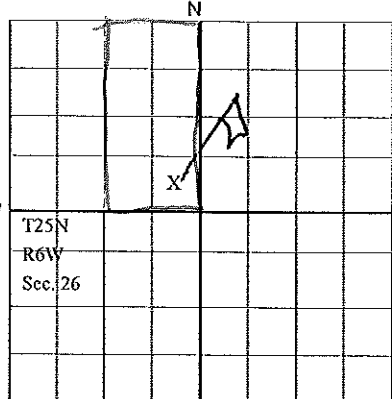




## MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE OF OIL, GAS, AND MINERALS

**APPLICATION FOR PERMIT TO:**  
☒ **DRILL** ☐ **DEEPEN** ☐ **CONVERT**  
**AND OPERATE A WELL**By authority of Part 615 or Part 625 of Act 451 PA 1994, as amended.  
Non-submission and/or falsification of this information  
may result in fines and/or imprisonment.**1a. Part 615 Supervisor of Wells**  
☒ Oil and Gas  
☐ Brine Disposal  
☐ Hydrocarbon Storage  
☐ Injection for Secondary  
Recovery**1b. Part 625 Mineral Wells**  
☐ Waste Disposal  
☐ Brine Production  
☐ Processed brine disposal  
☐ Storage  
☐ Test, fee sched. on rev.**1c. Fee enclosed**  
☒ Yes  
☐ No, revision of  
application  
☐ No, leg of horz  
drainhole

2. List all previous permit numbers		3. Fed. ID. No. (do not use SSN) 98-0087558		Locate well and outline drilling unit on section plat 
4. Conformance bond <input checked="" type="checkbox"/> Blanket <input type="checkbox"/> Single well	5. <input type="checkbox"/> Attached <input checked="" type="checkbox"/> On file	6. Bond number 105375520	7. Bond amount \$250,000	
8. Applicant (name of permittee as bonded) Encana Oil & Gas (USA) Inc.				
9. Address 370 17th Street Suite 1700 Denver, CO 80202		Phone 720-876-3989 I authorize DEQ 4 additional days to process this application. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
10. Lease or well name (be as brief as possible) State Garfield		Well number 1-26		
11. Surface owner State of Michigan				

12. Surface location SW 1/4 of SE 1/4 of NW 1/4 of Sec 26 T 25 R 6W		Township Garfield	County Kalkaska
13. If directional, bottom hole location 1/4 of 1/4 of 1/4 of Sec T R		Township	County
14. The surface location for this well is 2302 feet from nearest (N/S) N section line AND 1916 feet from nearest (E/W) W section line			
15. Is this a directional well? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, complete line 15. The bottom hole location for this well is feet from nearest (N/S) section line AND feet from nearest (E/W) section line			
16. The bottom hole location (whether straight or directional) of this well is feet from nearest (N/S) drilling unit line AND feet from nearest (E/W) drilling unit line			
17. Kind of tools <input checked="" type="checkbox"/> Rotary <input type="checkbox"/> Cable <input type="checkbox"/> Combination		18. Is sour oil or gas expected? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input checked="" type="checkbox"/> H <sub>2</sub> S Cont. plan enclosed	
19. Base of lowest known fresh water aquifer Formation Glacial Drift Depth 600'			
20. Intended total depth MD 9000 TVD 9000		21. Formation at total depth Collingwood	22. Producing/injection formation(s) Utica-Collingwood
23. Objective pool, field, or project Exploratory			

24. PROPOSED DRILLING, CASING AND CEMENTING AND SEALING PROGRAM												
HOLE			CASING				CEMENT			MUD		
Depth (MD)	Geol. Formation	Bit Dia.	O.D. Size	Wt/Ft	Grade	Condition	Depth (MD)	Sacks	T.O.C.	W.O.C	Wt.	Vis.
100'	Glacial Drift	N/A	20"		Driven	Conductor	100'	N/A	N/A	N/A	N/A	N/A
1026'	Marshall	17 1/2"	13 3/8'	68#	J55	New	700'	665	Surf.	12+	9.0	50+
4942'	Bass Island	12 1/4"	9 5/8"	40#	N80	New	4942	735	2000'	12+	10.2	28
8184'	Cabbot Head	8 1/2"	7"	26#	N80	Liner New	4600'-8184'	650	5200'	12+	10.8	30
9000'	Trenton	6 1/8"	4 1/2"	13.5#	P110	New	9000'	205	7000	12+	10.8	30

**25. DETAIL CEMENTING PROGRAM. IDENTIFY ALL CEMENT CLASSES, ADDITIVES AND VOLUMES (IN CU FT) FOR EACH CASING STRING**

Surface 75% OH excess: 400 sx 65/35 Poz w/ 3% CaCl (676 cu ft) + 265 sx Class A (313 cu ft)

Intermediate 50% OH Excess: 525 sx 65/35 Poz w/12% NaCl (1081 Cu ft) + 210 sx Class A w/12% NaCl (256 cu ft)


Intermediate Liner: 50% OH Excess: 650 Sx Cl H w/ 0.9% gas stop, 0.4% fluid loss, 0.2% de-air CaCl<sub>2</sub> (1016 cu ft)

Production/Injection: 25% OH excess: 205 Sx Cl H w/ 0.9% gas stop, 0.4% fluid loss, 0.2% de-air CaCl<sub>2</sub> (223 cu ft)

**26. Send correspondence and permit to**  
Name Brenda R. Linster c/o Encana Oil & Gas (USA) Inc. E-mail brenda.linster@encana.com  
Address 370 17th Street, Suite 1700, Denver, CO 80202 Phone 720-876-3989

**CERTIFICATION** "I state that I am authorized by said applicant. This application was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."

**27. Application prepared by (print or type)** Phone  
Brenda R. Linster 720-876-3989

**28. Signature** Date  
 03/31/12

Office of Oil, Gas, and Minerals Use Only			
Permit number	API number	Date issued	Owner number
			6460

Enclose permit fee of \$300 for all Part 615 wells; \$2,500 for a Part 625 waste disposal well; or \$500 for a brine production, processed brine disposal, or storage well. Make checks payable to State of Michigan.

DEQ Cashier use only.



## Applicant

ENCANA OIL &amp; GAS (USA) INC.

Well name and number

STATE GARFIELD 1-26

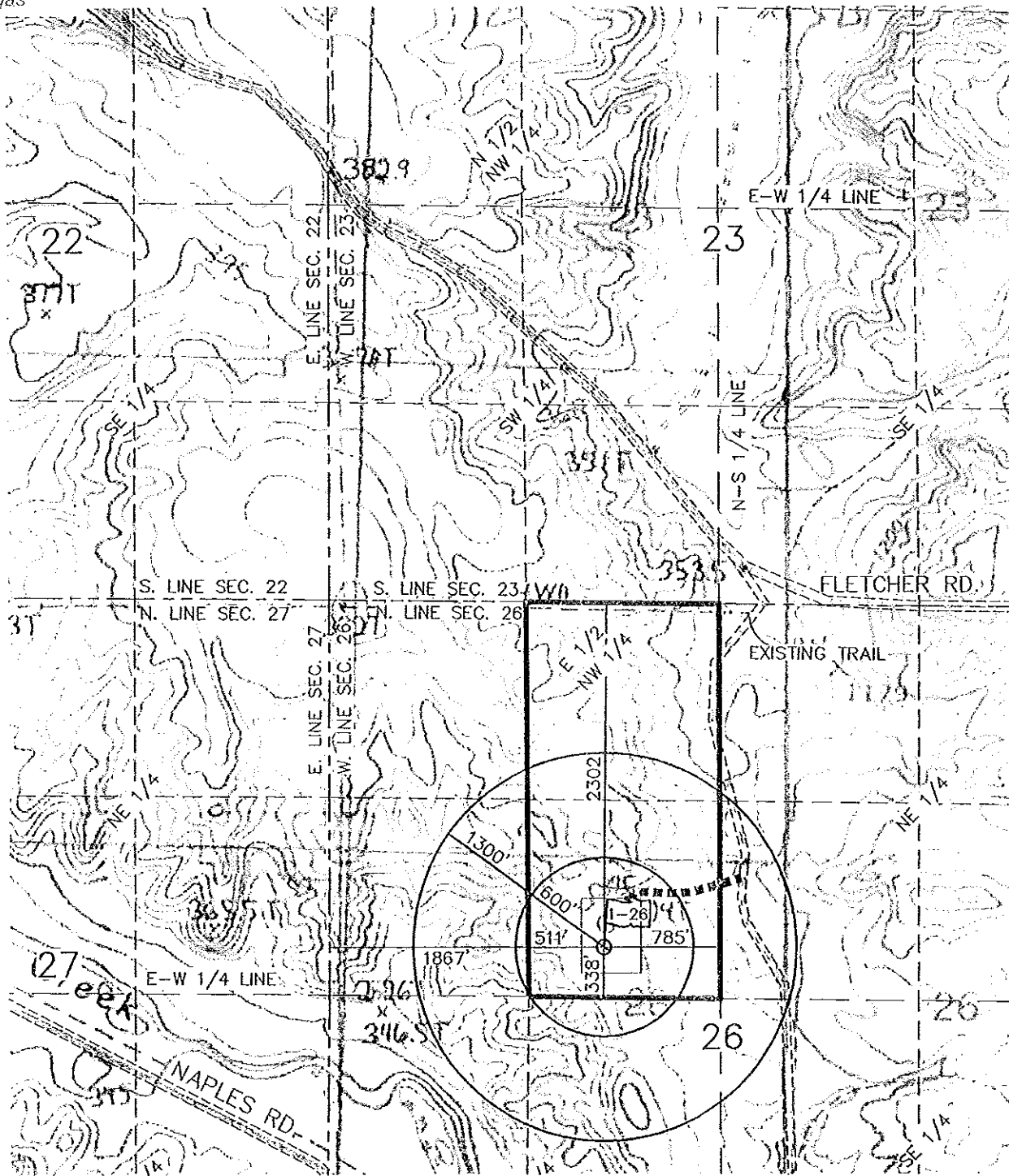
This information is required by authority of Part 615 Supervisor of Wells, or Part 625 Mineral Wells, of Act 451 PA 1994, as amended, in order to obtain a drilling permit.

1a. Surface location		Township		County	
SW 1/4 of SE 1/4 of NW 1/4 of section 26 T25 R6W		GARFIELD		KALKASKA	
1b. If this is a directional well, bottom hole location will be		Township		County	
1/4 of 1/4 of 1/4 of section T R					
Instructions: Outline drilling unit for oil/gas wells (Part 615) or property boundary for mineral wells (Part 625) and spot well location on plat shown. Locate the well in two directions from the nearest section, quarter section, and unit (or property, Part 625) lines.					
2. The surface location is		PLAT BELOW REPRESENTS ONE FULL SECTION (1 MILE SQUARE)			
2302 ft. from nearest (N/S) N section line					
1916 ft. from nearest (E/W) W section line and					
338 ft. from nearest (N/S) S quarter section line					
785 ft. from nearest (E/W) E					
3. Bottom hole will be (if directional)					
ft. from nearest (N/S) section line					
ft. from nearest (E/W) section line and					
ft. from nearest (N/S) quarter section line					
ft. from nearest (E/W) quarter section line					
4. Bottom hole will be (directional or straight)					
338 ft. from nearest (N/S) S drilling unit line					
511 ft. from nearest (E/W) W					
5. Show access to stake on plat and describe if it is not readily accessible. FROM EXIT 206 ON US127 GO WEST ON HIGGINS LK DR 0.1 MI. TURN RT GO N ON MILITARY RD 1.75 MI. TURN LT, GO W ON FLETCHER RD 11.5 MI. TURN LT GO S ON TRAIL & PIPELINE 0.5 MILE, GO W'LY ON SKID TRAIL & FLAG LINE 800' & S. 300' TO STAKE IN FOREST.					
6. Zoning <input type="checkbox"/> Residential, effective date _____ Initial date of residential zoning _____ <input checked="" type="checkbox"/> Other STATE OWNED					
ON SEPARATE PLAT OR PLOT PLAN, LOCATE, IDENTIFY AND SHOW DISTANCES TO A. All roads, power lines, buildings, residences, fresh water wells, and other man-made features, within 600 feet of the stake. B. All lakes, streams, wetlands, drainage-ways, floodplains, environmentally sensitive areas, natural rivers, critical dune areas, and threatened or endangered species within 1320 feet of the stake. C. All type I and IIa public water supply wells within 2000 feet and all type IIb and III public water supply wells within 800 feet of the well stake.					
Name of individual who surveyed site		Company		Date of survey	
DEAN FARRIER		FARRIER SURVEY INC (B222)P38		1-19-11	
Address				Phone	
PO BOX 998, KALKASKA, MI, 49646				231-258-2208	
I CERTIFY THE ABOVE INFORMATION IS COMPLETE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF.					
Signature of licensed surveyor (affix seal)				Date	
				3-31-12	

encana.

# SUPPLEMENTAL PLAT - STATE GARFIELD 1-26

natural gas



0' 500' 1000'

SCALE: 1" = 1000'

----- EXISTING ACCESS  
 ===== PROPOSED ACCESS

LAT: 44°31'59.31N  
 LON: 85°00'17.03W

APPROXIMATE ELEV. @ WELL: 1224'

SHL FOOTAGES:

338' FSL UNIT 2302' FNL SECTION  
 511' FWL UNIT 1867' FWL SECTION

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**FARRIER SURVEYING INC.**



P.O. BOX 998  
 244 S. CEDAR STREET  
 KALKASKA, MI 49646

TEL(231)258-8162 FAX(231)258-3249  
 office@farriersurveying.com

**CLIENT ENCANA OIL & GAS (USA) INC.**

**DESCRIPTION STATE GARFIELD 1-26**

UNIT: THE E½ OF NW 1/4 OF SECTION 26 ,  
 T25N-R6W, GARFIELD TOWNSHIP, KALKASKA COUNTY,  
 MICHIGAN

**DRAWN: MPS**

**FILE No. 25810**

**CHECK: DRF**

**Fd. Bk. 222 Pg.36**

**REVISED:**

**DATE: 3/31/12**

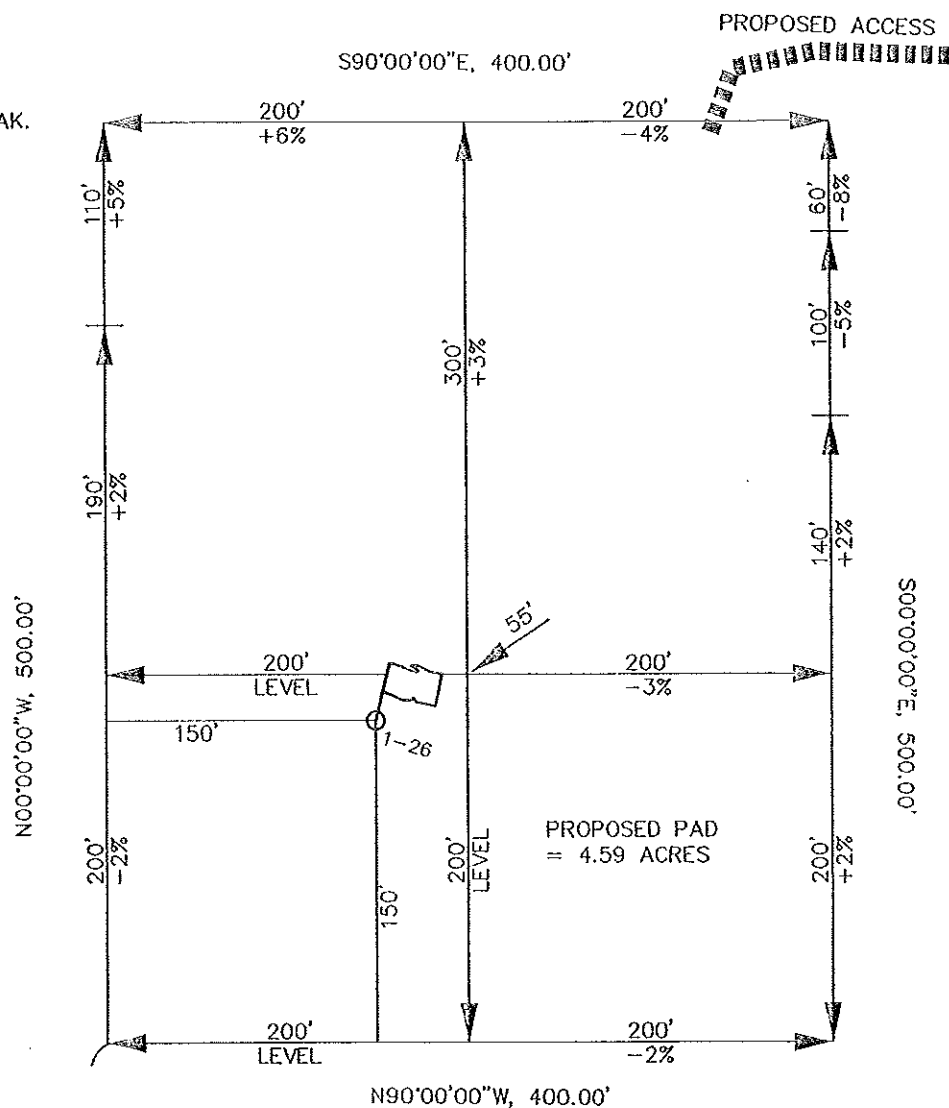
**SHEET: 1 of 2**

# encana SUPPLEMENTAL PLAT DETAIL-STATE GARFIELD 1-26

natural gas

COVER: MEDIUM DENSITY WITH  
1"-12" POPLAR, MAPLE, AND OAK.

STAKE WITNESS:  
N50°E, 1.0', 10" POPLAR



W 1/4 COR.  
SEC. 26

S89°22'33"E  
1715.55'

E-W 1/4 LINE SEC. 26

0' 50' 100'  
SCALE: 1" = 100'

APPROXIMATE ELEV. @ WELL: 1224'

SHL FOOTAGES:

338' FSL UNIT 2302' FNL SECTION  
511' FWL UNIT 1867' FWL SECTION

===== EXISTING ACCESS  
----- PROPOSED ACCESS

LAT: 44°31'59.31N  
LON: 85°00'17.03W

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P.O. BOX 998  
244 S.CEDAR STREET  
KALKASKA, MI 49646  
TEL(231)258-8162 FAX(231)258-3249  
office@farriersurveying.com

CLIENT ENCANA OIL & GAS (USA) INC.

DESCRIPTION STATE GARFIELD 1-26

UNIT: THE E½ OF NW 1/4 OF SECTION 26,  
T25N-R6W, GARFIELD TOWNSHIP, KALKASKA COUNTY,  
MICHIGAN

DRAWN: MPS

FILE No. 25810

CHECK: DRF

Fd. Bk. 222 Pg.36

REVISED:

DATE: 3/31/12

SHEET: 2 of 2



## ENVIRONMENTAL IMPACT ASSESSMENT

Required for issuance of well permit pursuant to Part 615, 1994 PA 451, as amended. Falsification of this information may result in fines and/or imprisonment. Check all boxes and fill in all blanks which apply to this drilling application. Attach additional pages as necessary.

## A. DESCRIPTION OF PROJECT

1. Applicant's name ENCANA OIL & GAS (USA), INC.	Well name and number STATE GARFIELD 1-26	Intended use of well EXPLORATORY
2. Mineral ownership, check each category of mineral owners in drilling unit or Antrim Uniform Spacing Plan <input type="checkbox"/> Private <input checked="" type="checkbox"/> State <input type="checkbox"/> Federal <input type="checkbox"/> Other, identify		
3. Applicable spacing order and drilling unit size <input type="checkbox"/> S.O. 14-9-94 N. Mich. Antrim, 80 acres <input checked="" type="checkbox"/> S.O. 1-73 Niagaran, 80 acres <input type="checkbox"/> R 324.301 General rule, 40 acres <input type="checkbox"/> Field Spacing or Unitization Order (identify below)  <input type="checkbox"/> Antrim USP (identify name, number of acres, and number of drilled and permitted wells)  <input checked="" type="checkbox"/> Administrative exception requested per R324.303 (2). See instructions for applying for an administrative spacing exception <input type="checkbox"/> Exception to spacing requested, petition for hearing filed <input type="checkbox"/> Non-producing well, no drilling unit		
4. Applicant's right to drill and produce <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Are all mineral interests in the drilling unit under lease and controlled by the applicant/permittee? If no, <input type="checkbox"/> petition filed for compulsory pooling OR <input type="checkbox"/> certified efforts to obtain leases are attached (if allowed by spacing order) <input type="checkbox"/> Not applicable, no drilling unit. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Has applicant obtained all contractual rights needed to locate the well where it is proposed? If no, <input type="checkbox"/> what additional approvals are needed?		
5. Special considerations <input type="checkbox"/> Replacement well for permit no. _____ or <input type="checkbox"/> Existing well pad <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is well expected to encounter H <sub>2</sub> S? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is well located in a city, township, or village with a population greater than 70,000? <input checked="" type="checkbox"/> Other (describe) <u>THE TARGET IS NOT EXPECTED TO HAVE H<sub>2</sub>S, BUT THE DRILL PATH PASSES THRU SOUR HORIZONS.</u>		

## B. IMPACTS AS A RESULT OF DRILLING

1. Access route dimensions <u>20</u> feet x <u>3100</u> feet / 43,560 = <u>1.42</u> acres. Provide a detailed description of topography, drainage, soil type(s), direction and percentage of slopes, land cover and present land use for the access route while drilling. Identify route on attached plat. <u>THE ACCESS WILL RUN ALONG AN EXISTING 2-TRACK FOR 2400' THROUGH LITE DENSITY ASPEN REGROWTH (2" TO 10"). IT THEN FOLLOWS A SKIDDER TRAIL 700' THROUGH ASPEN REGROWTH (1/2" TO 1"). THE SANDY SOIL IS GENTLY SLOPING, MOSTLY LESS THAN 6% WITH AN 100' RUN AT 8%. GENERAL DRAINAGE IS TO THE NORTHEAST. THE STATE OWNED LAND IS USED FOR FOREST-RECREATION.</u>
2. Well site dimensions <u>400</u> feet x <u>500</u> feet / 43,560 = <u>4.59</u> acres. Provide a detailed description of topography, drainage, soil types(s), direction and percentage of slopes, land cover and present land use for the well site. Identify well site on attached plat. <u>THE PAD IS IN A GENTLY SLOPING FOREST WITH A MEDIUM DENSITY COVER OF 1" TO 12" ASPEN MIXED WITH MAPLE AND OAK. THE SLOPES ON THE SANDY SOIL ARE NORTH: +3% FOR 300'; EAST: -3% FOR 200'; SOUTH: LEVEL FOR 200'; WEST: LEVEL FOR 200'. GENERAL DRAINAGE IS NORTHEASTERLY. TO ACCOMMODATE MULTIPLE LATERALS FROM THE ABOVE DESCRIBED PAD, THE STAKE WAS MOVED S60W, 55' FROM THE ORIGINAL SPOT 200' FROM 3 SIDES OF THE PAD.</u>
3. Is well site located in residentially zoned area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, R324.407(3) and R324.505 apply.
4. Are drain tiles present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, identify where they exist on attached plat or project map. How will they be handled if they are encountered?
5. Identify the distance and direction to all of the following, also identify on attached plat a. All buildings, fresh water wells, public roads, power lines and other man-made features within 600' of the well site. <u>NONE</u>  b. All Type I and Type IIa public water supply wells within 2000' of the well site and all Type IIb and Type III public water wells within 800' of the well site <u>NONE.</u>

(Type I is a community water supply with year-round service ≥ 15 living units or ≥ 25 residents. Type II is a non-community water supply with ≥ 15 service connections or ≥ 25 individuals for not less than 60 days per year. Average daily water production: IIA ≥ 20,000 GPD IIB <20,000 GPD Type III is a public water supply which is neither type I or II.)

(Part B-5 continued)

c. Surface waters, floodplains, wetlands, natural rivers, critical dune areas, threatened or endangered species within 1320' and Great Lake shorelines within 1500' of the well site NONE

d. Describe the actions to be taken to mitigate impacts to any of the items identified in Part B-5 a-c above. NONE NECESSARY.

6. Identify the source of fresh water used to drill this well

☐ "Permanent" water well, to be retained after final completion OR used for drinking water (shall be drilled and installed pursuant to Part 127 of 1979 PA 368, as amended)

☒ "Temporary" water well, will be plugged upon final completion and not used for drinking water (consult R 324.403 (2) for minimum construction requirements)

☐ Fresh water will be hauled from existing water well or municipal source (identify) \_\_\_\_\_

☐ No fresh water will be used in drilling this well

7. Pit location and handling and disposal of drill cuttings, muds and fluids

Anticipated depth to groundwater 80'+/- Method determined by ESTIMATION FROM USGS QUADRANGLE MAP

☒ On site in-ground pit, anticipated dimensions: L 120 W 80' D 12'

☐ Remote in-ground pit, anticipated dimensions: L \_\_\_\_\_ W \_\_\_\_\_ D \_\_\_\_\_

Attach approval of landowner and attach survey of remote pit location

☒ Well drilled below base of Detroit River Anhydrite. Describe how mud and cuttings pursuant to R324.407(7)(iv) will be handled.

Pit fluids below DRA disposed by TEAM SERVICES licensed liquid waste hauler OR

Pit fluids below DRA disposed at the \_\_\_\_\_ disposal well.

If drill cuttings & mud don't pass paint filter test, they will be disposed at \_\_\_\_\_ landfill.

☐ No salt cuttings OR

☒ Salt cuttings dissolved and disposed by TEAM SERVICES licensed liquid waste hauler OR

☐ Salt cuttings hauled to \_\_\_\_\_ landfill

☐ Temporary pit, cuttings and muds disposed at (identify) \_\_\_\_\_

☐ No in-ground pit, cuttings and muds disposed at (identify) \_\_\_\_\_

☒ Pit will be solidified.

C. IMPACTS AS A RESULT OF PRODUCTION

1. Kind of well ☒ exploratory ☐ development ☐ Other (describe) \_\_\_\_\_

☐ Antrim project (submit separate project EIA, form EQP 7200-21, for access roads, flow lines, and surface facilities)

where is project EIA found? \_\_\_\_\_ and complete C-2, omit C-3 and C-4

2. Location of surface facilities (Prior to construction, the District Geologist, pursuant to R324.1002, must also approve all surface facility secondary containment plans.)

☐ Greater than 300' from wellhead. Identify facility location on attached plat and complete C-3 and C-4.

☐ Less than 300' from wellhead. Identify facility location on attached plat, complete C-3, omit C-4

☐ Surface facility exists or was previously approved for construction and is known as \_\_\_\_\_ complete C-3, omit C-4.

☒ Surface facility location was not determined for this exploratory well (omit C-3 and C-4). Submit a separate request for Surface Facility Location Approval (form 7200-22), which includes a Facility Plan, Environmental Impact Assessment, and Soil Erosion and Sedimentation Control Plan, to District Geologist prior to construction pursuant to R324.504.

3. Flow Line Environmental Impact Assessment

☐ Identify flow line location and course from well to the surface facility on attached plat.

Flow line route dimensions \_\_\_\_\_ feet x \_\_\_\_\_ feet / 43,560 = \_\_\_\_\_ acres.

Describe the topography, drainage, soil type(s), direction and percentage of slopes, land cover and present land use along the flow line route

4. Surface Facility Environmental Impact Assessment

a. Dimensions of surface facility \_\_\_\_\_ feet x \_\_\_\_\_ feet / 43,560 = \_\_\_\_\_ acres.

b. Describe the topography, drainage, soil type(s), direction and percentage of slopes, land cover, and present land use

1. Along access route to surface facility

Part C-4, continued

2. At surface facility site

c. Are surface facilities likely to receive oil or gas with H<sub>2</sub>S concentration greater than 300 ppm? ☐ Yes ☐ No, if yes, R324.1106(2) applies.

d. Will surface facilities be located in residentially zoned area? ☐ Yes ☐ No, If yes, R324.506 may apply

e. Identify the distance and direction to all of the following, and identify on attached plat

1. Distance and direction to all buildings, fresh water wells, public roads, power lines and other man-made features within 600' of surface facility

2. Distance and direction to any surface waters, floodplains, wetlands, natural rivers, critical dune areas, and threatened or endangered species within 1320' and Great Lakes shorelines within 1500' of the surface facility site

3. Describe the actions to be taken to mitigate impacts to any of the items identified in Part C-4e 1 and 2 above.

4. Distance and direction to all Type I and Type IIa public water supply wells within 2000' of the surface facility site and all Type IIb and Type III wells within 800' of the surface facility

Type I is a community water supply with year-round service  $\geq 15$  living units or  $\geq 25$  residents. Type II is a non-community water supply with  $\geq 15$  service connections or  $\geq 25$  individuals for not less than 60 days per year. Average daily water production: IIa  $\geq 20,000$  GPD IIb  $<20,000$  GPD Type III is a public water supply which is neither type I or II.

5. Method of brine disposal

☐ Dedicated flow line to disposal well \_\_\_\_\_, permit number \_\_\_\_\_  
☒ Transported by tanker. ☐ Other \_\_\_\_\_

6. Method of transporting hydrocarbons past the point of sale

☐ Oil sold through transmission line ☒ Gas sold through transmission line  
☐ Oil transported by tanker for sale ☐ Gas flared on site (production restrictions may apply)  
☒ Other TO BE DETERMINED AFTER TESTING \_\_\_\_\_

D. MITIGATION OF IMPACTS FROM DRILLING AND/OR PRODUCTION

Describe additional measures to be taken to protect environmental and/or land use values THIS LOCATION WAS CHOSEN TO MAXIMIZE HYDROCARBON PRODUCTION WHILE MINIMIZING ENVIRONMENTAL DISTURBANCE. THE SITE WAS REVIEWED BY MDNR & MDEQ STAFF. AS A RESULT OF THAT REVIEW, THE PAD SHAPE AND STAKE LOCATION WERE APPROVED. THE PAD IS ELONGATED FOR FRAC'ING EQUIPMENT AND FLUIDS. SEVERE SLOPES WERE AVOIDED. BERMS WILL BE PLACED ON ALL SIDES OF THE PAD.

E. ADDITIONAL PERMITS

Identify additional permits to be sought DNR LAND USE PERMIT

F. SOIL EROSION AND SEDIMENTATION PLAN

Submit a soil erosion and sedimentation plan (form 7200-18) which addresses each well site, surface facility, and flow line route identified in this application. (Refer to requirements under Part 91, 1994 PA 451)

G. ALTERNATE WELL AND SURFACE FACILITY LOCATIONS

Were alternate surface locations considered for this well or surface facility?

☐ No, alternate sites did not seem necessary or more desirable  
☒ Yes, the following locations were considered THE PREFERRED LOCATION WAS IN THE SW-SW OF SECTION 26.

Why were they rejected in favor of the proposed location?

SEVERE SLOPES AND PROXIMITY TO BIG CANNON CREEK

H. CERTIFICATION

"I state that I am authorized by said applicant to prepare this document. It was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."

DEAN R. FARRIER, PROF. SURVEYOR #41098  
Name and title (printed or typed)

*Dean Farrier*  
Authorized Signature

3-31-12  
Date

Enclose with Application For Permit To Drill

Brenda Linster  
Encana Oil & Gas (USA) Inc.  
370 17<sup>th</sup> Street, Suite 1700  
Denver, CO 80202

March 7, 2012

**Rare Species Reviews #1046 – State Garfield 1-26 well pad and associated access road  
T25N R06W Section 26.**

Ms. Linster,

The proposed State Garfield 1-26 well pad and access road locations were checked against known localities for rare species and unique natural features, which are recorded in the Michigan Natural Features Inventory (MNFI) natural heritage database. This continuously updated database is a comprehensive source of existing data on Michigan's endangered, threatened, or otherwise significant plant and animal species, natural plant communities, and other natural features. Records in the database indicate that a qualified observer has documented the presence of special natural features. The absence of records in the database for a particular site may mean that the site has not been surveyed. The only way to obtain a definitive statement on the status of natural features is to have a competent biologist perform a complete field survey.

Under Act 451 of 1994, the Natural Resources and Environmental Protection Act, Part 365, Endangered Species Protection, "a person shall not take, possess, transport, ... fish, plants, and wildlife indigenous to the state and determined to be endangered or threatened," unless first receiving an Endangered Species Permit from the Michigan Department of Natural Resources (MDNR), Wildlife Division. Responsibility to protect endangered and threatened species is not limited to the list below. Other species may be present that have not been recorded in the database.

After careful review, it appears that listed species **may be impacted** as a result of this project. The concerns are with the state threatened **red-shouldered hawk** (*Buteo lineatus*) and the state and federally endangered **Kirtland's warbler** (*Dendroica kirtlandii*). However, MNFI cannot fully assess potential impacts without conducting an on-site survey. Keep in mind MNFI is not a regulatory agency. MDNR Wildlife is responsible for issuing permits and enforcement relative to the take of endangered and threatened species. These data can be submitted to MDNR Wildlife as supporting documentation should it be determined this project requires an endangered species permit. Their contact person is Lori Sargent, MDNR Wildlife Division, PO Box 30180, Lansing, MI 48909. Phone: 517.373.1263, email: [SargentL@michigan.gov](mailto:SargentL@michigan.gov). Should MDNR Wildlife require more information regarding your project, MNFI offers more detailed reviews including field surveys, which I would be happy to discuss with you.

V/r,

Mike Sanders  
Environmental Review Specialist

**Review # 1046 – State Garfield 1-26 T25N R6W Section 26.**

**Table 4: Legally protected species within 1.5 miles of #1046.**



SNAME	SCOMNAME	FIRSTOBS	LASTOBS	USESA	SPROT	GRANK	SRANK	ELCAT
<i>Buteo lineatus</i>	Red-shouldered hawk	2004-04-27	2004-04-27		T	G5	S3S4	Animal
<i>Dendroica kirtlandii</i>	Kirtland's warbler	1980	2010	LE	E	G1	S1	Animal

**Table 5: Special concern\* species or other features within 1.5 miles of #1046.**

	SCOMNAME	FIRSTOBS	LASTOBS	USESA	SPROT	GRANK	SRANK	ELCAT
<i>Glyptemys insculpta</i>	Wood turtle	1962	1962-05-06		SC	G4	S2S3	Animal
<i>Glyptemys insculpta</i>	Wood turtle	1980	1980-07		SC	G4	S2S3	Animal

\* Special concern species and natural communities are not protected under endangered species legislation but efforts should be taken to minimize any or all impacts.

**Comments #1046** - The state threatened red-shouldered hawk has been known to nest near the proposed well pad location. Red-shouldered hawks require large, relatively mature, well-stocked lowland hardwoods or upland hardwood stands in close proximity to wetlands or other water bodies. Foraging occurs in wetland habitats such as lowland hardwoods, lowland conifers, lake and stream edges, and in a variety of small, wetland and upland openings. This species will often construct 2-3 nests in different trees in their territory and may not use the same nest each year. Although, the same nesting territory will be used in subsequent years if favorable habitat remains.

We recommend that a survey be conducted in potential nesting habitat near the proposed project before work on the project begins. Red-shouldered hawk calls should be broadcast within a 1/2 mile radius of the proposed project in late April or early May. If adults respond to the broadcast calls, then a search for a nest(s) is needed.

Management guidelines for red-shouldered hawks can be described as concentric circles of decreasing (management) activity from the nest tree to the outermost zone. The first zone, or Nest Tree Zone, is defined as a five (5) chain radius around the nest tree (0 to 330 feet from the nest tree). No cutting, no roads and no planned activity between March 1 and August 31 is recommended. Minimize unplanned activity as much as possible.

The Buffer Zone surrounds the Nest Tree Zone, and is defined as a five (5) chain radius beyond the Nest Tree Zone (330 to 660 feet from the nest tree). No road construction, maintain 85% average canopy closure and no planned activities between March 1 and August 31 is recommended.

The Tertiary Zone surrounds the Buffer Zone, and is defined as a 25 chain radius beyond the Buffer Zone (660 to 2310 feet from the nest tree). Maintain 80% average canopy closure. Total openings should not exceed 10% (35 acres) of total area. No planned activity from March 1 through August 31.

Also, the proposed well pad is located just to the south of the Sharon Kirtland's Warbler Management Area. The federally and state endangered Kirtland's warbler is dependent upon large, relatively homogenous stands of jack pine with scattered small openings. Stands less than 80 acres in size are seldom occupied. Warblers will start using a jack pine stand when the height of the trees reaches 5 to 7 feet. Nests are built on the ground, concealed in the low cover of grasses, sedges, blueberries, and other ground cover vegetation. Once jack pines reach a height greater than 18 feet, the lower branches begin to die and the ground cover vegetation changes in composition, thereby leading to unfavorable nesting conditions. Kirtland's warbler feed on flying insects, larvae, and ripe berries. The majority of male Kirtland's warblers arrive on Michigan breeding grounds in early to mid-May. The warbler migrates to the Bahama Archipelago in late August and September. I've attached an MNFI species abstract that describes survey and management information.

In summary, the project site may include suitable Kirtland's warbler habitat. Potential impacts might include direct destruction of species and disturbance of critical habitat. A copy of the federal KW recovery plan can be accessed by calling the East Lansing office of the U.S. Fish and Wildlife Service. **We recommend that you contact Ms. Barb Hosler, Endangered Species Coordinator, USFWS at 517.351.6326 or [Barbara\\_Hosler@fws.gov](mailto:Barbara_Hosler@fws.gov) before proceeding with this project.**

## **GLOSSARY of Codes for Tables**

### **State Protection Status Code Definitions (SPROT)**

E: Endangered

T: Threatened

SC: Special concern

### **Global Heritage Status Rank Definitions (GRANK)**

The priority assigned by NatureServe's national office for data collection and protection based upon the element's status throughout its entire world-wide range. Criteria not based only on number of occurrences; other critical factors also apply. Note that ranks are frequently combined.

G3: Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g. a single western state, a physiographic region in the East) or because of other factor(s) making it vulnerable to extinction throughout its range; in terms of occurrences, in the range of 21 to 100.

G4: Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.

G5: Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.

Q: Taxonomy uncertain

### **State Heritage Status Rank Definitions (SRANK)**

The priority assigned by the Michigan Natural Features Inventory for data collection and protection based upon the element's status within the state. Criteria not based only on number of occurrences; other critical factors also apply. Note that ranks are frequently combined.

S1: Critically imperiled in the state because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extirpation in the state.

S2: Imperiled in state because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extirpation from the state.

S3: Rare or uncommon in state (on the order of 21 to 100 occurrences).



## MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY – OFFICE OF GEOLOGICAL SURVEY

**SOIL EROSION & SEDIMENTATION  
CONTROL PLAN**

By authority of Part 91, and Part 615 or Part 625 of Act 451  
PA 1994, as amended. Non-submission and/or falsification of  
this information may result in fines and/or imprisonment.

☒ Part 615 Oil/Gas Well    ☐ Part 625 Mineral Well

1. Name and address of applicant  
ENCANA OIL & GAS (USA) INC.  
370 17<sup>TH</sup> STREET SUITE 1700  
DENVER CO 80202

Phone: (720)876-3172    Fax: (720) 876-4172

2. Well or project name:

STATE GARFIELD 1-26

3. Well or project location:

Section(s) 26    T26N    R6W

4. Name and address of County or local Enforcement Agent (CEA)

KAREN VANHORN

KALKASKA PLANNING AND ZONING

890 ISLAND LAKE ROAD

KALKASKA, MI 49646

Phone: (231)258-3367    Fax: (231) 258-2828

5. Township

GARFIELD

6. County

KALKASKA

7. Date earth changes expected to start

SUMMER 2012

8. Date of expected completion

WITHIN 9 MONTHS OF COMMENCEMENT

9. Name and address of person responsible for earth change:

JOEL FOX, PETROLEUM ENGINEER

ENCANA OIL & GAS (USA) INC

370 17<sup>TH</sup> ST, STE 1700

DENVER CO 80202

Phone: (720)876-3597    Fax: (720) 876-4597

10. Name and address of person responsible for maintenance:

JOEL FOX, PETROLEUM ENGINEER

ENCANA OIL & GAS (USA) INC.

370 17TH STREET SUITE 1700

DENVER CO 80202

Phone: (720)876-3597    Fax: (720) 876-4597

11. Send copies of supplemental plat required by Part 615, R 324.201(2)(b) or R 324.504(4), and this form and all attachments, to CEA.

Date sent to CEA

03/31/2012

*BRL*

**EARTH CHANGE ACTIVITIES**

12. Project description: (Project activities may be permitted sequentially.)

a. Number of well sites 1 , 4.59 acres

d. Flow line(s) trenched in off well site\* \_\_\_\_\_ feet, \_\_\_\_\_ acres

b. Number of surface facility sites \_\_\_\_\_ , \_\_\_\_\_ acres

e. Flow line(s) plowed in off well site\* \_\_\_\_\_ feet, \_\_\_\_\_ acres

c. New access roads 3100 feet, 1.42 acres

\*Contact CEA for fee schedule

13. Describe sites for which permits are being sought under Part 301 (Inland Lakes & Streams) NONE

Describe sites for which permits are being sought under Part 303 (Wetlands) NONE

List file numbers if known \_\_\_\_\_

14 Areas requiring control structures

Will earth changes occur in areas with slopes of 10% or greater; areas where runoff water is likely, such as runs greater than 500' of moderate slope (5% to 10%), narrow valley bottoms, etc.; areas within 500' of a lake or stream; or other areas where sedimentation to a wetland or drainage way may occur?

☐ Yes Attach detail map at scale of 1"=200' or larger, with contour lines at a minimum of 20' intervals OR percent slope descriptions.

Also indicate any of the following erosion control structures that will be utilized. Identify location on map and attach detail plan.

Indicate on plan whether erosion control structures are temporary or permanent.

☐ Diversions ☐ Culverts ☐ Sediment basins ☐ Silt fences ☐ Rip-rap ☐ Berms ☐ Check dams ☐ Other \_\_\_\_\_

☒ No

15. Site restoration

☒ Topsoil will be segregated from subsoil and stockpiled    OR    ☐ No topsoil on site

☒ Recontour and revegetate as soon as weather permits. Seed mix PER AREA LAND MANAGER SPECIFICATION

☐ Describe other proposed methods of restoration \_\_\_\_\_

16. Application prepared by (name)

DEAN FARRIER PS#41098

Signature

*Dean Farrier*

Date

3-31-12

FOR USE OF COUNTY OR LOCAL ENFORCING AGENT

INSTRUCTIONS TO COUNTY OR LOCAL ENFORCMENT AGENT: Return this form to the applicable field or district office of the Office of Geological Survey within 30 days of receipt. Explain reasons for recommendation or disapproval and conditions required for approval. Include copies of any revisions to the plan.

17. Comments

☐ Conducted on site inspection    Date \_\_\_\_\_

☐ Inspected site with representative of applicant    Date \_\_\_\_\_

18. ☐ Approved    ☐ Disapproved

CEA signature

Date

**WELLHEAD BLOWOUT CONTROL SYSTEM**

Worksheet supplement for "Application for Permit to Drill or Deepen a Well"

This information is required by authority of Part 615  
Supervisor of Wells or Part 625 Mineral Wells, Act 451  
PA 1994, as amended, in order to obtain a permit.

Applicant

Encana Oil &amp; Gas (USA) Inc.

Well name and number

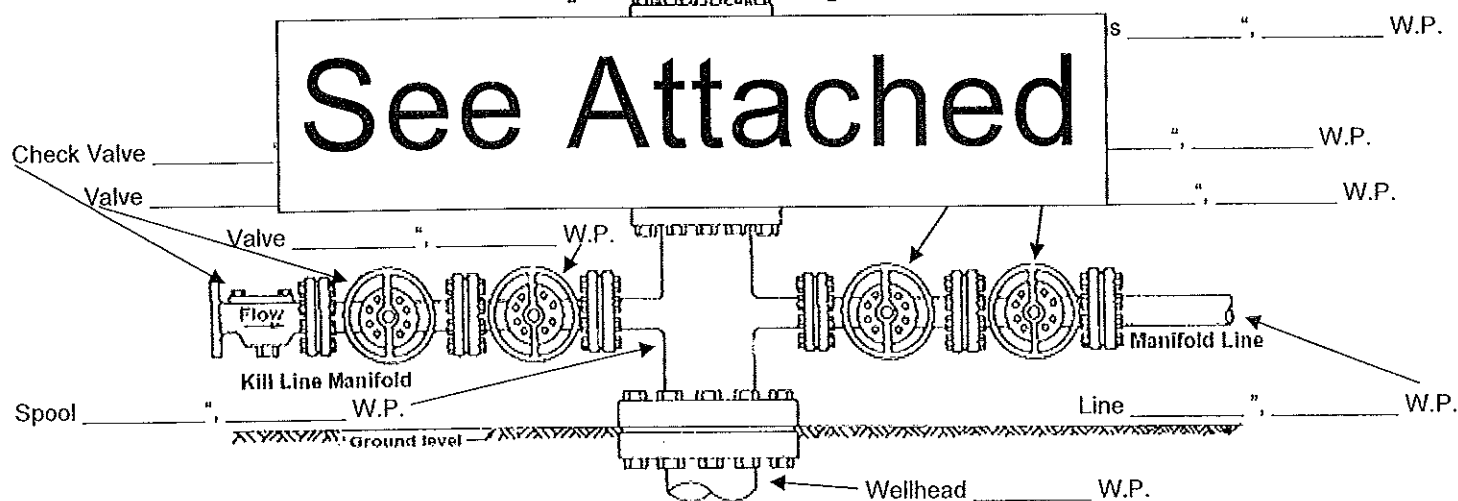
State Garfield 1-26

Max. anticipated surface pressure \_\_\_\_\_

Annular B.O.P. \_\_\_\_\_", \_\_\_\_\_ W.P. →

B.O.P. \_\_\_\_\_ Rams \_\_\_\_\_", \_\_\_\_\_ W.P.  
(Pipe/Blind)

B.O.P.  
☐ Manual  
☒ Hydraulic  
☒ Sour Trim



Fill above blanks with applicable information. If not applicable, enter "N.A." or cross-out item shown.

Describe test pressures and procedure for conducting pressure test. Identify any exceptions to R324.406 being requested.

After setting the 13 5/8" surface casing, a 13 5/8" 10,000 psi annular, double gate, mud cross, and single gate BOPs will be nipped up & pressure tested with the rig pump to 1,000 psi for 20 minutes and the test results recorded in the driller's log book. After setting the 9 5/8" intermediate casing the same 13 5/8" BOPs will remain nipped up Prior to drilling the shoe of the 9 5/8" intermediate casing a third-party will provide the necessary equipment to provide a witnessed pressure test. The drill string will be removed from the well and a test plug will be set below the BOP stack in the wellhead. The choke manifold, Kelly and surface valves will be individually tested to 8,000 psi. The annular BOP will be individually tested to 5,000 psi. Additionally a low pressure test will be conducted at 250 psi. All test periods will be a minimum of 20 minutes and the test results recorded in the driller's log book. After setting the 7" liner the same 13 5/8" BOPs will remain nipped up and pressure tested with the rig pumps to 1,500 psi for 20 minutes and the test results recorded in the driller's log book.

B.O.P.  
☐ Manual  
☒ Hydraulic  
☒ Sour Trim

Max. anticipated surface pressure 10,000 PSI

Annular B.O.P. 13 5/8", 10,000 PSI W.P.

B.O.P. Pipe Rams 13 5/8", 10,000 PSI W.P.

B.O.P. Blind Rams 13 5/8", 10,000 PSI W.P.

Check Valve 3 1/16", 10,000 PSI W.P.

Valve 3 1/16", 10,000 PSI W.P.

Valve 3 1/16", 10,000 PSI W.P.

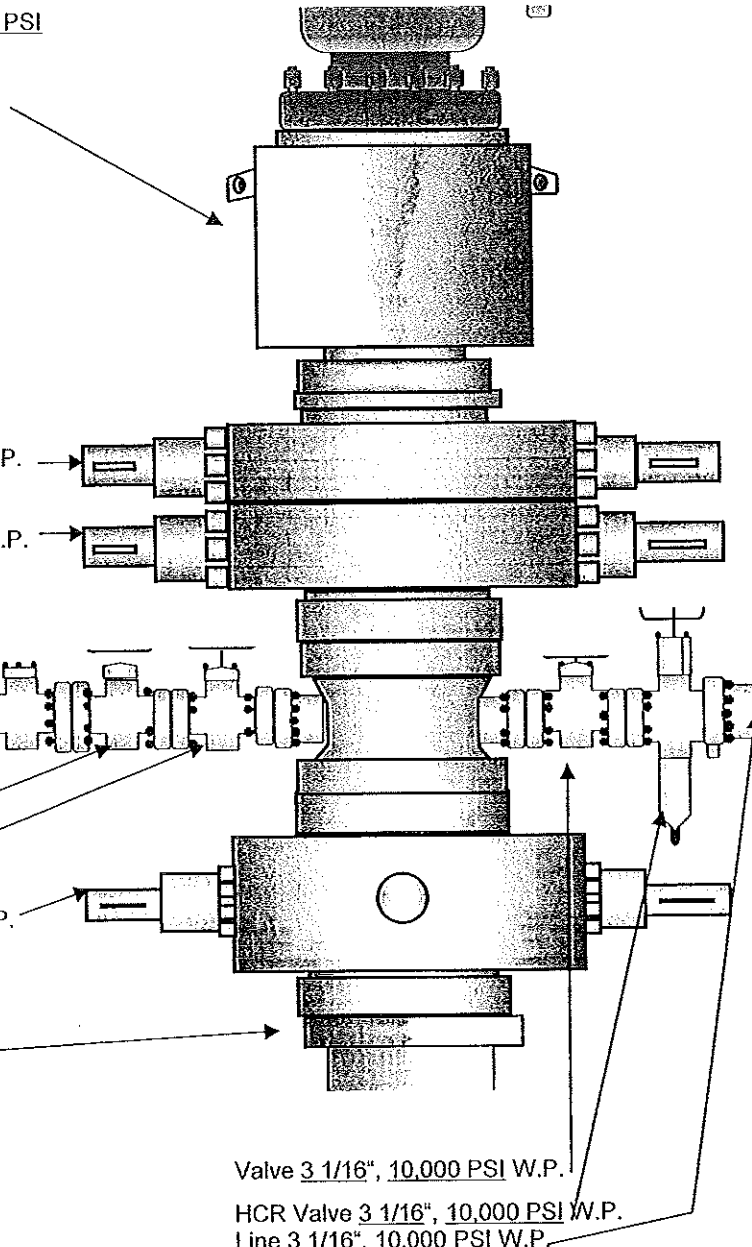
B.O.P. Pipe Rams 13 5/8", 10,000 PSI W.P.

Wellhead 10,000 PSI W.P.

Valve 3 1/16", 10,000 PSI W.P.

HCR Valve 3 1/16", 10,000 PSI W.P.

Line 3 1/16", 10,000 PSI W.P.





## **H<sub>2</sub>S Contingency Plan**

State Garfield 1-26  
Garfield Township, Kalkaska County

**March 2012**

*Permittee:*

**Encana Oil & Gas (USA) Inc.  
370 17<sup>th</sup> Street, Suite 1700  
Denver, CO 80202**

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**LIST OF ATTACHMENTS**

Maps  
Contact Information for General Public  
Emergency Contact Information



# **1 Introduction and General Requirements**

## **1.0 INTRODUCTION**

This Hydrogen Sulfide Contingency Plan (plan) identifies measures to be taken by Encana Oil & Gas (USA) Inc. (Encana) and/or its contractors and subcontractors in the event of an emergency involving the possible release of hydrogen sulfide (H<sub>2</sub>S) gas. The plan provides an organized plan of action for alerting and protecting personnel at an H<sub>2</sub>S site and the public.

This plan will be implemented when it is expected to encounter or upon encountering an H<sub>2</sub>S zone containing 50 ppm or higher H<sub>2</sub>S concentrations. In areas of known H<sub>2</sub>S concentrations exceeding 50 ppm, the precautions identified in this plan will be implemented prior to drilling into the Al Carbonate. All equipment should be located prior to drilling formations that potentially have H<sub>2</sub>S. When well conditions allow the escape of gas at the surface, the gas shall be sampled to determine H<sub>2</sub>S content. If the gas is determined to have an H<sub>2</sub>S content in excess of 50 ppm, then this plan will be implemented.

H<sub>2</sub>S is a toxic, poisonous gas that could cause death or injury. The objective of this contingency plan is to provide an organized plan to action for alerting and protecting the public from H<sub>2</sub>S exposure in the event a potentially hazardous volume is accidentally released to the atmosphere. This plan should be activated immediately if any such release occurs. Encana's Drilling Consultant is responsible for initiating and carrying out the plan.

Part I of the plan contains the general procedures that shall be followed in the event of an emergency involving the possible release of hydrogen sulfide into the atmosphere. Part I includes a list of personnel to be contacted, delegates duties and responsibilities and specifies who is responsible for ordering ignition of the well (if necessary). Part I also includes emergency circumstances that require the plan to be put in place, actions to account for and remove personnel, actions for restricting site access, procedures for notifying the general public and emergency response agencies, procedure for evacuating the general public (if required), and procedure for igniting the H<sub>2</sub>S well.

Part II of the plan contains maps, a list of emergency contact numbers, and contact information for adjacent landowners, businesses and government agencies.

All personnel are to be thoroughly familiar with this plan and its contents prior to initiating drilling operations.

## 2.0 CORE INFORMATION

### 2.1 Physical Properties of Hydrogen Sulfide

Hydrogen sulfide is a gas and is often referred to as H<sub>2</sub>S. Hydrocarbons that contain hydrogen sulfide are often referred to as sour oil or sour gas. H<sub>2</sub>S has the following physical properties:

- Color: H<sub>2</sub>S is a colorless and invisible gas
- Odor: In small concentrations it has a distinctive offensive smell (smells like rotten eggs). At high (fatal) concentrations, the sense of smell is impaired.
- Vapor Density: H<sub>2</sub>S is heavier than air so it tends to settle in low-lying areas
- Explosive Limits: Extremely explosive: LEL 4% to UEL 45%
- Combustion Products: Produces Sulfur Dioxide (SO<sub>2</sub>) when burned
- Solubility: Easily dissolved in liquids but the gas will break out when slightly agitated

### 2.2 Exposure

#### Occupational Exposure and Toxicity Limits

1 ppm	You can smell it (smells like rotten eggs)
10 ppm	NIOSH REL (Recommended Exposure Limit)
20 ppm	Ceiling Concentration (OSHA)
50 ppm	Maximum Peak 10-minute maximum peak – once only if no other measurable exposure occurs during the same 8-hour work period

#### Serious Health Consequences for Exposures Listed Below

100 ppm	IDLH (Immediately Dangerous to Life or Health). Loss of smell in 2 to 15 minutes (may burn throat, cause headache and nausea).
200 ppm	Sense of smell lost rapidly (burns eyes and throat)
500 ppm	Loss of reasoning and balance, prompt resuscitation needed
700 ppm	Immediate unconsciousness (causes seizures and breathing will stop and death will result)
1000 ppm	Causes immediate unconsciousness (death or permanent brain damage will occur)

## 3.0 IDENTIFYING, TESTING, AND POSTING H<sub>2</sub>S SOURCES

### 3.1 Identification

Identify and document all areas where significant (i.e., greater than 10 ppm) sources of H<sub>2</sub>S gas exist at the facility. List such areas by the maximum level of H<sub>2</sub>S expected.

### 3.2 Testing

Air quality will be measured at the end of the flowline, bell nipple, and at the rotary table each tour when drilling in a formation suspected or known to contain H<sub>2</sub>S. Data from each sample shall be recorded on the drilling log. Air quality checks shall be made and recorded after a trip when the bottom is circulated up. Alarm systems shall be tested for operation daily and results

recorded in the Drilling Log.

### 3.3 H<sub>2</sub>S Posting

Install signs or markers with the words "Caution Poison Gas" at a facility's normal access point where process or production equipment contains H<sub>2</sub>S concentrations greater than 10 ppm.

In areas known to have H<sub>2</sub>S concentrations greater than 10 ppm in the breathing zone, signs must include the words "Respiratory protection required beyond this point." Place these signs in locations to prevent accidental entry to the area.

## 4.0 RISK ASSESSMENT AND CONTROLS

### 4.1 Risks

For sites where sour products are produced, stored, transferred, or processed, the risk of hydrogen sulfide release should be evaluated and controlled.

Risks are controlled by:

- Fixed or portable H<sub>2</sub>S monitors with alarms
- Use of personal H<sub>2</sub>S monitors with alarms
- Development of emergency response plans where 100 ppm radius of exposure will be exceeded
- Training of personnel
- Use of appropriate PPE, i.e. respiratory protection for personnel where workplace concentrations could exceed 10 ppm
- Availability of emergency equipment
- Fence and lock all sites with H<sub>2</sub>S concentrations above 100 ppm and facilities located inside the town limits or anywhere the public is exposed to production equipment.

## 5.0 MONITORING AND RESPIRATORY PROTECTION

### 5.1 Personal Monitoring

Use portable personal direct reading H<sub>2</sub>S monitors set to alarm at 10 ppm.

### 5.2 Area Monitoring

Provide fixed, continuous H<sub>2</sub>S monitoring systems with audible and visible indicators set to alarm at 50 ppm H<sub>2</sub>S gas in attended facilities where employees would be exposed to concentrations greater than 10 ppm H<sub>2</sub>S if released.

- A manually operated H<sub>2</sub>S detector will be on the rig floor.
- A manually operated explosimeter will be located on the rig floor.

- The automatic monitor will be set to trigger an alarm and blinker light on the rig floor when H<sub>2</sub>S concentrations exceed 10 ppm. Since it may be desirable to deactivate the alarm if H<sub>2</sub>S fumes are present for extended periods, the blinker light will serve as a reminder that fumes are still present. Any time the alarm is deactivated, a trained operator must continuously monitor the H<sub>2</sub>S detectors for changes in the H<sub>2</sub>S concentration. The alarm switch will be activated by the operator if the H<sub>2</sub>S concentrations increase to a higher toxic level.

### 5.3 Respiratory Protection

Provide proper respiratory protection for all employees assigned to work in facilities where workplace concentrations of H<sub>2</sub>S could exceed 10 ppm in the breathing zone. Respiratory protection will be located at the Driller's position, on the rig floor, and on the monkey board.

## 6.0 TRAINING PROGRAM

All personnel associated with the drilling operations will receive training to ensure efficient and correct action in all situations. This training will be in the general areas of personnel safety, rig operations, and well control procedures. Visitors to the locations will also receive training.

### 6.1 Personnel Safety Training

All personnel shall have received H<sub>2</sub>S training in the following areas:

- Hazards and characteristics of H<sub>2</sub>S.
- Safety precautions.
- Operation of safety equipment and life support systems.
- Corrective action and shutdown procedures.

### 6.2 Rig Operations

All rig personnel shall have received training in the following areas:

- Well control procedures.
- Layout and operations of the well control equipment.

*NOTE: Proficiency will be developed through BOP drills which will be documented by the Drilling Consultant.*

### 6.3 Service Company Personnel

All service personnel shall have been trained by their employers in the hazards and characteristics of H<sub>2</sub>S and the operation of safety equipment and life support systems.

## 6.4 Visitors

All first-time visitors to the location will be required to attend a safety orientation. The Drilling Consultant shall be responsible for this orientation and he shall see that every visitor is logged correctly. This orientation must include the following elements:

- Hazards and characteristics of hydrogen sulfide.
- The necessity of an emergency action plan.
- The location of hydrogen sulfide within the area of exposure at the drilling location.
- The manner in which the public will be notified of an emergency.
- Steps to be taken in case of an emergency.

## Part I—H<sub>2</sub>S Contingency Plan

### 1.0 ROLES AND RESPONSIBILITIES

It is the responsibility of *all personnel* on the location to familiarize themselves with the procedures outlined in this contingency plan.

#### 1.1 All Personnel

- Responsible for assigned safety equipment.
- Responsible for knowing the location of all safety equipment.
- Responsible for reporting any indications of H<sub>2</sub>S to those in the area and to a supervisor.

#### 1.2 Drilling Consultant

- Responsible for thoroughly understanding and seeing that all aspects of this contingency plan are enforced.
- Responsible for implementing all phases of this contingency plan.
- Responsible for notifying emergency personnel (including 911), surface landowners, general public, and regulatory agencies in the event that an emergency condition develops.
- Responsible for ensuring that all visitors receive and H<sub>2</sub>S safety orientation. A visitors log will be maintained as well as a list of all personnel on location after drilling has progressed to the suspected H<sub>2</sub>S formation.
- **CONTACT INFORMATION:** Mark Nelson, Discovery Engineering, 231-342-2900 (cell).

#### 1.3 Drilling Supervisor

- Responsible for coordinating all well site operations in the event that an emergency condition develops.
- Responsible for keeping a minimum of personnel on the location during expected hazardous operations.
- Responsible for igniting the well (if necessary).
- **CONTACT INFORMATION:** Sonny McCulley, Les Wilson Inc., 618-383-2780 (cell).

## 2.0 LOCATION LAYOUT, MUD CONTROL, AND BOP

### 2.1 Location Layout

The location layout will be followed to the maximum extent possible consistent with rig configuration, well depth, terrain, prevailing winds, etc. The specific locations of emergency equipment will be in readily accessible areas.

- A. Safety Briefing Areas: Three areas will be designated as briefing areas. The most upwind (based on prevailing winds) of these areas will always be designated as the SAFE BRIEFING AREA. During any emergency, personnel will assemble at the SAFE BRIEFING AREA for instructions from the Drilling Consultant.
- B. H<sub>2</sub>S rig monitor with at least three heads: One located at the bell nipple, one located at the shale shaker, and a third one on the rig floor.
- C. The location and type of all air masks. Self-contained breathing apparatus for use by rig personnel for this well will be kept in the following location(s):

Type: 30 min rescue unit	Location: Drilling Consultant Trailer
Type: 30 minute rescue unit	Location: All Trailers
Type: 30 min rescue unit (2)	Location: SAFE BRIEFING AREA
Type: 30 min rescue unit (2)	Location: Briefing Area #2
Type: Hoseline work unit (5)	Location: Safety Trailer
Type: 5 min escape unit (3)	Location: Rig Floor
Type: 5 min escape unit	Location: Tubing board (derrick)

If a cascade system is utilized, indicate the location(s);

Type: 10 cylinder cascade	Location: Safety Trailer with 10 cyl cascade is to be located by rig at base of catwalk.
---------------------------	--

- D. The location of windsocks or streamers. The wind direction indicators for this well will be located at:

Type: Windsock	Location: SAFE BRIEFING AREA
Type: Windsock	Location: Briefing Area #2
Type: Windsock	Location: On floor & pits

The windsock on the floor will be firmly anchored at the end of the cat walk with the streamer positioned six feet above rig floor level.

- E. The location of any other safety equipment used such as flare guns or bug blowers.

Type: Flare gun	Location: Drilling Consultant's Trailer
-----------------	---

F. The location of all telephones and/or means of communications are as follows:

Type: Cell phone                      Location: Drilling Consultant's Pickup

G. The mud logger's trailer will be located away from the shale shaker and wellbore.

H. The rig will be equipped with a choke manifold, gas-buster, and burner.

I. An adequate mud storage area with sufficient stock will be maintained consistent with well conditions.

J. Warning Signs:

a. "No Smoking" signs should be strategically located around the rig and rig location. The following locations are appropriate:

1. Rig Floor
2. Dog House
3. Substructure
4. Lower landing of all stairs to rig floor
5. Mud pits
6. Shale shaker

b. "Poison Gas" signs should also be strategically located around the rig and rig location. The following locations are appropriate:

1. All entrances leading to location.
2. Lower landing of all stairs leading to rig floor.
3. All areas around substructure, including mud pits and shale shaker.
4. Various points along the perimeter of the radius of exposure.

*NOTE: All warnings should be black and yellow in color and of readable size at a distance.*

K. The location of Emergency Contact Information: A list of the current emergency telephone numbers and a map with all residential areas and evacuation routes clearly identified will be located on the rig bulletin board and in the Drilling Consultant's trailer.

## 2.2 Mud Control

- Mud weight should be such that it provides an overbalance of 150 to 200 psi while drilling potential H<sub>2</sub>S formations.
- With water base muds, the pH should be maintained to counteract intruding acid gases such as H<sub>2</sub>S and CO<sub>2</sub>.
- A sufficient supply of a suitable H<sub>2</sub>S scavenger will be on hand to use in conjunction with or instead of a high pH mud system.

## 2.3 Blowout Prevention (BOP) Equipment

- A high pressure sour service choke manifold, gas buster, and burner will be installed prior to drilling into the potentially sour gas formation.
- BOPs will be of materials qualified by API for H<sub>2</sub>S atmospheres.
- BOPs and choke manifold will be pressure tested prior to drilling into the A2 Carbonate and at other times required by State regulations.
- Operational tests shall be performed every tour. Blind ram operation test shall be on every trip of the drill pipe.
- BOP rams will be removed and a visual inspection made of them at the start of each well.

## 3.0 PLAN ACTIVATION

### 3.1 Operating Procedures

#### 3.1.1 All Operations

All equipment with potential for H<sub>2</sub>S shall be suitable for H<sub>2</sub>S service, i.e. Drill String, Casing, Well Head, Blow-Out Preventer equipment and trim, Rotating Head, Kill Lines, Choke Manifold and Lines.

A remote controlled choke will be installed prior to all H<sub>2</sub>S drilling.

Mud system pH will be maintained at or above 10.0 with sufficient materials on location to maintain the required pH.

A flare will be located a minimum of 100 feet from wellhead.

#### 3.1.2 Gas Kicks

Any gas kick will be controlled by using approved well control techniques. Upon evidence that ambient H<sub>2</sub>S concentrations have reached 10 ppm, all non-essential personnel will be evacuated to pre-determined safe areas. Personnel remaining on the rig floor will continue to control the well until the situation indicates the area is safe to re-enter.

#### 3.1.3 Special Operations

*Drill Stem Tests* All drill stem tests must be closed chamber and conducted during daylight hours only.

*Coring* After a core has been cut, circulate bottoms up and monitor for H<sub>2</sub>S. If hole conditions (and/or detectors) indicate potentially hazardous conditions, put breathing equipment on (10) ten stands before core barrel reaches surface. Breathing equipment will be worn by all personnel while core barrel is pulled, broken out and opened, and until a safe atmosphere is indicated.

### 3.2 Operating Conditions

Operating conditions are defined in three categories. A description of each of these conditions and the required action to take are given below.



**Condition I – Normal Operating Conditions, Potential Danger, Operations under control.**

Characterized by; Normal Drilling Operations in zones which contain or may contain H<sub>2</sub>S.

Warning Flag: Yellow  
Alarm: None

Probable Occurrence: No detectable gas present at surface

General Action:

1. Know location of safety equipment.
2. Check safety equipment for proper function. Keep it available.
3. Be alert for a condition change.
4. Follow instructions of supervisor.

**Condition II – Potential To Moderate Danger to Life.**

Characterized by: H<sub>2</sub>S gas present. Concentration less than 10 ppm.

Warning Flag: Orange  
Alarm: Flashing light at 10 ppm H<sub>2</sub>S. Intermittent blasts on horn at 10 ppm H<sub>2</sub>S.

Probable Occurrence:

1. As drill gas.
2. As trip gas when circulating bottoms up.
3. When a core barrel is pulled.
4. When a well kick is circulated out.
5. Surface pressure, well flow or lost operations.
6. Equipment failure during testing operations.

General Action:

1. Follow instructions of supervisor.
2. Put on breathing equipment if directed, or if conditions warrant it.
3. Stay in "SAFE BRIEFING AREA" if instructed and not working to correct the problem.
4. The Drilling Consultant will initiate action to reduce the H<sub>2</sub>S concentration to zero.

**Condition III - Moderate to Extreme Danger to Life.**

Characterized by: H<sub>2</sub>S present in concentrations at or above 10 ppm. Critical well operations or well control problems. In the extreme, loss of well control.

Warning Flag: Red  
Alarm: Flashing light and continuous blast on horn at 10 PPM H<sub>2</sub>S.

Probable Occurrence:

1. As drill gas.
2. As trip gas when circulating bottoms up.
3. When a core barrel is pulled.
4. When a well kick is circulated out.
5. Surface pressure, well flow or lost return problems.
6. Equipment failure during testing operations.

General Action:

1. Put on breathing equipment. Move to "SAFE BRIEFING AREA" and remain there if not working to correct or control problem.
2. Follow instructions of Drilling Consultant or other supervisor.
3. The Drilling Consultant will initiate emergency action as provided in the contingency plan and as appropriate to the actual conditions. If testing operations are in progress the well will be shut in.
4. The Drilling Consultant will conduct any necessary operations with an absolute minimum of personnel. All persons in the immediate area will wear a breathing apparatus. All other personnel will restrict their movements to those directed by the Superintendent.
5. If gas containing hydrogen sulfide is ignited, the burning hydrogen sulfide will be converted to sulfur dioxide which is poisonous.

#### **4.0 EMERGENCY PROCEDURES**

The procedure listed below applies to drilling and testing operations.

- A. If at any time during Condition I, the mud logger, mud engineer, or any other person detects H<sub>2</sub>S, he will notify the Drilling Supervisor. All personnel should keep alert to the Drilling Supervisor's orders. He will:
- Immediately begin to ascertain the cause or the source of the H<sub>2</sub>S and take steps to reduce the H<sub>2</sub>S concentration to zero. This should include having the mud engineer run a sulfide and pH determination on the flowline mud if water-base mud is in use. If an oil-base mud is in use, the mud engineer should check the lime content of the mud.
  - Order non-essential personnel out of the potential danger area.
  - Order all personnel to check their safety equipment to see that it is working properly and in the proper location. Persons without breathing equipment will not be allowed to work in a hazard area.
  - Notify the Drilling Consultant of condition and action taken.
  - Increase gas monitoring activities with portable H<sub>2</sub>S detectors and continue operations with caution.
  - Display the orange warning flag.

B. If the H<sub>2</sub>S concentration exceeds 10 PPM the following steps will be taken:

- Put on breathing equipment.
- Display red flag.
- Driller – prepare to shut the well in.
  - Pick up pipe to get Kelly out of BOPs.
  - Close BOPs if necessary.
- If testing operations are in progress, the well will be shut-in.
- Help anyone who may be affected by gas.
- Evacuate quickly to the “SAFE BRIEFING AREA” if instructed or conditions warrant.

C. In the event a potentially hazardous volume of H<sub>2</sub>S is released into the atmosphere, the following steps must be taken to alert the public:

- Remove all rig personnel from the danger area and assemble at a pre-determined safe area, preferably upwind from the well site.
- Alert the drilling office, public safety personnel, regulatory agencies, and the general public of the existence and location of an H<sub>2</sub>S release. See List of Emergency Telephone Numbers.
- Assign personnel to block any public road (and access road to location) at the boundary of the area of exposure. Any unauthorized people within the area should be informed that an emergency exists and be ordered to leave immediately.
- Request assistance from public safety personnel to control traffic and/or evacuate people from the threatened area.

## 5.0 SITE EVACUATION AND SECURITY

All personnel entering the location will be required to sign-in before starting any work and will sign-out when exiting the location. All visitors will also be required to sign-in and sign-out when entering and exiting the location.

In the event that the location must be evacuated, the Drilling Consultant will take the following steps to ensure all personnel on location are accounted for, to safely remove nonessential personnel, and to restrict nonessential personnel and public to the site:

- Remove all rig personnel from the danger area and assemble at a pre-determined safe area, preferably upwind from the well site.
- Account for all personnel, are accounted for per the sign-in sheet.
- Assign personnel to block any public road (and access road to location) at the boundary of the area of exposure. Any unauthorized people within the area should be informed that an emergency exists and be ordered to leave immediately.

## 6.0 PUBLIC/EMERGENCY RESPONSE NOTIFICATION AND EVACUATION

In the event a potentially hazardous volume of H<sub>2</sub>S is released into the atmosphere, the Drilling Consultant will take the following steps to notify and/or evacuate the public:

- Remove all rig personnel from the danger area and assemble at a pre-determined safe area, preferably upwind from the well site.
- Alert the drilling office, public safety personnel, regulatory agencies, and the general public of the existence and location of an H<sub>2</sub>S release. See List of Emergency Telephone Numbers.
- Assign personnel to block any public road (and access road to location) at the boundary of the area of exposure. Any unauthorized people within the area should be informed that an emergency exists and be ordered to leave immediately.
- Request assistance from public safety personnel to control traffic and/or evacuate people from the threatened area.

## 7.0 PROCEDURES FOR IGNITING THE WELL

### 7.1 Responsibility

The decision to ignite the well is the responsibility of the Drilling Supervisor. This decision should be made only as a last resort and in a situation where it is clear that:

- Human life is endangered.
- There is no hope of controlling the blowout under the prevailing conditions at the well.

*NOTE: If the well is ignited, the burning H<sub>2</sub>S will be converted to sulfur dioxide (SO<sub>2</sub>) which is also highly toxic. DO NOT assume that the area is safe after the well is ignited. Follow through with all plans to evacuate endangered persons.*

### 7.2 Equipment and Manpower

The following equipment and manpower will be required to support the ignition team.

- 1—three-man team for igniting the well
- 3—30 minute SCBA units for each team member
- 2—handheld multi-gas (LEL, O<sub>2</sub>, H<sub>2</sub>S, CO) monitors
- 1—full body harness with 100 foot retrieval rope
- 1—12-gauge flare pistol with shells

### 7.3 Procedure

The following procedure will be used to ignite a leak in the event that it becomes necessary to protect the public.

- A. Two men wearing self-contained, pressure demand air masks must determine the perimeter of the flammable area. This should be done with two men, each using a multi-gas detector. The flammable perimeter should be established at 10% of lower explosive limits (LEL).
- B. After the flammable perimeter has been established and all personnel and public have been removed from the area, the ignition team should move to within 500 feet of the up-wind side of the leak perimeter and fire a flare into the area. If the leak is not ignited on the first attempt, move in 20 or 30 feet and fire again. Continue moving in and firing until the leak is ignited or the multi-gas detector indicates the ignition team is moving into a hazardous area (<10% of the lower explosive limit). If trouble is incurred in igniting the leak by firing toward the leak, try firing 40 to 90 feet to each side of the area where you have been firing.
- C. NOTE: Worker firing flare gun is required to wear full body harness with retrieval rope attached so that if he becomes injured, the other two workers can pull him to safety. Worker firing flare gun is required to have multi-gas monitor. All ignition team workers are required to wear fully-charged, 30-minute SCMA units.
- D. If still no ignition is accomplished, assess the situation and determine if an alternate method of igniting should be used. If an alternative method of igniting should be used, put any necessary precautions in place before attempting to ignite the well.
- E. If ignition is not possible due to the make-up of the gas, the toxic leak perimeter must be established and maintained to ensure evacuation is completed and continues until the emergency is secured.

## Part II—H<sub>2</sub>S Contingency Plan

### 1.0 MAPS

An accurate map depicting the locations of all existing structures used for public and private occupancy, areas maintained for public recreation, and roads and railroads is provided in Attachment 1.

### 2.0 CONTACT INFORMATION FOR GENERAL PUBLIC

A list of names, telephone numbers, and addresses of seasonal and permanent residents, private businesses, schools, places of worship, hospitals, government offices, and parties responsible for the areas maintained for public camping or gathering identified on the maps are provided in Attachment 2.

### **3.0 EMERGENCY CONTACT INFORMATION**

A list of names, telephone numbers, and addresses of Encana and Contractor representatives, the local emergency preparedness coordinator, the local ambulance services, local hospitals, local fire departments, the Department of Environmental Quality, Department of Natural Resources, and the pollution emergency alerting system are provided in Attachment 3.

**ATTACHMENT 1—Maps**

**ATTACHMENT 2—Contact Information for General Public**

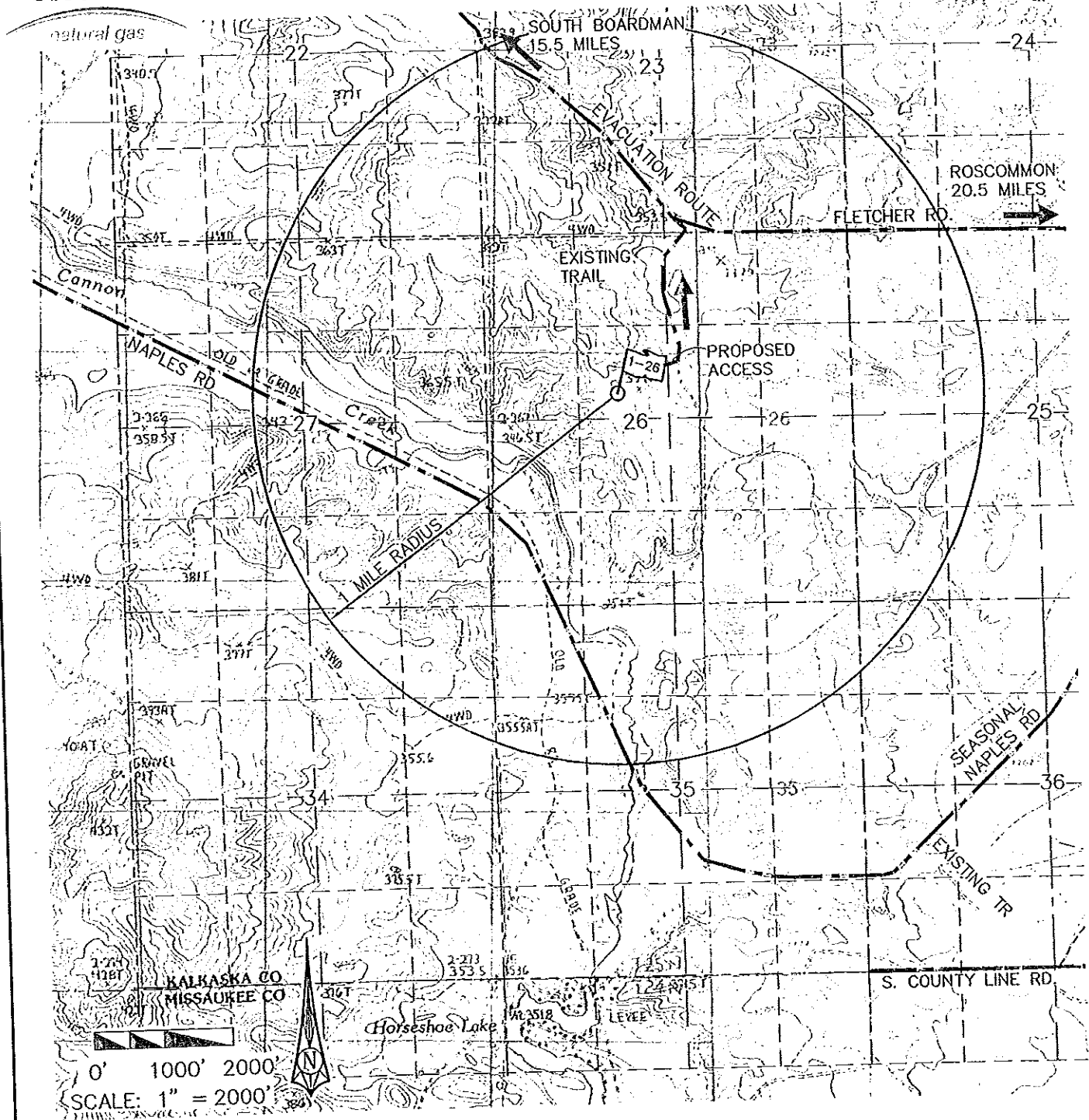
**ATTACHMENT 3—Emergency Contact Information**

## **ATTACHMENT 1**

### **MAPS**



# encana. VICINITY MAP — STATE GARFIELD 1-26



===== EXISTING ACCESS  
 ----- PROPOSED ACCESS

LAT: 44°31'59.31N  
 LON: 85°00'17.03W

APPROXIMATE ELEV. @ WELL: 1224'

SHL FOOTAGES:

338' FSL UNIT 2302' FNL SECTION  
 511' FWL UNIT 1867' FWL SECTION

A:\Cadworkstation\Land Projects 08\ENCANA\25710 St.Garfield 1-36\St.Garfield 1-36\dwg\25710.dwg 3/9/2012 4:13:58 PM EST

**FARRIER SURVEYING INC.**  
 P.O. BOX 998  
 244 S. CEDAR STREET  
 KALKASKA, MI 49646  
 TEL (231) 258-8162 FAX (231) 258-3249  
 office@farriersurveying.com

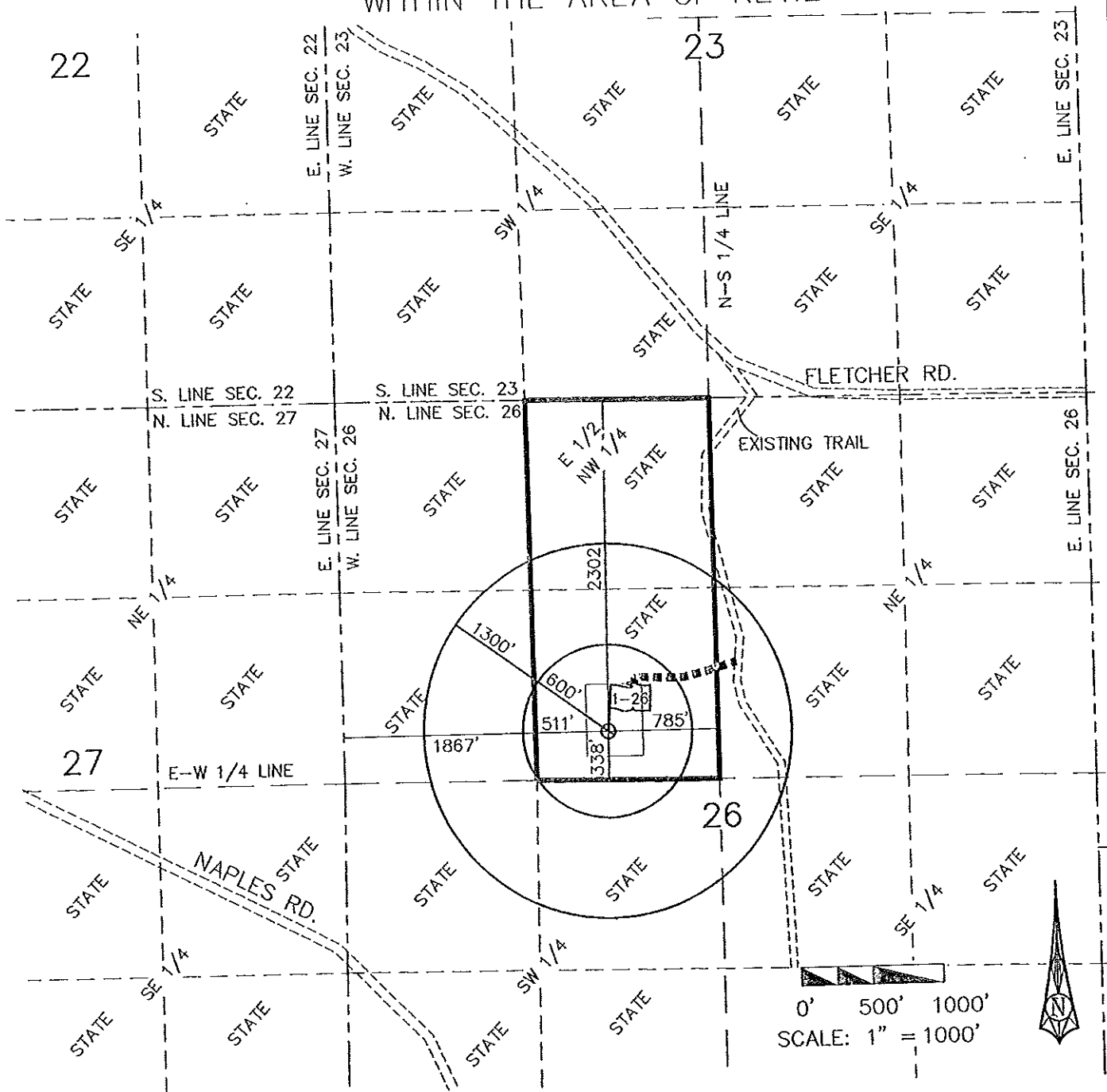
**CLIENT ENCANA OIL & GAS (USA) INC.**  
**DESCRIPTION STATE GARFIELD 1-26**  
 UNIT: THE E½ OF NW ¼ OF SECTION 26,  
 T25N-R6W, GARFIELD TOWNSHIP, KALKASKA COUNTY,  
 MICHIGAN

DRAWN: MPS	FILE No. 25810
CHECK: DRF	Fd. Bk. 222 Pg. 36
REVISED:	DATE: 3/31/12
	SHEET: 1 of 1



# AREA OF REVIEW - STATE GARFIELD 1-26

THERE ARE NO RESIDENCES OR WELLS OF RECORD  
WITHIN THE AREA OF REVIEW



APPROXIMATE ELEV. @ WELL: 1224'

SHL FOOTAGES:

338' FSL UNIT 2302' FNL SECTION  
511' FWL UNIT 1867' FWL SECTION

LAT: 44°31'59.31N  
LON: 85°00'17.03W

===== EXISTING ACCESS  
----- PROPOSED ACCESS

A:\Cadworkstation\Land Projects 08\ENCANA\25710 St.Garfield 1-36\St.Garfield 1-36\dwg\25710.dwg 3/9/2012 4:13:58 PM EST

**FARRIER SURVEYING INC.**  
P.O. BOX 998  
244 S.CEDAR STREET  
KALKASKA, MI 49646  
TEL(231)258-8162 FAX(231)258-3249  
office@farriersurveying.com

**CLIENT ENCANA OIL & GAS (USA) INC.**

**DESCRIPTION STATE GARFIELD 1-26**

UNIT: THE E 1/2 OF NW 1/4 OF SECTION 26,  
T25N-R6W, GARFIELD TOWNSHIP, KALKASKA COUNTY,  
MICHIGAN

DRAWN: MPS

FILE No. 25810

CHECK: DRF

Fd. Bk. 222 Pg.36

REVISED:

DATE: 3/31/12

SHEET: 1 of 1

**ATTACHMENT 2**

**CONTACT INFORMATION FOR GENERAL PUBLIC**

### PUBLIC CONTACT INFORMATION

<b>SITE INFORMATION: State Garfield 1-26</b>		<b>GPS Information</b>	
Site Physical Address:	8568 Cannon Bridge Rd. SE, Fife Lake, MI 49633	Latitude:	44°31'59.560"
Site Phone Number:	TBD	Longitude:	-85°00'16.351"
Legal Description:	E ½ of the NW ¼ Section 26 T25N R6W	Elevation:	1224'

### PUBLIC CONTACT INFORMATION (Surface Owners and General Public within 0.25 miles)

State of Michigan  
DNR – Traverse City Management Unit  
Kalkaska Field Office  
Jerry Grievc – Forester  
2089 North Birch Street  
Kalkaska, MI 49646  
231-258-2711 office

Kalkaska County Road Commission  
James Woodhams-Manager  
1049 Island Lake Road  
Kalkaska, MI 49646  
231-258-2242

**ATTACHMENT 3**

**EMERGENCY CONTACT INFORMATION**

# EMERGENCY CONTACT INFORMATION (Page 1 of 2)

<b>SITE INFORMATION: State Garfield 1-26</b>		<b>GPS Information</b>	
Site Physical Address:	8568 Cannon Bridge Rd. SE, Fife Lake, MI 49633	Latitude:	44°31'59.560"
Site Phone Number:	TBD	Longitude:	-85°00'16.351"
Legal Description:	E ½ of the NW ¼ Section 26 T25N R6W	Elevation:	1224'

<b>DIRECTIONS TO SITE:</b>	<b>From Kalkaska:</b> From the intersection of US 131 and Highway M-72 on the South end of the Village of Kalkaska, travel East on Hwy M-72 for ¼ miles. Turn right on HWY M-66, travel South 9 miles. Turn left on W. Sharon Rd, travel East 5 miles. W. Sharon Rd becomes Fletcher Rd, travel Southeast 6 miles. Turn right at pointer, follow 2 track South 2400'. Turn right on skidder trail (travel Southwest 800') to enter the well site.
	<b>From Grayling:</b> Go South on I-75 4 miles, merge Right onto US-27. Go south 6 miles, take Exit 206. Go West on N. Higgins Lake Dr 0.1 miles. Turn right, go North on Military Rd 1.7 miles. Turn left on Fletcher Rd, go West 11.5 miles. Turn left at point, follow 2 track South 2400'. Turn right on skidder trail (travel Southwest 800') to enter well site.

<b>DIRECTIONS TO HOSPITAL:</b>	<b>Grayling Mercy Hospital:</b> (989-340-5000) 1100 E. Michigan Ave, is approximately 26 miles. From the site, follow the access East and North 1/2 mile. Turn right on Fletcher Rd, go East 10 miles. Turn right on S Military Rd, go South 1.7 miles. Turn Left on N. Higgins Lake Dr, go East 0.3 miles. Turn left and merge on North bound US-127, go North 6 mile and merge onto North I-75, go North 4 miles. Take Exit 254 on the left to merge on to I-75 Business North, go Northerly 1.5 miles. Turn Right on Michigan Ave go 0.5 mile to hospital.
	<b>Kalkaska Memorial Hospital:</b> (231-258-7500) 419 S. Coral Street is approximately 25 miles. From the site, follow the access East and North 1/2 mile. Turn Left on Fletcher Rd, go Northwest 7.5 miles. The road becomes W. Sharon Rd, go West 5 miles. Turn right on HWY M-66, go North 9 miles. Go straight thru M-72 unto Old M-66, go North 1.0 mile. Take slight left turn, continue on Old M-66 (Elm Street) go Northwest 0.2 mile. Continue straight at the traffic light, crossing Cedar Street/US-131. Continue Northwest on Third Street another 3 blocks. Turn left onto Coral Street, go Southwest 300 feet to the Emergency Room Entrance of Kalkaska Memorial Health Center.

<b>EMERGENCY RESPONSE NUMBERS</b>	
Sheriff	911
605 N. Birch Street	
Kalkaska, MI 49646	
231-258-8686 (non-emergency)	911
State Police	
Kalkaska Post #79	
2089 Birch Street	
Kalkaska, MI 49646	
231-258-4112 (non-emergency)	911
Fire	911
Ambulance	911
Hospital	
Grayling Mercy Hospital	
1100 E. Michigan Avenue	
Grayling, MI 49738-1312	
989-340-5000 (non-emergency)	
Kalkaska Memorial Hospital	
491 S. Coral Street	
Kalkaska, MI 49646	
231-258-7500 (non-emergency)	
Is "911" accessible from this location? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

EMERGENCY CONTACT INFORMATION (Page 2 of 2)

**COMPANY CONTACTS**

**ENCANA OIL & GAS (USA) INC.**

Joel Fox  
Production Engineer  
370 17<sup>th</sup> Street, Suite 1700  
Denver, CO 80202  
720-876-3597 office  
303-885-0101 cell

**LES WILSON INC.**

Verdayne Seals  
205 Industrial Ave.  
Carmi, IL 62821  
618-382-8599 office  
618-838-8599 cell

**DISCOVERY ENGINEERING\***

Mark Nelson  
Drilling Consultant  
2700 Sorority Lane  
Holt, MI 48842  
231-342-2900 cell

**LES WILSON INC.**

Sonny McCulley  
Drilling Supervisor  
205 Industrial Ave.  
Carmi, IL 62821  
618-383-2780 cell

\* Responsible for notifying emergency response agencies, general public, surface landowners, and regulatory agencies.

**AGENCY CONTACTS**

**KALKASKA COUNTY EMERGENCY MANAGEMENT**

Mark Laskowski  
231-251-3334 office  
231-384-5785 cell

**POLLUTION EMERGENCY ALERT SYSTEM**

1-800-292-4706

**DEQ-OGS H<sub>2</sub>S SUB-UNIT**

Ray Vugrinovich – Supervisor  
517-241-1532 office

**DNR- Cadillac Office**

TBD – Supervisor  
231-876-4435 office  
231-631-7078 cell

Susanne Biteman-Geologist  
231-876-4436 office

**DNR- Traverse Management Unit**

Jerry Grieve-Forester  
231-258-2711 office



March 31, 2012

Michigan Department of Natural Resources  
Forest Mineral and Fire Management Division  
P.O. Box 30452  
Lansing, MI 48909-7952

Re: Encana Oil & Gas (USA) Inc,  
State Garfield 1-26  
Section 26, Township 25 North, Range 6 West  
Notification of Application for Permit to Drill

To Whom It May Concern:

Encana Oil & Gas (USA) Inc. (Encana) intends to drill an exploratory natural gas well in Section 26, Township 25 North, Range 6 West in Garfield Township, Kalkaska County, Michigan. In accordance with Part 615, R324.201(2)(d), of Michigan's Oil and Gas Regulations, Encana is required to notify the surface owner.

Please note the following:

- The Application for Permit to Drill was mailed to the Office of Geological Survey Michigan Department of Environmental Quality on March 31, 2012.
- Activities are expected to begin in Summer of 2012.
- Traverse City Management Unit Forester Jerry Grieve has been notified of the proposed activities.
- A copy of the first page of the Application for Permit to Drill is enclosed for your records.

Sincerely Yours,

A handwritten signature in black ink, appearing to read "Brenda R. Linster", written over a horizontal line.

Brenda R. Linster  
Regulatory Advisor

Enc.

Encana Oil & Gas (USA) Inc.  
Republic Plaza  
370 - 17 Street, Suite 1700  
Denver, Colorado  
United States 80202  
t 720.876.3989  
f 720.876.4989  
e [brenda.linster@encana.com](mailto:brenda.linster@encana.com)



encana™

natural gas

March 31, 2012

Mark Laskowski  
Kalkaska County Emergency Services Coordinator  
605 N. Birch Street  
Kalkaska, MI 49646

Re: Encana Oil & Gas (USA) Inc.  
State Garfield 1-26  
H<sub>2</sub>S Contingency Plan Submittal

Dear Mr. Laskowski:

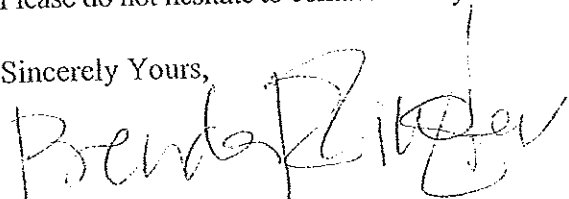
Encana Oil & Gas (USA) Inc. (Encana) intends to drill an exploratory natural gas well in Section 26, Township 25 North, Range 6 West in Garfield Township, Kalkaska County, Michigan. Encana does not anticipate this well to be a H<sub>2</sub>S well; however, H<sub>2</sub>S well formations may be encountered during drilling activities. In accordance with Part 615, R324.1101(4), of Michigan's Oil and Gas Regulations, Encana is providing the H<sub>2</sub>S Contingency Plan for the State Garfield 1-26 well.

Please note the following:

- The Application for Permit to Drill was mailed to the Office of Geological Survey Michigan Department of Environmental Quality March 31, 2012.
- The well site is located on State of Michigan property.
- Activities are expected to begin in Summer of 2012.
- A copy of the H<sub>2</sub>S Contingency Plan is enclosed for your records.

Please do not hesitate to contact me if you have any questions or would like additional information.

Sincerely Yours,



Brenda R. Linster  
Regulatory Advisor

Enc.

Encana Oil & Gas (USA) Inc.  
Republic Plaza  
370 – 17 Street, Suite 1700  
Denver, Colorado  
United States 80202  
t 720.876.3989  
f 720.876.4989  
e [brenda.linster@encana.com](mailto:brenda.linster@encana.com)

March 31, 2012

Deborah Hill  
Kalkaska County Clerk  
605 N. Birch Street  
Kalkaska, MI 49646

Re: Encana Oil & Gas (USA) Inc.  
State Garfield 1-26  
Notification of Application for Permit to Drill

Dear Ms. Hill:

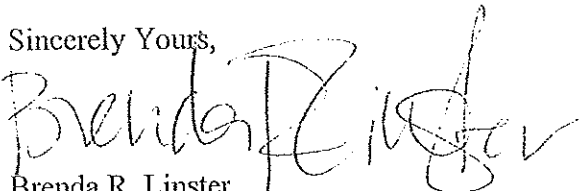
Encana Oil & Gas (USA) Inc. (Encana) intends to drill an exploratory natural gas well in Section 26, Township 25 North, Range 6 West in Garfield Township, Kalkaska County, Michigan. In accordance with Part 615, R324.201(2)(d), of Michigan's Oil and Gas Regulations, Encana is required to notify the clerk of the county.

Please note the following:

- The Application for Permit to Drill was mailed to the Office of Geological Survey Michigan Department of Environmental Quality (MDEQ) on March 31 2012.
- The well site is located on State of Michigan property.
- Activities are expected to begin in Summer of 2012.
- A copy of the first page of the Application for Permit to Drill is enclosed for your records.

Please do not hesitate to contact me if you have any questions or would like additional information.

Sincerely Yours,

  
Brenda R. Linster  
Regulatory Advisor

Enc.

Encana Oil & Gas (USA) Inc.  
Republic Plaza  
370 - 17 Street, Suite 1700  
Denver, Colorado  
United States 80202  
t 720.876.3989  
f 720.876.4989  
e [brenda.linster@encana.com](mailto:brenda.linster@encana.com)

March 31, 2012

Karen Van Horn  
Kalkaska Planning & Zoning  
890 Island Lake Rd  
Kalkaska, MI 49646

Re: Encana Oil & Gas (USA) Inc.  
State Garfield 1-26  
Notification of Application for Permit to Drill  
Soil Erosion and Sedimentation Control Plan Submittal

Dear Ms. Van Horn:

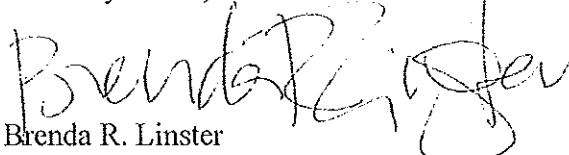
Encana Oil & Gas (USA) Inc. (Encana) intends to drill an exploratory natural gas well in Section 26, Township 25 North, Range 6 West in Garfield Township, Kalkaska County, Michigan. In accordance with form EQP 7200-18, Encana is providing a copy of the Soil Erosion and Sedimentation Control Plan (SESCP) and relevant supplemental plats for your records. Please note that the SESCO is for the proposed well site and access road only. Encana will acquire a Soil Erosion Permit and provide a separate SESCO for the flow line when appropriate.

Please note the following:

- The Application for Permit to Drill was mailed to the Office of Geological Survey Michigan Department of Environmental Quality on March 31, 2012.
- The well site is located on State of Michigan property.
- Activities are expected to begin in Summer of 2012.
- A copy of the first page of the Application for Permit to Drill is enclosed for your records.
- A copy of the SESCO form EQP 7200-18 is enclosed for your records

Please do not hesitate to contact me if you have any questions or would like additional information.

Sincerely Yours,

  
Brenda R. Linster  
Regulatory Advisor

Enc.

Encana Oil & Gas (USA) Inc.  
Republic Plaza  
370 – 17 Street, Suite 1700  
Denver, Colorado  
United States 80202  
t 720.876.3989  
f 720.876.4989  
e [brenda.linster@encana.com](mailto:brenda.linster@encana.com)



March 31, 2012

Mr. Larry E. Organek  
Department of Environmental Quality  
Office of Geological Survey  
Petroleum and Mining Geology Unit  
PO Box 30256  
Lansing, MI 48909-7756

Re: Request for Confidential Well Status  
State Garfield 1-26  
Section 26, Township 25 North, Range 6 West

Dear Mr. Organek:

Encana Oil & Gas (USA) Inc. (Encana) has submitted an Application for Permit to Drill the State Garfield 1-26 well. Encana respectfully requests that all information submitted with this application be kept confidential and granted "tight-hole status" to the extent allowed by Michigan's rules and regulations.

Please contact me at your earliest convenience if you have any questions or require additional information.

Sincerely Yours,

A handwritten signature in black ink, appearing to read "Brenda R. Linster". The signature is written in a cursive, flowing style.

Brenda R. Linster  
Regulatory Advisor

Encana Oil & Gas (USA) Inc.  
Republic Plaza  
370 -- 17 Street, Suite 1700  
Denver, Colorado  
United States 80202  
t 720.876.3989  
f 720.876.4989  
o [brenda.linster@encana.com](mailto:brenda.linster@encana.com)



March 31, 2012

Mr. Mark Snow  
Department of Environmental Quality  
Office of Geological Survey  
Permits and Bonding Unit  
PO Box 30256  
Lansing, MI 48909-7756

Re: State Garfield 1-26  
Section 26, Township 25 North, Range 6 West

Dear Mr. Snow:

Enclosed with this letter is an application packet for the proposed Encana Oil & Gas (USA) Inc. (Encana) State Garfield 1-26 well. The application packet includes the following documents:

- Credit Card Transaction Authorization (EQP 7010) for the \$300 application fee
- An original and one copy of the Application for Permit to Drill (form EPQ 7200-1), including
  - Survey Record of Well Location (form EQP 7200-2)
  - Supplemental Survey Plats
  - Environmental Impact Statement (form EQP 7200-19)
  - Rare Species and Unique Natural Features Clearance Letter
  - Soil Erosion & Sedimentation Control Plan (form EQP 7200-18)
  - Wellhead Blowout Control System (form EQP 7200-4)
  - H<sub>2</sub>S Contingency Plan (Part I and Part II)
  - Copy of notification letters
    - Michigan Department of Natural Resources (surface owner)
    - Kalkaska County Emergency Management
    - Kalkaska County Clerk
    - Kalkaska County Planning and Zoning

As part of this application, we respectfully request the installation of three water wells as part of the site construction for the proposed State Garfield 1-26 well.

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t 720.876.3989  
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e [brenda.linstner@encana.com](mailto:brenda.linstner@encana.com)

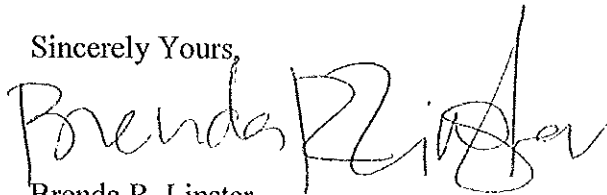
Please note the following:

- Encana has requested confidential status for this well. A copy of the request is provided with this letter.
- Encana has completed a Rare Species Review of the proposed well pad and access road. The review indicated that the red-shouldered hawk and Kirtland's warbler may be impacted as a result of the proposed activities. Encana will use a qualified biologist to conduct field surveys during the appropriate timing windows and will submit the results to the MDNR Traverse City Management Unit Biologist and your office.

A copy of the Rare Species Review results letter is provided with the application.

Please contact me at your earliest convenience if you have any questions or require additional information.

Sincerely Yours,

A handwritten signature in cursive script, appearing to read "Brenda R. Linster".

Brenda R. Linster  
Regulatory Advisor

Enclosures.

cc w/enclosures: Susanne Biteman-DEQ,  
Jerry Grieve-DNR