



September 24, 2013

8157-2800-32640-02

Mr. Dallas Longshore, CET
Manager, Caverns & Well Operations
Tervita Corporation
500, 140 – 10th Avenue S.E.
Calgary, AB T2G 0R1

Dear Mr. Longshore:

**RE: NON-HAZARDOUS WASTE DISPOSAL WELL APPROVAL, AMENDMENT # 1
TERVITA TOWER 8-31-81-17 W6M; WA# 27395
TOWER LAKE FIELD; CADOMIN FORMATION**

Deep disposal wells are a key component to oil and gas development and operations. The Oil and Gas Commission (Commission) is amending disposal well approvals to provide clarity and ensure that conditions conform to current expectations.

The subject well was granted approval for disposal of non-hazardous waste on September 6, 2011. The cumulative disposal volume as of February 2013 was 260,000 m³.

Attached find **Order 11-02-013 Amendment # 1**, designating an area in the Tower Lake field – Cadomin formation a Special Project under section 75 of the *Oil and Gas Activities Act* (OGAA), for use of a storage reservoir for the disposal of oil and gas operations non-hazardous waste. A non-hazardous waste disposal well includes approval for disposal of produced water, including well flow-back completion fluids.


This Order clarifies a number of detailed operational conditions, including: maximum wellhead injection pressure, ultimate reservoir pressure limit, wellbore integrity monitoring and reporting requirements. Additional general information regarding disposal wells is available on the Commission's website at <http://bcogc.ca/node/5997/download>.

This Order is effective October 21, 2013. Any concerns may be communicated to this office prior to that date.

Disposal wells are subject to regular field inspection and audit. Contravention of a condition of this Order may be subject to enforcement under section 62 of OGAA, or suspension or cancellation of the Order under section 75(2)(b).

Should you have any questions, please contact Ron Stefik at (250) 419-4430.

Sincerely,



Richard Slocomb, P.Eng
Deputy Commissioner, Engineering
Oil and Gas Commission

Attachment

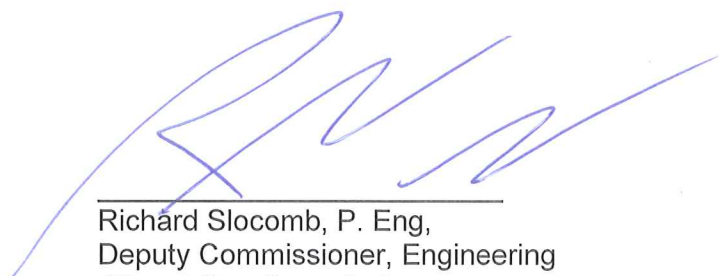
ORDER 11-02-013 AMENDMENT # 1

WHEREAS an approval of December 16, 2011 enabled deep disposal into well Tervita Tower 8-31-81-17, WHEREAS this approval is now known as Order 11-02-013 Amendment # 1, WHEREAS Tervita Corporation is the Permit Holder of the well, and NOW THEREFORE clauses 1 through 5 of Order 11-02-013 are rescinded and replaced by the following.

1. Under Section 75(1)(d) of the *Oil and Gas Activities Act*, the Oil and Gas Commission (Commission) designates the operation and use of a storage reservoir for the disposal of non-hazardous waste and produced water, into the Cadomin formation (the formation) – Tower Lake field as a special project in the following area:

DLS Twp 81 Rge 17 W6M Section 31 - Lsds 1,2,7 and 8.
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 non-hazardous waste and produced water, including well flowback completion fluids, only into the well Tervita Tower 8-31-81-17 (Well Permit # 27395), Cadomin formation (1140 mKB to 1226 mKB, TVD).
 - 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 17,000 kPa or the pressure required to fracture the formation, whichever is lesser.
 - d) Inject only through tubing.
 - 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 values on the monthly disposal statement.
 - i) Cease injection upon reaching a maximum formation pressure of 12,250 kPa.
 - j) Conduct an annual reservoir pressure test on the formation in the subject well, 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.
 - k)
 - ii) 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.
 - ii) Perform a hydraulic isolation temperature log on the subject well within 90 days of this Order and submit results to the Commission within 30 days of the completion of logging, and thereafter at an interval of not more than every 5 years.

- i) Not conduct a hydraulic fracture stimulation on any formation in the subject well without prior Commission approval.



Richard Slocomb, P. Eng,
Deputy Commissioner, Engineering
Oil and Gas Commission

DATED AT the City of Victoria, in the Province of British Columbia, this 27th day of September, 2013.

Advisory Guidance for Order 11-02-013 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 25th day of the month following the reported month, as per section 75 of the Drilling and Production Regulation.