



May 14, 2015

9045-7400-32640-02

Trevor Dorey  
Environmental Coordinator  
Nexen Energy ULC  
801 – 7<sup>th</sup> Ave SW  
Calgary, AB T2P 3P7

Dear Mr. Dorey:

**RE: PRODUCED WATER AND NON-HAZARDOUS WASTE DISPOSAL APPROVAL  
AMENDMENT #1  
NEXEN ENERGY TSEA b-16-I/94-O-08; (WA# 25113);  
HORN RIVER FIELD - DEBOLT FORMATION**

Commission staff have reviewed the application submitted January 29, 2015, requesting permission to dispose of non-hazardous waste into the Debolt formation of the subject well.

The subject well was approved for produced water disposal March 24, 2009. Nexen has now requested a non-hazardous waste disposal approval to allow injection of a waste stream including water used for hydro-testing of pipe spools, water accumulated in the well cellars during spring run-off, rain water from sill tray accumulations, and other non-hazardous waste streams.

This well has performed well as a disposal well to date with over 1.6 million cubic meters of disposed water with minimal applied wellhead pressure. We concur that the subject well is suitable to accommodate non-hazardous waste disposal as well as produced water disposal.

Attached please find **Order 09-02-004 Amendment #1** designating an area in the Horn River field – Debolt formation as a Special Project under section 75 of the *Oil and Gas Activities Act* (OGAA), for use of a storage reservoir for the disposal of non-hazardous waste and produced water, including well stimulation flowback fluid. This Order includes a number of detailed operational conditions, including: maximum wellhead injection pressure, ultimate reservoir pressure limit, wellbore integrity testing and reporting requirements. Additional general information regarding disposal wells is available on the Commission's website at <http://bcogc.ca/node/5997/download>

An EMA permit is required from the Commission Waste Management department. Should you have any questions, please contact Ron Stefik at (250) 419-4430 or Michelle Gaucher at 250-419-4482.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Ron Stefik', is written over a horizontal line.

Ron Stefik, Eng.L.  
Supervisor, Reservoir Engineering  
Oil and Gas Commission

Attachment

**ORDER 09-02-004 Amendment #1**

1 Under Section 75(1)(d) of the *Oil and Gas Activities Act*, the Commission designates the operation and use of a storage reservoir for disposal of produced salt water and non-hazardous waste fluids generated from oil and gas operations, into the Debolt formation – Horn River field as a special project in the following area:

NTS 94-O-08 Block - I Unit - 16.

2 Under section 75(2) of the *Oil and Gas Activities Act*, the special project designation in this Order is subject to the following conditions. The Permit Holder shall:

- a) Inject produced water, including well flowback completion fluids, and non-hazardous waste, into the well Nexen Energy Tsea b-16-I/94-O-8; WA# 25113 Debolt formation, 628.0 – 722.0 mKB.
- b) Hold a valid Permit under the Environmental Management Act for the disposal of non-hazardous waste.
- c) Not exceed an injection pressure, measured at the wellhead on the subject well, of 3,800 kPag or the pressure required to fracture the formation, whichever is lesser.
- d) Inject only through tubing with a packer set as near as is practical above the injection interval.
- e) Continually measure and record the wellhead casing and tubing pressures.
- f) Cease injection and notify the Commission immediately if hydraulic isolation is lost in the wellbore or formation.
- g) Submit the annual packer isolation test report to the Commission within 30 days of the completion of the test.
- h) Include the disposal operating hours and the maximum injection pressure value on the monthly BC-S18 disposal statement.
- i) Conduct a reservoir pressure test on the formation in the subject well annually, with a shut-in period of sufficient length to provide data for calculation of the reservoir pressure, and submit a report of the test within 60 days of the end of the test.
- j) Cease injection upon reaching a maximum formation pressure of 5,580 kPaa.
- k)
  - i) Perform a casing inspection log on the subject well and submit results to the Commission within 30 days of the completion of logging, at an interval of not more than every 10 years, commencing from the date of initial injection.
  - ii) Perform a hydraulic isolation temperature log on the subject well and submit results to the Commission within 30 days of the completion of logging, at an interval of not more than every 5 years, commencing from the date of initial injection.
- l) Not conduct hydraulic fracture stimulation on any formation in the subject well without prior Commission approval.



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Ron Stefik, Eng.L.  
Supervisor, Reservoir Engineering  
Oil and Gas Commission

DATED AT the City of Victoria, in the Province of British Columbia, this 14<sup>th</sup> day of May, 2015.

Advisory Guidance for Order 09-02-004 Amendment #1

- I. A production packer must be set above the injection interval and the space between the tubing and casing filled with corrosion inhibiting fluids, as per section 16(2) of the Drilling and Production Regulation.
- II. Annual packer isolation tests are required, as per section 16(3) of the Drilling and Production Regulation.
- III. Injected fluids must be metered, as per section 74 of the Drilling and Production Regulation.
- IV. A monthly disposal statement must be submitted to the Commission not later than the 25<sup>th</sup> day of the month following the reported month, as per section 75 of the Drilling and Production Regulation.