0077
PH16	425759 (Facility ID)	Garfield	PH	16	N/A (PH16 Well Pad)	335026 (Location ID)	NENE, Sec 16, T7S, R95W, 6th PM	39.44164	-107.9941
PI20	425760 (Facility ID)	Garfield	PI	20	N/A (PI20 Well Pad)	335039 (Location ID)	NESE, Sec 20, T7S, R95W, 6th PM	39.42159	-108.0117
PP20	425762 (Facility ID)	Garfield	PP	20	N/A (PP20 Well Pad)	334996 (Location ID)	SESE, Sec 20, T7S, R95W, 6th PM	39.4184	-108.0136

## Multi-Location Form Submittal

### Site Specific Information

Encana Location	TECHNICAL CONDITIONS (p1)				
	Type of Waste Causing Impact:	Sensitive Area:	Adjacent land use:	Soil Type:	Potential Receptors: (water wells, surface waters)
J25W	Produced water was stored in the pit.	<b>NO</b> - Based on distance to surface water (>4,200 ft), and depth to groundwater (>50 ft).	rangeland	Ascalon-Pena complex, 6 to 25 percent slopes	According to the COGCC GIS OnLine mapping service there is no surface water or wells within ¼ mile of the well pad.
PB15	Produced water was stored in the pit.	<b>NO</b> - Based on distance to surface water (>800 ft), and depth to groundwater (>80 ft).	pastureland	Potts loam, 6 to 12 percent slopes	According to the COGCC GIS OnLine mapping service there is one perennial stream (Battlement Creek), and 2 water wells within ¼ mile of the well pad.
PD21	Produced water was stored in the pit.	<b>NO</b> - Based on distance to surface water (>1,800 ft), and depth to groundwater (>50 ft).	rangeland	Potts loam, 6 to 12 percent slopes	According to the COGCC GIS OnLine mapping service there is one intermittent stream (Monument Gulch), and no wells within ¼ mile of the well pad.
PH16	Produced water was stored in the pit.	<b>NO</b> - Based on distance to surface water (>300 ft), and depth to groundwater (>50 ft).	rangeland	Ildefonso stony loam, 6 to 25 percent slopes	According to the COGCC GIS OnLine mapping service there is no surface water or wells within ¼ mile of the well pad.
PI20	Produced water was stored in the pit.	<b>NO</b> - Based on distance to surface water (>500 ft), and depth to groundwater (>90 ft).	rangeland	Ildefonso stony loam, 25 to 45 percent slopes	According to the COGCC GIS OnLine mapping service there is one intermittent stream (unnamed), and no wells within ¼ mile of the well pad.
PP20	Produced water was stored in the pit.	<b>NO</b> - Based on distance to surface water (>700 ft), and depth to groundwater (>90 ft).	rangeland	Ildefonso stony loam, 6 to 25 percent slopes	According to the COGCC GIS OnLine mapping service there is one intermittent stream (unnamed), and no wells within ¼ mile of the well pad.

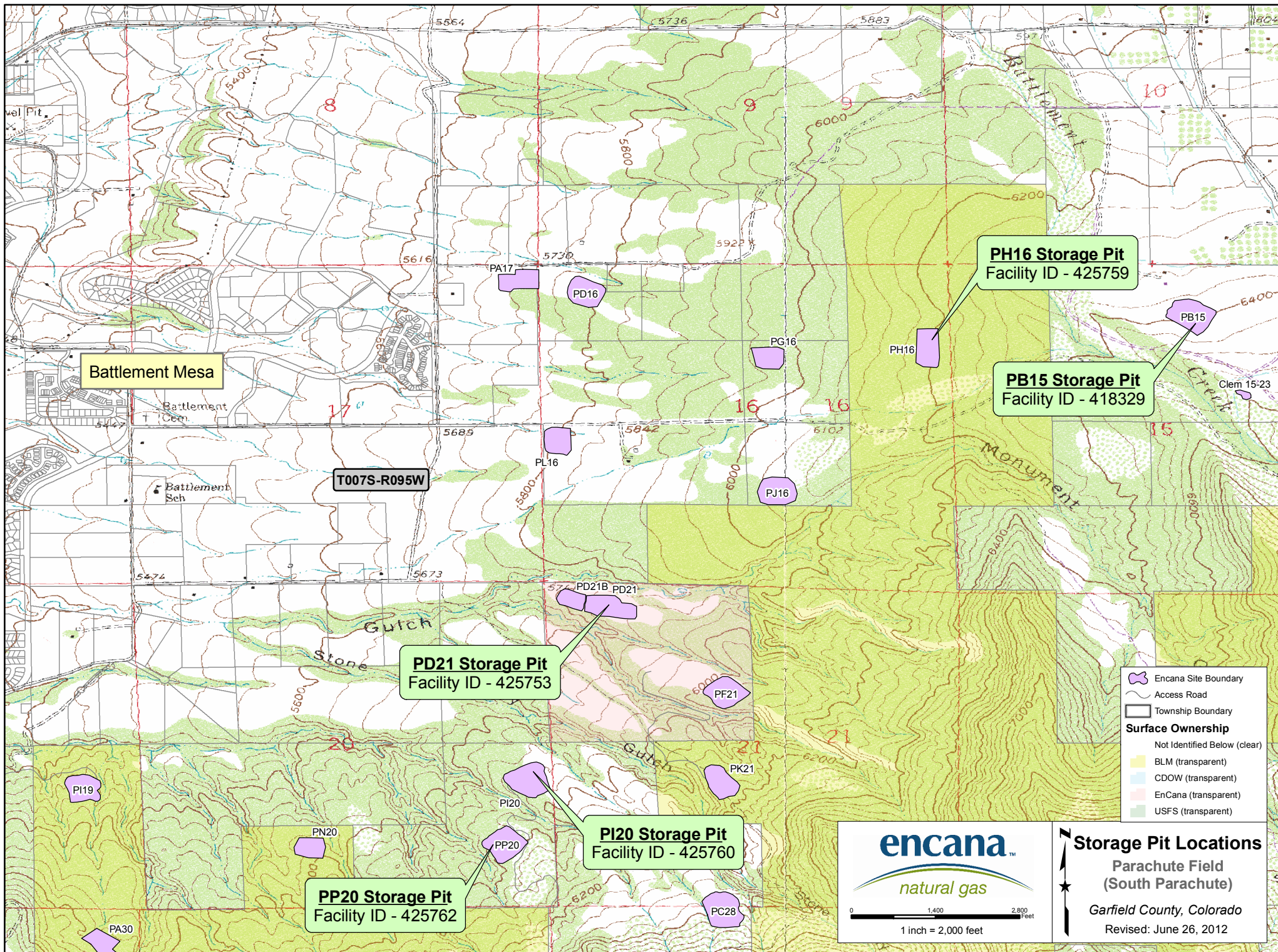


**Form 27 (Site Investigation Remediation Workplan)**  
**Multi-Location Form Submittal**  
**Site Specific Information**

06/27/2012

Encana Location	IMPLEMENTATION SCHEDULE (p2)					
	Date Site Investigation Began:	Date Site Investigation Completed:	Date Remediation Plan Submitted:	Remediation Start Date:	Anticipated Completion Date:	Actual Completion Date:
J25W	03/25/2011	04/08/2011	see attached	NA	04/08/2011	04/08/2011
PB15	08/15/2010	08/30/2010	see attached	NA	08/30/2010	08/30/2010
PD21	04/20/2010	09/02/2010	see attached	06/02/2010	09/02/2010	09/02/2010
PH16	05/20/2009	04/01/2010	see attached	10/08/2009	03/17/2010	03/17/2010
PI20	06/01/2010	06/11/2010	see attached	NA	06/11/2010	06/11/2012
PP20	06/01/2010	06/24/2010	see attached	06/11/2010	06/24/2010	06/24/2010









0 2,200 4,400 Feet  
1 inch = 3,000 feet

# J25W Storage Pit Mamm Creek Garfield County, Colorado

Revised: June 26, 2012

- Encana Site Boundary
- Access Road
- Township Boundary
- Surface Ownership
  - Not Identified Below (clear)
  - BLM (transparent)
  - CDOW (transparent)
  - EnCana (transparent)
  - USFS (transparent)

