CO_2 Sequestration Approval No. 13463

MADE at the City of Calgary, in the Province of Alberta, on 30th day of July 2025.	Byron Lee ALBERTA ENERGY REGULATOR

The Alberta Energy Regulator (AER) pursuant to the *Oil and Gas Conservation Act*, chapter O-6 of the Revised Statutes of Alberta, 2000, orders as follows:

1) The Class III scheme of Enhance Energy Inc. (hereinafter called "the Operator") in the **Lacombe Field** and surrounding areas, for the sequestration of carbon dioxide (CO_2), as identified in AER *Directive 051: Injection and Disposal Wells – Well Classifications, Completions, Logging, and Testing Requirements* into the **Leduc Formation** as described in

   a) Application No. 1956215,

   is approved, subject to the terms and conditions herein contained.

2) The injection of fluids may commence in the well(s) referred to in Table 1 once the AER has confirmed in writing that *Directive 051* and *Directive 071* requirements have been met.

3) Approval for the well(s) listed in Table 1 is contingent upon the seismic hazard assessment, and if applicable the risk assessment submitted to the AER. If relevant, this approval is also conditioned on maintaining a monitoring, mitigation, and response (MMR) plan for induced seismicity.

4) The Operator may commence or continue injection of CO_2 through the wells listed in Table 1 when the commitments of the Closure plan have been approved by the AER.

5) The Operator may commence or continue injection of CO_2 in the wells listed in Table 1 when the commitments of the Measurement, Monitoring, and Verification (MMV) plan have been approved and met, substantially and in accordance with the scheme, for the wells.

6) The status of the approved CO_2 injection wells on this scheme must be changed to the following:

   i. Fluid: CO2
   ii. Mode: N/A
   iii. Type: INJ
   iv. Structure: CARBON SEQU

   In *Petrinex* as soon as fluid injection commences in the well(s) listed in Table 1 to enable the recording of injection volumes and the related injection stream density data. Any requests for clarifications on this requirement can be addressed to the AER Production Accounting Helpdesk at: pa.help@aer.ca .

7) The Operator shall conduct CO_2 fluid injection in accordance with the following

requirements:

a) the average target formation stabilized shut-in pressure from the wells listed in Table 1 must not exceed 20 000 kilopascals (gauge) at a reference depth of 2070 m TVD,

b) a stabilized shut-in formation pressure in accordance with *Directive 040* requirements must be acquired after every two years of fluid injection in each of the wells listed in Table 1, or observation wells that can reasonably be expected to provide the required information. Supplementary surveys may be prescribed based on these results and to provide a better understanding of the CO_2 plume movement,

c) the cumulative injection volume for the approved scheme injection wells must not exceed 852.6 million standard cubic metres (15 ^{o}C, 101.325 kPa) of CO_2 per annum, or an equivalent mass of 1.6 million tonnes per annum,

d) no waste or other materials may be added to the injectant,

e) the injectant must contain no less than 95 per cent of CO_2 by volume. The composition of the injection stream must be monitored by taking monthly representative samples,

f) appropriate corrosion protection must be implemented in the injection wells,

g) continuously monitor the pressure in the tubing/casing annulus of the injection wells; conduct annual packer isolation tests to 7000 kPa for 10 minutes, which shall be submitted electronically through the AER Digital Data Submission system by August 31 of each year following the start of CO_2 injection operations. If a leak or a potential leak is detected in the tubing/casing annulus or the packer in the injection well(s), the Operator must immediately inform the AER through WellOperations@aer.ca,

h) a one-time temperature log must be conducted across the Leduc and Nisku formations in the 00/04-36-039-25W4/0 well within two years of the start of fluid injection in the well interval or during a well workover, whichever occurs first. The log trace and its interpretation must be submitted to the AER at Resources.Applications@aer.ca within 60 days of the logging operation. This is to verify the geological containment of the sequestered fluids within the target formation.

i) immediately report any suspicion of fluid migration into zones other than the tenured formation under the carbon lease tenure agreement to the AER at Resources.Applications@aer.ca ,

j) immediately suspend injection operations if any injection equipment, monitoring equipment or safety devices that could compromise the safe operation of the scheme, should fail,

k) immediately report any loss of containment, observed anomalies that indicate fracturing out of zone, or anomalous pressure changes occurring anywhere within the projected fluid plume area to Resources.Appications@aer.ca .

l) apply to remove an injection well from Table 1 before abandoning the well,

m) a plan to abandon any of the wells listed in Table 1 must be approved by the AER Well Operations prior to implementation, and

n) continue monitoring the injection and observation wells in accordance with the current MMV plan, until this CO_2 Sequestration scheme is transferred to the Government of Alberta or when this approval is rescinded.

8) The Operator must provide a written incident report within 90 days to ResourceCompliance@aer.ca and WellOperations@aer.ca of any event that poses an imminent risk to public safety or environment including:

   a) any anomalies that indicate fracturing out of zone,

   b) any indications of loss of containment, and

   c) unexpected surface heave.

   If monitoring indicates loss of containment or unexpected surface heave, the Operator must conduct and submit the results of a more detailed subsurface modelling using site-specific parameter values to assess the issue of deformations caused by pressure changes.

9) The Operator must promptly notify the AER at Resources.Applications@aer.ca upon detecting seismic events in the area of operation. If the event is found to be induced and related to the sequestration operations under this scheme, the requirements outlined in the MMR plan must be activated immediately, or a new plan must be developed and implemented.

10) The approved MMV and Closure plans are valid for three years from the start of injection into any well(s) listed in Table 1. The Operator must submit updates to these plans to the AER for review and approval at least 90 days before the current plans expire. Submissions should be made by application through the AER Digital Data Submission (DDS) system.

11) The Operator is required to perform, document, and submit an updated risk assessment to the AER at ResourceCompliance@aer.ca for all wells terminated at or traversing the Leduc Formation. This includes abandoned, suspended, or active wells within the projected fluid plume area. The assessment must evaluate the potential for leakage based on the wells' age, diagnostic tools used, and abandonment practices applied (including porous zone isolation). Wells identified as medium to high risk in the MMV plan must have their risks mitigated before the fluid plume reaches these locations. The initial risk assessment must cover well locations likely to be impacted by the fluid plume within 2 years of CO_2 injection and be submitted within 3 months of injection initiation. The subsequent risk assessment must encompass all wells in the projected fluid plume and be submitted within 1 year of fluid injection initiation.

12) The Operator shall submit annual status reports on the scheme operations. The reports must align with the most current MMV plan and submitted to Compliance Verification in the AER Compliance & Liability Management Branch. The report must be in metric units with the first report due by August 31 following the year of fluid injection commencement and include:

   a) a summary of scheme operations including, but not limited to,
      i) any new project wells drilled in the reporting period,

ii) any workovers/treatments done on the injection and monitoring wells including the reasons for and the results of the workovers/treatments,
iii) changes in injection equipment and operations,
iv) identification of problems, remedial action taken, and impacts on scheme performance.

b) complete pressure analysis including but not limited to stabilized shut-in formation pressure surveys and a discussion on how the pressure compares with the formation pressure expected for the cumulative volume of CO_2 injection, along with an updated estimate of what the actual cumulative injection volume will be at the maximum shut-in formation pressure specified in clause 7(a),

c) discussion of the overall performance of the scheme, including how the formation pressure is changing over time; updated geological maps; and updated CO_2 plume extent and pressure distribution models. The updated models should be based on the new data obtained since the last model run including the cumulative CO_2 injected to the end of the reporting period,

d) a summary of MMV plan activities, performance, and results in the reporting period, including, but not limited to:

i) a report on any event that exceeded the approved operating requirements or triggered MMV activities,
ii) comparison of measured performance to predictions,
iii) summary of operations and maintenance activities conducted,
iv) details of any performance or MMV plan issues that require attention, pressure surveys, corrosion protection, fluid analyses, logs, and any other data,
v) pressure surveys, corrosion protection, fluid analyses, logs and any other data collected that would help in determining the success of the scheme, and
vi) discussion of the need for changes to the MMV plan.

e) a table for all wells listed in Table 1, showing the following data for each month of the reporting period:

i) mole fraction of the CO_2 and other components of the injection stream,
ii) volume and mass of the CO_2 injected at standard conditions,
iii) formation volume factor of the injected CO_2 stream,
iv) cumulative volume and mass of the injected CO_2 at standard conditions following the commencement of the scheme,
v) volume and mass of the CO_2 injected at reservoir conditions,
vi) hours on injection,
vii) maximum daily injection rate at standard conditions,
viii) average daily injection rate at standard conditions,
ix) wellhead injection pressure (WHIP) and corresponding wellhead injection temperature,
x) average wellhead injection pressure, corresponding average wellhead injection temperature,
xi) bottom hole injection pressure (BHIP) at the top of injection interval and the corresponding bottom hole injection temperature, and

xii) average bottom hole injection pressure at the top of injection interval and the corresponding average bottom hole injection temperature.

f) a table showing the volumes and mass of the injected CO_2 on a monthly and cumulative basis,

g) a plot showing ongoing monthly injection volumes and the maximum wellhead injection pressure versus time. The plot must display the scheme on an ongoing basis and not just for the reporting period,

h) a plot showing the following daily average data at standard conditions versus time from the commencement of CO_2 injection:

i) daily CO_2 injection rate,
ii) wellhead and bottom hole injection pressures, and
iii) estimated or measured average reservoir pressure in the target formation.

i) the potential need for installing additional monitoring wells towards the periphery of the pressure build up area later in the project life,

j) evaluate the need for additional deep monitoring wells adjacent approved injections wells in the operating area. Based on the information provided, the AER may require the Operator to drill one or more such deep monitoring wells, and

k) discussion of stakeholder engagement activities in the reporting period.

13) The AER may at any time vary the terms and conditions hereof or may suspend or revoke this approval if, in its opinion, circumstances so warrant.

14) This scheme is approved and must continue to be operated in accordance with the relevant *Directive 065* requirements, as may be amended from time to time.

END OF DOCUMENT

TABLE 1
APPROVAL NO. 13463

1	2	3	4	5
Unique Well Identifiers	Disposal Zone	Top of Injection Interval (Measured depth - metres KB)	Depth of Production Packer (Measured depth - metres KB)	Maximum Wellhead Injection Pressure (kilopascals gauge)
00/04-36-039-25W4/0	Leduc	1994.0	1979.0	16 000

* Surface Location
† The pressure of the tubing/casing annulus shall be continuously monitored with any significant fluctuations immediately reported to the AER via WellOperations@aer.ca.