



August 9, 2017

3400-2010-32640-02

Amanda Klein
Environment and Regulatory Specialist
Secure Energy Services Inc.
3600, 205 – 5th Avenue S.W.
Calgary, AB T2P 2V7

Dear Ms. Klein,

**RE: NON-HAZARDOUS WASTE AND PRODUCED WATER DISPOSAL
SPECIAL PROJECT; AMENDMENT #4
SECURE DAWSON 4-36-78-15; WA# 26920
DAWSON CREEK FIELD – PADDY-CADOTTE FORMATION**

Approval for disposal of non-hazardous waste and produced water, Order 12-02-015, was issued for the Paddy and Cadotte formations on May 24, 2012, and the Order has been amended several times to bring the well up to current requirements and alter the reservoir pressure testing frequency. The most recent amendment, Order 12-02-015 Amendment #3, was issued to expand the perforation intervals as part of an operation conducted by Secure to improve injectivity into the well. A hydraulic fracture operation was also conducted following approval from the OGC. A hydraulic isolation temperature log run following the operation proves that hydraulic isolation is maintained within the new disposal perforations.

Attached please find **Order 12-02-015 Amendment #4** designating an area in the Dawson Creek field – Paddy-Cadotte formation as a Special Project under section 75 of the *Oil and Gas Activities Act*, for the use of a storage reservoir for the disposal of non-hazardous waste and produced water. The only changes from Order 12-02-015 Amendment #3 are the maximum wellhead injection pressure in condition 2c), and the maximum formation pressure in condition 2i). These numbers have been recalculated based on the new perforation interval. Additional general information regarding disposal wells is available on the Commission's website at <http://www.bcogc.ca/industry-zone/documentation/Subsurface-Disposal>.

The Ministry of Environment identifies the type of effluent approved for injection in the separate Waste Discharge Permit, granted under the Environmental Management Act.

In certain circumstances, disposal well operation may induce seismicity of values that require modification of operations to mitigate.

Disposal of fluid with high total dissolved solids content requires adjustment of the wellhead injection pressure to remain below formation fracture pressure

Should you have any questions, please contact the undersigned at (250) 419-4430 or Michelle Harding at (250) 419-4493.

Sincerely,

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

Attachment



ORDER 12-02-015 Amendment #4

- 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 the disposal of produced water, including flowback from fracturing operations, and non-hazardous waste, into the Paddy-Cadotte formation – Dawson Creek field as a special project in the following area:

DLS Twp 78 Rge 15 W6M Section 36 - Lsds 3, 4, 5, and 6

- 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 and non-hazardous waste only into the well Secure Dawson 4-36-78-15; WA# 26920 – Paddy-Cadotte formation (perforations from 865.0 mKB to 910.0 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 13,180 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 electronically.
 - 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 disposal statement.
 - i) Cease injection upon reaching a maximum formation pressure of 6,070 kPaa measured at 887.5 mKB.
 - j) Maintain and manage the well head to prevent surface liquids from entering the well bore through the annulus outside or between casing and conductor strings.
 - k) Conduct a reservoir pressure test on the formation in the subject well every two years, 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.
 - l) 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 disposal operations.
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 disposal operations.
 - m) Not conduct a hydraulic fracture stimulation on any formation in the subject well without prior Commission approval.



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

DATED AT the City of Victoria, in the Province of British Columbia, this 9th day of August 2017.

Advisory Guidance for Order 12-02-015 Amendment #4

- I. A production packer must be set above the injection interval and the space between the tubing and casing filled with corrosion and frost inhibiting fluids, as per section 16(2) of the Drilling and Production Regulation.
- II. Annual packer isolation tests are required to be submitted, as per section 16(3) of the Drilling and Production Regulation.
- III. Injected fluids must be metered and the injection pressure measured at the wellhead, 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 25th day of the month following the reported month, as per section 75 of the Drilling and Production Regulation.
- V. Seismic events must be reported and disposal operations suspended as per section 21.1 of the Drilling and Production Regulation.