

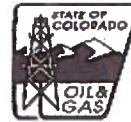
FORM

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



#6321

FOR OGCC USE ONLY

**RECEIVED**  
 9/27/2011

## 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): Lined Earthen Pit/Northwest Location

OGCC Employee:

☐ Spill ☐ Complaint  
☐ Inspection ☐ NOAV

Tracking No: 2523712

OGCC Operator Number: 100185

Name of Operator: Encana Oil &amp; Gas (USA) Inc.

Address: 2717 County Road 215, Suite 100

City: Parachute

State: CO Zip: 81635

Contact Name and Telephone:

Chris Hines - Environmental Field Coordinator

No: 970.285.2653

Fax: 970.285.2705

API Number: 335573 (Location ID)

County: Garfield

Facility Name: N. Parachute (Location Name)

Facility Number: EF G29 595 (Location No) / PIT Facility ID 425550 (we

Well Name: NA - Multiple Wells

Well Number: NA-Multiple Wells

425551 (East Pit)

Location: (QtrQtr, Sec, Twp, Rng, Meridian): SWNE 29 5S 95W 6th

Latitude: 39.58581

Longitude: -108.07428

### TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): Production Fluids

**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, well pad

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Nihill channery loam, 6 to 25 percent slopes

Potential receptors (water wells within 1/4 mi, surface waters, etc.): East Fork of Parachute Creek is located 200 feet north of the site;

depth to seasonal groundwater is estimated to be greater than 40 feet below ground surface.

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

Impacted Media (check):

☒ Soils☐ Vegetation☐ Groundwater☐ Surface Water

Extent of Impact:

See Attached

How Determined:

See Attached

### REMEDIAL WORKPLAN

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

See Attached

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

See Attached

**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.:**

See Attached

Submit Page 2 with Page 1

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



Tracking Number: \_\_\_\_\_  
Name of Operator: \_\_\_\_\_  
OGCC Operator No: \_\_\_\_\_  
Received Date: \_\_\_\_\_  
Well Name & No: (West & East P1/S)  
Facility Name & No: P1/S 425550 / 425551

Page 2

**REMEDIAL 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: <u>6/29/2010</u>	Date Site Investigation Completed: <u>9/30/2011</u>	Date Remediation Plan Submitted: <u>9-27-11</u>
Remediation Start Date: <u>6/29/2010</u>	Anticipated Completion Date: <u>TBD</u>	Actual Completion Date: <u>TBD</u>

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

Print Name: Chris Hines

Signed: \_\_\_\_\_

Title: Environmental Field Coordinator

Date: 9-27-11

OGCC Approved: \_\_\_\_\_

Title: FOR Chris Canfield

Date: 10/13/2011

EPS NW Region

COA : Provide periodic reports  
to document Remediation progress.

# NARRATIVE ATTACHMENT

## FORM 27 (SITE INVESTIGATION AND REMEDIATION WORKPLAN)

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### G29 Well Pad Pit Closure – 335573 (Location ID)

Document Date – 09/23/2011

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## TECHNICAL CONDITIONS

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

Based on 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, the East Fork of Parachute Creek is located approximately 200 feet north of the well pad. There are no water wells located within ¼ mile of the well pad.

## REMEDIATION WORKPLAN

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

Encana is submitting the attached Form 27 Remediation Workplan as followup to a Form 19 Spill Release Report (Spill #2523712) submitted to the Colorado Oil and Gas Conservation Commission (COGCC) on June 29, 2010. Encana notified the COGCC of a liner failure from the pit which was identified when soil beneath the liner was sampled. The pit was constructed prior to April 1, 2009, and was comprised of two lined pits connected by a weir. The soil beneath the liner was found to be impacted with total petroleum hydrocarbons (TPH), benzene, benzo(b)fluoranthene, and indeno(1,2,3,c,d)pyrenes concentrations that exceeded the concentration levels listed on COGCC Table 910-1. Additionally, the soil beneath the liner exceeded the Table 910-1 concentration levels for electrical conductivity (EC), sodium adsorption ratio (SAR), and pH. Each of the remaining Table 910-1 analytes sampled were within background concentrations or in compliance with COGCC concentration levels. Site location and site maps are provided as Figures 1 and 2. The laboratory analytical results for the soil samples collected from the potholes are summarized in Table 1.

Encana excavated impacted soil from the floor of the east pit at the site. To assess the vertical and lateral extent of hydrocarbon impacted soil, Encana excavated potholes in the floors of the east and west pits in June, August, September, and October 2010. Soil samples were collected from potholes excavated in the floors of the two pits and were submitted to a contract laboratory for analysis of TPH, benzene, benzo(b)fluoranthene, and indeno(1,2,3,c,d)pyrenes. Analytical results indicated TPH, benzene, benzo(b)fluoranthene, and indeno(1,2,3,c,d)pyrenes concentrations were vertically defined in the east pit to concentrations that were in compliance with the COGCC Table 910-1. However, TPH concentrations in the west pit still exceeded the concentration level in Table 910-1 at depth. Following pothole excavation activities, the pits were backfilled with clean material due to safety concerns and to continue assessing hydrocarbon impacted soil at the site.



# **NARRATIVE ATTACHMENT**

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

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### **G29 Well Pad Pit Closure – 335573 (Location ID)**

Document Date – 09/23/2011

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On August 16 and August 17, 2011, six soil borings (G29-SB01 through G29-SB06) were advanced at the site. A soil boring location map is provided as Figure 3. Soil borings G29-SB03 and G29-SB04 were advanced in the western pit at the site, where Encana was unable to define hydrocarbon impacted soil vertically in October 2010. Soil boring G29-SB02 was advanced in the east pit and soil borings G29-SB01, G29-SB05, and G29-SB06 were advanced upgradient and downgradient of the pits. Each of the soil borings was advanced to a total depth ranging from 40 feet to 41 feet below ground surface (bgs). During drilling photo-ionization (PID) readings were minimal and petroleum hydrocarbon staining was not observed in soil borings G29-SB01, G29-SB05, and G29-SB06; therefore, one soil sample was submitted to a contract laboratory from the terminus at each soil boring location. Due to staining and elevated field screen readings, multiple soil samples were submitted from soil borings G29-SB02, G29-SB03, and G29-SB04. All of the soil samples were submitted for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) and TPH. The TPH results were reported as gasoline range organics (GRO) and diesel range organics (DRO).

Soil analytical results indicated BTEX and TPH concentrations in samples collected from borings G29-SB01, G29-SB05, and G29-SB06 were in compliance with the concentration levels listed in COGCC Table 910-1.

BTEX concentrations in soil samples G29-SB03 20'-22' and G29-SB04 26'-28' were in compliance with COGCC Table 910-1 concentrations levels. However, petroleum hydrocarbon impacts were encountered in soil borings G29-SB03 and G29-SB04 at a depth ranging from 20 feet to 22 feet bgs and 26 feet to 28 feet bgs, respectively. TPH concentrations exceeded Table 910-1 at concentrations of 1,909.7 milligrams per kilogram (mg/kg) in G29-SB03 20'-22' and 2,566 mg/kg in G29-SB04 26'-28'. Both BTEX and TPH concentrations for soil samples collected at the terminus of borings G29-SB03 (G29-SB03-38'-40') and MW04 (G29-SB04-39'-41') were in compliance with Table 910-1 concentration levels.

BTEX concentrations for soil samples G29-SB02 19'-21' and G29-SB02 39'-41' were in compliance with COGCC Table 910-1 concentration levels. Petroleum hydrocarbon impacts were encountered in boring G29-SB02 at depths ranging from 19 feet to 21 feet bgs and 39 feet to 41 feet bgs. The TPH concentrations for both of the samples collected from soil boring G29-SB02 exceeded Table 910-1 at concentrations of 8,520 mg/kg and 5,300 mg/kg, respectively.

A cross-section diagram visually representing TPH concentrations in the soil subsurface is provided as Figure 4. The analytical results for the soil samples collected from the soil borings are summarized in Table 2.



# **NARRATIVE ATTACHMENT**

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

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### **G29 Well Pad Pit Closure – 335573 (Location ID)**

Document Date – 09/23/2011

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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.:

Encana proposes installing additional soil borings to the north, east, and west of G29-SB02. Soil vapor extraction (SVE) wells (G29-SVE01 through G29-SVE05) will be installed to evaluate the efficacy of and derive design parameters for a passive SVE system. Before installing the SVE wells, soil samples will be collected from soil borings G29-SVE01 and G29-SVE04 to define the vertical and horizontal extents of hydrocarbon impacted soils near G29-SB02. Figure 5 presents the proposed SVE well locations.

Once the extent of soil impact has been defined, Encana will conduct an SVE system pilot test. Following the pilot test, a passive SVE system will be installed and will involve affixing wind-driven turbines to G29-SVE01 through G29-SVE05 to induce air flow into the soil subsurface. The induced air flow promotes volatilization of hydrocarbons entrained on the soil and provides oxygen to indigenous and augmented microbes, thereby promoting remediation of impacted unsaturated soils. If limited flow and remediation activity result from the passive SVE system, Encana will have completed the pilot test and have the necessary SVE wells in place to evaluate an appropriate active SVE system.

Encana will conduct air monitoring consisting of PID, carbon monoxide, oxygen, hydrogen sulfide, and carbon dioxide readings from each well on a quarterly basis. One air sample from the passive SVE well with the highest PID reading will be collected quarterly. The samples will be analyzed for BTEX, GRO, and DRO. The analytical results will be evaluated for potential air permitting requirements and passive SVE well performance.

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

Groundwater was not encountered during drilling activities. The pits were located approximately 200 feet south of the East Fork of Parachute Creek. Due to the proximity of the East Fork of Parachute Creek to the site, Encana collected surface water samples downgradient of the site when water was available. Surface water samples were collected in April, May, June, and July 2011 for analysis of BTEX, methyl-tert-butyl-ether (MTBE), halides, anions, cations, and general water quality parameters. Analytical results indicate the analytes sampled were in compliance with the Colorado Department of Public Health and Environment (CDPHE) and United States Environmental Protection Agency (EPA) standards. Encana will continue to collect surface water samples downgradient of the site on a quarterly basis when water is available.





# NARRATIVE ATTACHMENT

## FORM 27 (SITE INVESTIGATION AND REMEDIATION WORKPLAN)

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### G29 Well Pad Pit Closure – 335573 (Location ID)

Document Date – 09/23/2011

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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.

Following pothole excavation activities in October 2010, the pits were backfilled with clean material and recontoured in accordance with the interim reclamation specified in the Application for Permit to Drill for wells at this facility.

The EC, SAR, and pH levels for soil samples collected from the floors of the eastern and western pits exceeded the COGCC Table 910-1 concentration level. However, Frequently Asked Question Number 31 on the COGCC website indicates that the COGCC will only apply the Table 910-1 concentration levels for EC, pH, and SAR to soils that are within three feet of the ground surface. As such, the COGCC requires that materials with elevated EC, pH, or SAR concentrations be buried under a minimum of three feet of Table 910-1 compliant backfill cover. Although EC, pH, and SAR are parameters used to ensure proper reclamation of disturbed areas, limited exceedances of these parameters below the required three feet of cover will not affect reclamation, as the pit bottom was buried below the vegetative root zone.

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 remediation workplan for this site will be carried out as described above. All analytical data collected in support of this remediation workplan 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.

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

All remaining hydrocarbon impacted soil will be remediated *in situ* via passive SVE wells.



## FIGURES











# LEGEND

- COMPOSITE SAMPLE POINT
- ▲ BACKGROUND GRAB SAMPLE
- PIT BOUNDARY
- ..... CUTTINGS STOCK PILE
- - - - - EDGE OF WORKING SURFACE AND PERIMETER CONTROLS
- EDGE OF DISTURBANCE
- . - . - EAST FORK PARACHUTE CREEK
- ACCESS ROAD

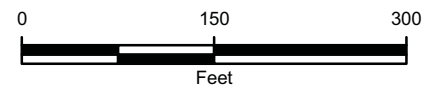


FIGURE 2  
SITE MAP  
WELL PAD G29  
SWNE 29 5S 95W  
GARFIELD COUNTY, COLORADO  
ENCANA OIL AND GAS (USA) INC.

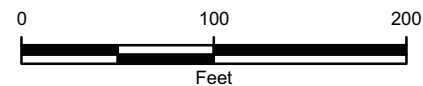




IMAGE COURTESY OF USDA/NRCS, 2009

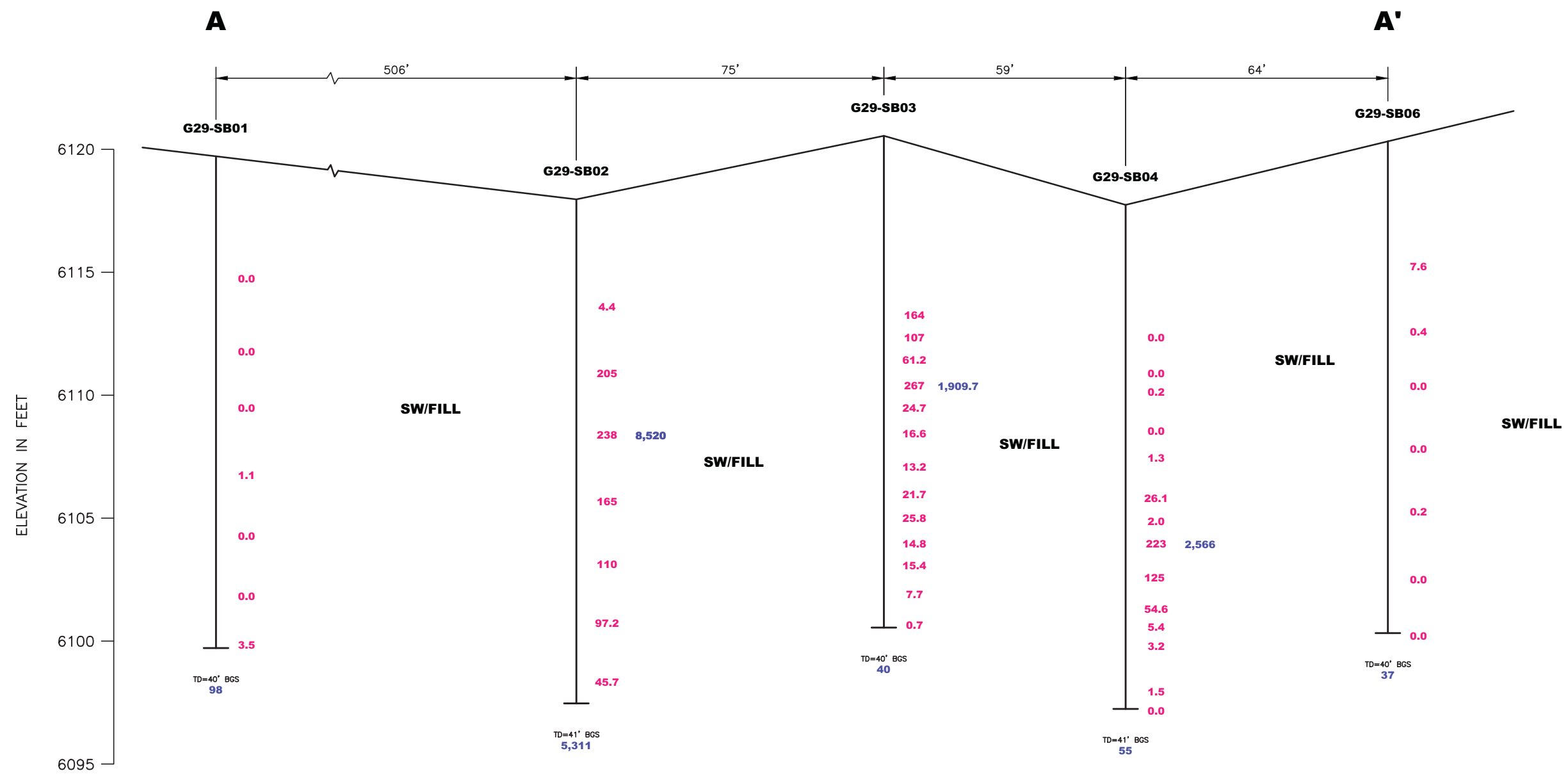
# **LEGEND**

- SOIL BORING
- OIL AND GAS WELL



**FIGURE 3**  
**SOIL BORING LOCATION MAP**  
**WELL PAD G29**  
**SWNE 29 5S 95W**  
**GARFIELD COUNTY, COLORADO**  
**ENCANA OIL AND GAS (USA) INC.**





**LEGEND**

- SW/FILL** WELL GRADED SANDS, GRAVELLY SANDS, LITTLE TO NO FINES, FILL MATERIAL
- GROUND SURFACE
- | BOREHOLE
- TD TOTAL DEPTH IN FEET BGS
- BGS BELOW GROUND SURFACE

- 0.0** PHOTO-IONIZATION DETECTOR READING (PARTS PER MILLION)
- 98** TOTAL PETROLEUM HYDROCARBONS DIESEL RANGE ORGNICS/GASOLINE RANGE ORGNICS IN MILLIGRAMS PER KILOGRAM (mg/kg)

HORIZONTAL SCALE  
1" = 30'

VERTICAL SCALE  
1" = 10'

**FIGURE 4**  
**CROSS-SECTION A-A'**  
**WELL PAD G29**  
**SWNE 29 5S 95W**  
**GARFIELD COUNTY, COLORADO**  
**ENCANA OIL & GAS (USA) INC.**

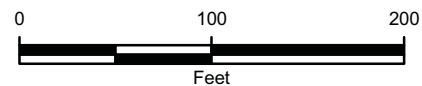




IMAGE COURTESY OF USDA/NRCS, 2009

## LEGEND

- ▲ 2 INCH SOIL VAPOR EXTRACTION WELL
- ▲ 4 INCH SOIL VAPOR EXTRACTION WELL
- SOIL BORING
- OIL AND GAS WELL



**FIGURE 5**  
**PROPOSED SOIL VAPOR EXTRACTION WELL LOCATION MAP**  
**WELL PAD G29**  
**SWNE 29 5S 95W**  
**GARFIELD COUNTY, COLORADO**  
**ENCANA OIL AND GAS (USA) INC.**



## TABLES





TABLE 1

Laboratory Results Summary Table

09/27/2011

Analytes (BDL = Below Detection Limit; ND = Non Detect)

Sample Tracking <a href="#">Project Tracking</a>				Allowable Concentration -->	Organic Compounds in Soil (mg/kg [ppm])																		Inorganics in Soil			Metals in Soil (mg/kg [ppm])													
Location	Sample Date:	Sample Matrix	Matrix Notes		500	TPH-GRO (C6-C10) Low Fraction	TPH-DRO (C10-C36) High Fraction	Benzene	Toluene	Ethylbenzene	Xylenes - total	Acenaphthene	Anthracene	Benzo(A)anthracene	Benzo(B)fluoranthene	Benzo(K)fluoranthene	Benzo(A)pyrene	Chrysene	Dibenzo(A,H)anthracene	Fluoranthene	Fluorene	Naphthalene	Pyrene	EC (<4 mmhos/cm or 2x background)	SAR (calculation)	pH	Arsenic	Barium - EPA Total Barium	Cadmium	Chromium (III)	Chromium (VI)	Copper	Lead (inorganic)	Mercury	Nickel (soluble salts)	Selenium	Silver	Zinc	
G29	06/29/10	<a href="#">Background</a>	SW background																																				
G29	06/29/10	<a href="#">Background</a>	SE background	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.81	2.77	9.11	17.4	297	BDL	21.6	BDL	22.4	13	BDL	17	BDL	BDL	51.4	
G29	06/29/10	<a href="#">Cuttings</a>		306	ND	306	ND	ND	ND	ND	ND	ND	ND	0.071	0.03	0.0364	0.053	ND	0.038	ND	0.038	ND	0.164	0.0447	2.48	7.95	9.27	11.2	5960	BDL	17.5	BDL	24.4	13.4	BDL	16.3	BDL	BDL	57.8
G29	08/18/11	<a href="#">Cuttings</a>		180	BDL	180	BDL	BDL	BDL	BDL	BDL	0.19	1	1.6	0.38	0.53	1.3	0.26	2.4	BDL	0.13	0.92	2.1	20	8.1	1.9	5800	0.44	7.6	BDL	32	9.3	0.22	5.3	BDL	BDL	38		
G29	06/29/10	<a href="#">Pit</a>	composite of both pits	7506	336	7170	0.184	0.389	0.0851	3.19	0.523	ND	ND	0.305	ND	ND	ND	ND	ND	2.47	1.9	ND	5.61	22.5	9.34	11.9	4500	BDL	14.1	BDL	26.4	10.8	BDL	11.3	BDL	BDL	61.2		
G29	08/26/10	<a href="#">Pit</a>	W pit bottom	3101.7	1.7	3100	BDL							0.007		BDL																							
G29	08/26/10	<a href="#">Pit</a>	W pit spoil	2800	BDL	2800	BDL							0.01		BDL																							
G29	08/26/10	<a href="#">Pit</a>	E pit bottom	3000	BDL	3000	BDL							0.049		0.01																							
G29	08/26/10	<a href="#">Pit</a>	E pit spoil	1300	BDL	1300	BDL							BDL		BDL																							
G29	09/14/10	<a href="#">Pit</a>	E pit bottom	421.2	1.2	420																																	
G29	09/14/10	<a href="#">Pit</a>	W pit bottom	1240	40	1200																																	
G29	09/28/10	<a href="#">Pit</a>	blend of cuttings and pit spoil	359.9	18.9	341									0.0096																								
G29	10/05/10	<a href="#">Pit</a>	W pit bottom - middle test pit - 12'	189.3	14.3	175																																	
G29	10/05/10	<a href="#">Pit</a>	MOI from N wall where the wier was re	608	107	501																																	
G29	10/05/10	<a href="#">Pit</a>	W pit bottom - W test pit - 14'	3734	354	3380																																	
G29	10/05/10	<a href="#">Pit</a>	W pit bottom - E test pit - 12'	10870	470	10400																																	



TABLE 2  
SOIL ANALYTICAL DATA  
WELL PAD G29  
GARFIELD COUNTY, COLORADO  
ENCANA OIL & GAS (USA) INC.

Soil Sample ID	Date	Depth (ft bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH (mg/kg)
G29 SB01-38'- 40'	8/17/2011	38-40	<0.0050	<0.025	<0.0050	0.04	<0.5	98	98
G29 SB02-19'- 21'	8/16/2011	19-21	<0.050	<0.25	0.23	3.2	120	8,400	<b>8,520</b>
G29 SB02-39'- 41'	8/16/2011	39-41	<0.050	<0.25	<0.050	0.18	11	5,300	<b>5,311</b>
G29 SB03-20'- 22'	8/16/2011	20-22	<0.050	<0.25	<0.050	0.44	9.7	1,900	<b>1,909.7</b>
G29 SB03-38'- 40'	8/16/2011	38-40	<0.0050	<0.025	<0.0050	<0.015	<0.5	40	40
G29 SB04-26'- 28'	8/16/2011	26-28	<0.050	<0.25	<0.050	2	66	2,500	<b>2,566</b>
G29 SB04-39'- 41'	8/16/2011	39-41	<0.0050	<0.025	<0.0050	<0.015	<0.5	55	55
G29 SB05-38'- 40'	8/17/2011	38-40	<0.0050	<0.025	<0.0050	<0.015	<0.5	33	33
G29 SB06-38'- 40'	8/17/2011	38-40	<0.0050	<0.025	<0.0050	<0.015	<0.5	37	37
<b>COGCC Allowable Level</b>			<b>0.17</b>	<b>85</b>	<b>100</b>	<b>175</b>	--	--	<b>500</b>

**NOTES:**

mg/kg - milligrams per kilogram

ft bgs - feet below ground surface

TPH-GRO - Total petroleum hydrocarbons - gasoline range organics analyzed by EPA Modified Method 8015D

TPH-DRO - Total petroleum hydrocarbons - diesel range organics analyzed by EPA Method 3546

TPH - total petroleum hydrocarbons GRO/DRO

-- No standard

< - indicates result is less than the stated laboratory practical quantitation limit

**BOLD** - indicates result exceeds the COGCC Allowable Level

COGCC - Colorado Oil and Gas Conservation Commission

Benzene, toluene, ethylbenzene, and total xylenes analyzed by EPA Method 8260B

COGCC Allowable Level taken from 2 CCR 404-1, Table 910-1, effective April 2009



Table 3

Site Identification: ENPR26ST

Sample Location: North Parachute Ranch (East Fork)

**Laboratory Analytical Report Summary**

## Analytical Results

Test Parameter	Units	4/28/2011	6/27/2011	7/21/2011	Regulatory Standards	
					Level	Reference Number
Chloride	mg/l	10.0	7.8	6.1	250	1,5
Fluoride	mg/l	0.16	0.29	0.25	4.0	1
Bromide	mg/l	<1.0	<1.0	<1.0	none	N/A
Nitrate	mg/l	0.78	0.79	0.5	10.0	1,2,3,4
Nitrite	mg/l	<0.10	<0.10	<0.10	1.0	1
Sulfate	mg/l	31.0	40.0	38.0	250	1,5
Ammonia mg/l		<0.10	<0.10	<0.10	none	N/A
pH	su	7.9	8.2	8.4	6.5-8.5	1,3,5
Specific conductance	µmhos/cm	500	530	520	none	N/A
Dissolved Solids	mg/l	300	330	320	500	1,5
Arsenic mg/l		<0.020	<0.020	<0.020	0.01	2
Barium	mg/l	0.073	0.072	0.071	2.0	2,4
Cadmium	mg/l	<0.0050	<0.0050	<0.0050	0.005	2,4
Calcium	mg/l	50.0	52.0	54.0	none	N/A
Chromium	mg/l	<0.010	<0.010	<0.010	0.1	2,3
Copper	mg/l	<0.020	<0.020	<0.020	1	4,5
Iron	mg/l	<0.10	<0.10	<0.10	5.0	3
Lead	mg/l	<0.0050	<0.0050	<0.0050	0.015	4
Magnesium	mg/l	20.0	25.0	26.0	none	N/A
Manganese	mg/l	<0.010	<0.010	<0.010	0.05	5
Selenium mg/l		<0.020	<0.020	<0.020	0.05	2,4
Potassium	mg/l	0.71	1.8	1.8	none	N/A
Silver	mg/l	<0.010	<0.010	<0.010	0.05	2
Sodium	mg/l	30.0	31.0	31.0	none	N/A
Benzene	mg/l	<0.0010	<0.0010	<0.0010	0.005	3
Toluene	mg/l	<0.0050	<0.0050	<0.0050	1	4
Ethylbenzene	mg/l	<0.0010	<0.0010	<0.0010	0.7	4
Total Xylene	mg/l	<0.0030	<0.0030	<0.0030	10	4
Methane	mg/l	<0.010	<0.010	<0.010	none	N/A
Ethane	mg/l	<0.013	<0.013	NT	none	N/A
Ethene	mg/l	<0.013	<0.013	NT	none	N/A
Sulfide	mg/l	<0.050	<0.050	<0.050	none	N/A
Methyl tert-butyl ether (MTBE)	mg/l	<0.0010	<0.0010	<0.0010	none	N/A
Alkalinity	mg/l	220	260	250	none	N/A
Alkalinity, Bicarbonate	mg/l	210	260	240	none	N/A
Alkalinity, Carbonate	mg/l	<20.0	<20.0	<20.0	none	N/A

## Notes:

\*-units in mS/cm

\*\*-units in ug/L

mg/l = milligrams per liter

µg/l = micrograms per liter

NT = Not tested

µmhos/cm = micromhos per centimeter

NTU = nephelometric turbidity units

pH = parts of hydrogen

su = standard unit

BDL = below detection limit

## Standard Reference Numbers:

Standard 1 = Colorado Department of Public Health and Environment Drinking Water Regulations Maximum Contaminant Levels

Standard 2 = Colorado Department of Public Health and Environment Water Quality Control Commission Ground Water Standards - Human Health Standards

Standard 3 = Colorado Department of Public Health and Environment Water Quality Control Commission Ground Water Standards - Agricultural Standards

Standard 4 = U.S. Environmental Protection Agency National Primary Drinking Water Standards

Standard 5 = U.S. Environmental Protection Agency National Secondary Drinking Water Standards

N/A = No applicable standard exists in referenced regulations.