

December 6, 2017

2800-7400-32640-02

Darren Evans
Storm Resources Ltd.
PO Box 1420, Station M
Calgary, Alberta T2P 2L6

Dear Mr. Evans,

**RE: PRODUCED WATER DISPOSAL SPECIAL PROJECT APPROVAL
SRL W BUICK a-92-L/94-A-14; WA# 21764
BUICK CREEK WEST FIELD – DEBOLT FORMATION**

Commission staff have reviewed the application from Storm Resources Ltd. dated October 20th, 2017 for produced water disposal into the subject well, Debolt formation. The subject well was drilled and abandoned in 2006/2007. In March 2017, Storm Resources re-entered the well and completed the Debolt formation for disposal purpose. An extended injectivity test for 500 m³ above the primary volume was approved on August 22, 2017 under Order 17-02-012.

Attached please find **Order 17-02-012 Amendment #1**, designating an area in the Buick Creek West field, Debolt formation, as a Special Project under section 75 of the *Oil and Gas Activities Act*, for the operation and use of a storage reservoir for the disposal of produced water. This Order contains a number of detailed operational conditions, including a maximum wellhead injection pressure, a requirement for continuous tubing and casing pressure monitoring, and an ultimate reservoir pressure limit. The results of the injection test and pressure testing indicate that the overall disposal volume may be limited. Because of this, a reservoir pressure test is required after the injection of 10,000 m³, as per condition 2(h)(i). The frequency of pressure testing set out in condition 2(h)(ii) may be subject to change based on the results of the first pressure test under this Order.

For the inspection requirement of Order condition 2(l), please arrange via email to OGCPipelines.Facilities@bcogc.ca.

Please note that disposal of fluid with high total dissolved solids content requires adjustment of the wellhead injection pressure to remain below formation fracture pressure, as per condition 2(b).

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

Sincerely,



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

Attachment

ORDER 17-02-012 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 the disposal of produced water, including flowback from fracturing operations, into the Debolt formation – Buick Creek West field as a special project in the following area:

NTS 94-A-14 Block L Unit 92

- 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 only into the well SRL W Buick a-92-L/94-A-14; WA# 21764 – Debolt formation (disposal perforations 1778.0 to 1802.0 mKB).
 - b) Not exceed an injection pressure, measured at the wellhead on the subject well, of 14,600 kPag or the pressure required to fracture the formation, whichever is lesser.
 - c) Inject only through tubing with a packer set as near as is practical above the injection interval.
 - d) Continually measure and record the wellhead casing and tubing pressures electronically.
 - e) Cease injection and notify the Commission immediately if hydraulic isolation is lost in the wellbore or formation.
 - f) Submit the annual packer isolation test report to the Commission within 30 days of the completion of the test.
 - g) Include the disposal operating hours and the maximum injection pressure value on the monthly BC-S18 disposal statement.
 - h) i) After injecting a cumulative volume of 10,000 m³ under this Order, or following 12 months of disposal operation, whichever comes first; conduct a 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. Thereafter;
ii) Conduct an annual reservoir pressure test on the formation in the subject well.
 - i) Cease injection upon reaching a maximum formation pressure of 18,625 kPaa, measured at 1790.0 mKB.
 - j) 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.
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.
 - k) Not conduct a hydraulic fracture stimulation on any formation in the subject well without prior Commission approval.
 - l) Complete an inspection, satisfactory to the Commission, within 4 weeks of initial disposal operations.



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

DATED AT the City of Victoria, in the Province of British Columbia, this 6th day of December, 2017.



Advisory Guidance for Order 17-02-012 Amendment #1

- 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.