

December 20, 2022

7750-2885-32640-02

Spencer Saurette, P.Eng.
Exploitation Engineer BC South
Canadian Natural Resources Ltd.
2100, 855 – 2nd Street SW
Calgary, Alberta T2P 4J8

Dear Mr. Saurette,

**RE: PRODUCED WATER DISPOSAL SPECIAL PROJECT APPROVAL
AMENDMENT #1
CNRL HZ SEPTIMUS A13-9-81-18; WA# 27314
SEPTIMUS FIELD – CADOMIN-NIKANASSIN FORMATION**

Approval for disposal of produced water was issued for the subject well, Cadomin formation, on February 11, 2019. Disposal operations at this site have consistently been within the Order limits, with a total disposal volume, as of September 30, 2022, of 248,334 m³.

Seismic events can occur as a result of disposal operations if fault orientation and rock stresses are favorable for movement. Continued low level seismic events near the subject well may be due to disposal activities at this well. In an effort to minimize events, a lower reservoir storage pressure limit is being imposed. No other conditions of the Order have been modified. Reservoir pressure testing is required once per calendar year. As this pressure value is determinative of the ability to continue disposal operation, and remaining capacity, a sufficient shut-in time and data to either achieve or calculate a static reservoir pressure is required.

Attached please find **Order 19-02-003 Amendment #1** designating an area in the Septimus field, Cadomin-Nikanassin 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.

Should you have any questions, please contact Michelle Gaucher at (250) 419-4482 or the undersigned at (250) 419-4430.

Sincerely,



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

Attachment

ORDER 19-02-003 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 Cadomin-Nikanassin formation – near the Septimus field as a special project in the following area:

DLS Twp 81 Rge 18 W6M Section 9 - Lsds 1, 2, 7 and 8 – 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 only into the well CNRL HZ Septimus A13-9-81-18; WA# 27314 – Cadomin-Nikanassin formation (open hole from 1491.2 to 2885.0 mKB MD).
 - b) Not exceed an injection pressure, measured at the wellhead on the subject well, of 18,150 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) Include the disposal operating hours and the maximum injection pressure value on the monthly Petrinex disposal report.
 - f) Cease injection and notify the Commission immediately at Reservoir@bcogc.ca if there are any indications that hydraulic isolation is lost in the wellbore or formation.
 - g) Conduct and submit an annual Surface Casing Vent Flow test to the Commission within 30 days of the completion of the test.
 - h) 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.
 - i) Cease injection upon reaching a maximum formation pressure of 12,400 kPaa, measured at 470.9mSS in the subject well.
 - 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.



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

Advisory Guidance for Order 19-02-003 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 conducted and the associated report must be submitted to the Commission within 30 days of test completion, 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 via Petrinex not later than the 20th 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.