BRITISH COLUMBIA ENERGY REGULATOR

September 24, 2025 1880-2885-32640-02

Tom Johnston
President
AQT Water Management Inc.
Suite 102A, 11039-78 Ave
Grand Prairie, AB
T8W 2J7

Dear Mr. Johnston:

RE: PRODUCED WATER DISPOSAL SPECIAL PROJECT APPROVAL; AMENDMENT #1
AQT BOUDREAU 16-15-84-21 (WA# 22619)
BOUDREAU FIELD – CADOMIN-NIKANASSIN FORMATION

The Regulator has reviewed the application submitted by AQT Water Management Inc. (AQT) dated September 9, 2025, requesting reconsideration of the maximum wellhead injection pressure (MWHIP).

The subject well, drilled in 2008 with a deviated path and completed in the Kiskatinaw, Baldonnel, and Belloy formations without production, was abandoned in 2018 and re-entered in 2025. Cement was drilled out to 1,015 m and the well was completed in the Cadomin-Nikanassin for disposal, approved on August 12, 2025.

In the original approval, a conservative MWHIP was selected due to the deficient step-rate test provided. In the new application, AQT proposes Cadomin-Nikanassin disposal well 11-12-84-19 (WA 3010) as an analogue given the similar geological setting.

The BCER agrees WA 3010 is an appropriate analogue. A step-rate test conducted on WA 3010 in January 2016 yielded a fracture gradient of 21.7 kPa/m. Considering the distance, a 5% safety factor is applied to this gradient, in addition to the 10% factor used in the MWHIP calculation. This gives a revised fracture gradient of 20.6 kPa/m and a resulting MWHIP of 6,975 kPa.

Attached please find **Order 25-02-010 Amendment #1**, designating an area in the Boudreau field, Cadomin-Nikanassin formation, as a Special Project under section 75 of the Energy Resource Activities Act, for the operation and use of a storage reservoir for the injection of produced water.

For the inspection requirement of Order condition 2m), please arrange via email to Pipelines.Facilities@bc-er.ca.

Should you have any questions, please contact Logan Gray at (250) 419-4465 or the undersigned at (250) 419-4482.

Sincerely,

M Gaucher

Michelle Gaucher, P.Eng.
Supervisor, Reservoir Engineering
BC Energy Regulator

Attachments

IN THE MATTER of the application from AQT Water Management Inc., dated September 9, 2025, requesting amendment to the disposal approval:

ORDER 25-02-010 Amendment #1

1. Under Section 75(1)(d) of the Energy Resource Activities Act, the Regulator designates the operation and use of a storage reservoir for produced water, including flowback from fracturing operations, in the Boudreau Field – Cadomin-Nikanassin formation as a special project in the following area:

   DLS Twp 84 Rge 21 W6M Section 15 LSDs 9, 10, 15, and 16

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

   a) Inject water into the well AQT Boudreau 16-15-84-21; WA# 22619 Cadomin-Nikanassin formation from 991.8 – 1,103.0 mKB MD.

   b) Not exceed an injection pressure, measured at the wellhead on the subject well, of 6,975 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) Alarm the casing-tubing annulus pressure monitoring system to indicate when casing pressure varies outside the normal operating range.

   f) Cease injection and notify the Regulator at Reservoir@bc-er.ca immediately 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 Regulator 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 11,750 kPaa, measured at 1,005.7 mKB TVD.

   j) i) Perform a casing inspection log on the subject well and submit results to the Regulator 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 Regulator 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 Regulator approval.

   l) Maintain a groundwater monitoring program and collect and analyze disposal fluid samples as detailed in Appendix A.

   m) Complete an inspection, satisfactory to the Regulator, within 4 weeks of initial disposal operations.

Michelle Gaucher, P.Eng.
Supervisor, Reservoir Engineering
BC Energy Regulator

DATED AT the City of Victoria, in the Province of British Columbia, this 24th day of September 2025.

Advisory Guidance for Order 25-02-010 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 Regulator 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 including the volume of disposal fluid, maximum wellhead injection pressure, and total operating hours must be submitted to the Regulator 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.

Appendix A – Groundwater Monitoring Requirements

AQT Boudreau 16-15-084-21 W6M (WA 22619) Produced Water Disposal

1. A groundwater monitoring program must be implemented at the site of disposal well WA 22619. The program must be designed and overseen by a professional with competency in hydrogeology who is registered and in good standing with Engineers and Geoscientist of British Columbia (Professional); and must involve the following tasks, as described in this Appendix:
    a. prior to activation of the disposal well: the installation of one or more monitoring wells, baseline (reference) groundwater monitoring and sampling
    b. within 6 months of activation of the disposal well: the submission of a reference monitoring report.
    c. on an annual basis, commencing from the date of commencement of disposal: annual groundwater monitoring and sampling, and submission of annual groundwater monitoring reports.
2. One groundwater monitoring well must be installed prior to activation of the disposal well, within a 30 m distance of disposal well WA 22619. The monitoring well must be below the water table, within the saturated groundwater zone, to enable the collection of representative groundwater samples from the monitoring well.
3. Additional monitoring wells may be installed along the perimeter of the site, as recommended by the Professional.
4. Monitoring wells must be installed by a registered well driller, in accordance with the BC Groundwater Protection Regulation (GWPR) (B.C. Reg. 39/2016).
5. During drilling of monitoring wells, geological conditions must be logged.
6. The permit holder must seek consent from the landowner of each property listed in Table 1 below to collect representative water samples from the water well at each property.

Table 1. Private Properties with Water Supply Wells

Legal Description	Parcel ID
SE ¼ Sec 22-84-21	010-172-122
NW ¼ Sec 10-84-21	014-791-528

7. Representative reference groundwater samples must be collected from monitoring wells following installation and appropriate development/purging, and from each of the two (2) water supply wells listed in Table 1 above, subject to consent from the landowners.
8. Reference groundwater samples must be analyzed by an accredited laboratory for the following analytical parameters:
    a. Routine water quality parameters (major cations and anions, total dissolved solids, alkalinity, pH, electrical conductivity, dissolved oxygen, oxidation-reduction potential, hardness)
    b. Dissolved metals

9. A disposal fluid sample must be collected and analyzed for the same suite of parameters as the groundwater samples.
10. The static water level at the monitoring wells must be measured following development/purging and prior to sampling.
11. Groundwater monitoring and sampling must be conducted using standard environmental investigation protocols and quality assurance/quality control protocols.
12. A reference groundwater monitoring report must be prepared by the Professional and submitted to the BC Energy Regulator by email to hydrogeology@bc-er.ca (referencing Order 25-02-010) within 6 months of activation of the disposal well. The reference report must include:
    a. A description of methodologies used for the assessment, including QA/QC protocols
    b. Graphical well logs with stratigraphic observations and monitoring well construction details
    c. A site plan showing the locations of monitoring wells and water supply wells relative to site boundaries, on-site infrastructure, and relevant surrounding features
    d. Static water level measurement in the monitoring wells
    e. Analytical results in tabular form with appropriate comparison criteria and standards
    f. Laboratory analytical reports
    g. Data analysis (statistics, trends) and interpretation, as applicable.
13. Annual groundwater monitoring and sampling must be conducted once annually at the site monitoring wells and the two (2) water supply wells, commencing from the date of commencement of disposal, as per the requirements in 7. through 11. above.
14. The results of the annual groundwater monitoring and sampling must be included in a report, prepared as per the requirements in 12. above, and submitted to the BC Energy Regulator by email to hydrogeology@bc-er.ca (referencing Order 25-02-010) by December 31st of each calendar year after the year of the first annual report.
15. Additional documentation and/or further sampling or investigation may be required by the BC Energy Regulator based on a review of submitted documentation and/or other site information.
16. Upon site closure, the monitoring wells must be properly decommissioned in accordance with the BC GWPR.