

Proposed Enhance CO₂ Pipeline Project: Additional Information for Facility Sites



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Enhance CO₂ Pipeline: Facility Overview

Enhance Energy Inc. (“Enhance”) has prepared this project information document to provide landowners, the public, government agencies, and other interested parties with details about the proposed Enhance CO₂ Pipeline system. This document is supplemental to the initial Project Information Document that was released to the public in July 2008 and is specific to the facility sites associated with the proposed Enhance CO₂ Pipeline system. This document should be read in conjunction with the initial Project Information Document. There are Three planned facility sites associated with the pipeline in the Heartland Industrial Region of Alberta; a compression facility at the Agrium Fertilizer Complex just south of Redwater, a compression facility at the North West Upgrading site and a pump station just west of Bruderhiem. For an overview of the proposed pipeline facility site locations please see the attached map.

Enhance is a Calgary-based energy resources development company, which specializes in secondary and tertiary oil and gas recovery methods from conventional energy reserves. Enhance uses unique technological processes including CO₂ miscible, polymer, and water flooding on conventional oil and gas reserves. The use of this technology results in increased production and recovery of greater quantities of oil or gas reserves from existing reservoirs after traditional primary recovery techniques are exhausted.

The new CO₂ pipeline proposed by Enhance connects the Alberta Heartland Industrial Region to the oil production fields just southeast of Clive, Alberta. This pipeline is part of a larger partnership that involves the sequestration of industrial waste gases and an enhanced oil recovery project in the Clive oil field.

The proposed pipeline would be built and operated by Enhance Energy Inc

To learn more about Enhance Energy Inc. and the Enhance CO₂ Pipeline Project, please visit our website at www.enhanceenergy.com

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Enhance CO₂ Pipeline: Facility Overview

The Enhance CO₂ Pipeline will help decrease greenhouse gas emissions, reduce energy usage, and increase resources recovery.

One of Alberta's main priorities is to ensure its energy resources are developed in an environmentally responsible and sustainable way. The environmental and socioeconomic benefits of this project will be substantial, as CO₂ capture and transmission through the proposed Enhance CO₂ Pipeline system will contribute to decreasing overall emissions, reducing energy usage, and increasing oil recovery.

The Enhance Pipeline system once constructed will receive CO₂ volumes from the Agrium Redwater Complex and North West Upgrader (NWU), then the volumes will pass through a pump station (Elk Island Site) to be located 2 km west of the Town of Bruderhiem, delivering CO₂ volumes to points near Clive, Alberta (please see route map in the June 2008 Pipeline Information document).

The proposed Enhance CO₂ Pipeline route for the pipeline system travels north of the Agrium site and later to the NWU site (exact routing and meter facility location yet to be determined), then east to a crossing of the North Saskatchewan River. From there, it travels south to the Elk Island pump station site between Fort Saskatchewan and Bruderhiem. From the pump station, the route travels east, then south of Elk Island Park and continues past Tofield. South of Tofield, the right-of-way turns west and connects with a north-south pipeline corridor that travels from Red Deer to Edmonton. The route then follows this pipeline corridor south until it reaches the Enhance Pipeline receipt facility near Clive. The total pipeline system length covered by this route will be approximately 234 km.

The Enhance CO₂ Pipeline Facilities will consist of:

- drying and compression facilities at the north end on the Agrium site and NWU, which will process the CO₂ that will be collected and bring the product up to pipeline specifications;
- a pump station east of Fort Saskatchewan and west of Bruderheim, to be called the Elk Island Pump Station, that will boost pressure on the pipeline system;
- the pipeline operations and control centre were originally noted to be located at the Elk Island Pump Station; however, current plans are to locate them in a commercial/light industrial area off site (e.g. Fort Saskatchewan or Edmonton).



The north end drying and compression facilities of the Enhance CO₂ Pipeline will be located at the CO₂ supply sources, on industrial zoned lands in Sturgeon County, south of the Town of Redwater.

The supply source that will initially be connected to the Enhance CO₂ Pipeline System will come from the Agrium Redwater Fertilizer Complex and the NWU. Enhance will construct facilities on several locations within the Agrium plant site located at 12-17-56-21 W4M, the total land use will be approximately 0.5 acre of land.

Modifications at the Agrium site will include the installation of two new 5000 hp compressors, two glycol dehydration units, a cooling tower, installation of a water treatment facility as well as associated piping, electrical modifications and instrumentation. The CO₂ will be diverted from the current exhaust stack to the compressors, compressed to 1500 psi, and dehydrated to remove any water. Water that is recovered from product stream will be treated and used to cool the CO₂ after compression and before it enters the pipeline system. Also located at the Agrium site will be pipeline pig launcher and product metering facilities.

The Elk Island Pump Station will be constructed on 14.4 acres (5.8 hectares) located at 1-25-55-21 W4M. The equipment located at the pump station will consist of two multistage centrifugal pumps to handle the initial volumes. As the volumes increase over time, additional pumps will be required at the site. The CO₂ will be supercritical (or dense phase) at the station and the fluid will act essentially like a liquid and will be pumped rather than compressed. The pump station site will also have pigging equipment and be designed for future metering facilities. A CO₂ vent stack will be located at the pump station for maintenance purposes.



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Enhance CO₂ Pipeline: Regulatory

The Enhance CO₂ Pipeline system will be designed to meet and exceed all applicable professional codes and standards.

The Enhance CO₂ Pipeline system will be designed, submitted for regulatory approval, constructed, and operated as a High Vapor Pressure (HVP) pipeline, which requires an Emergency Planning Zone (EPZ) calculation for the pipeline system. Initial calculations have indicated that an EPZ of about 700 meters around each of the facility sites is expected. All residents and other public land users within the EPZ will be contacted and provided with details on the Emergency Response Planning (ERP) for the project once the exact calculations are made subject to decisions on pipe size and emergency shut-down valve location.

Whereas there are no building setback requirements under the Energy Resources Conservation Board (ERCB) regulations for this type of pipeline, the safety features design of the Enhance CO₂ Pipeline System will be correlated with similar features of a propane pipeline, considering that the properties of the CO₂ product include one major exception: that CO₂ is a non-flammable gas. There will be no flaring or odors from the operation of the Enhance CO₂ Pipeline System.

Traffic during construction will increase for a short period of time at the facility sites. Throughout construction, Enhance will coordinate with the local authorities to maintain traffic control and safety. Once the pipeline system is in operation, operations staff will travel daily to the facility sites to inspect and maintain the equipment.

Part of the studies to be undertaken in association with the compression facilities and pump station will be a Noise Impact Assessment, as required under the ERCB regulations. Mitigation of any noise impacts in excess of allowable limits will be implemented in the system design, as required.

Enhance intends to proceed with regulatory applications for the proposed project in the first quarter of 2009. The proposed project requires an Energy Development Application to the Alberta Energy Resources Conservation Board (ERCB), under Part 4 of the Pipeline Act, in compliance with ERCB Directive 56. All appropriate ERCB information documents regarding the handling of applications under Directive 56 are included with this information package.



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Health, Safety, and Environment Programs

Enhance is currently developing a health, safety, and environmental program modeled after industry's best practices. The new pipeline system will be incorporated into this program to ensure it is operated and maintained to the highest professional standards.

Enhance will also develop a comprehensive Emergency Response Plan (ERP), to ensure the timely and coordinated response to any emergencies within facility sites and along the entire proposed pipeline right-of-way. Once finalized, details of the ERP will be reviewed and discussed with all impacted stakeholders along the entire route. The ERP that will be implemented will detail the necessary response and care measures to be undertaken should the need ever arise.

Enhance will have a health, safety,
and environmental program,
modeled after industry's
best practices.



Enhance CO₂ Pipeline: Project Schedule

Enhance will have a health, safety, and environmental program, modeled after industry's best practices.

Enhance is currently proceeding with landowner and other stakeholder consultations around the facility sites that are described in this Project Disclosure Document. The proposed project is subject to regulatory approvals and the completion of necessary commercial agreements. Enhance intends to proceed with regulatory applications for the proposed project in the first quarter of 2009.

Based upon anticipated timing of regulatory approval, facilities construction could begin as early as the fourth quarter 2009, pipeline construction could begin in 2011, with project startup in 2012. The public consultation program will ensure that the public remains informed and involved throughout the development, construction, and operation of this proposed project.

Enhance CO₂ Pipeline: Public Consultation Process



Enhance is committed to ensuring that the Enhance CO₂ Pipeline Project is developed and executed with highest regard for environmental, social, and economic considerations. Enhance highly values input from stakeholders into the development of this pipeline project and will solicit public input throughout the regulatory approval process.

Public consultations are intended to continue during each phase of the proposed pipeline project development including construction and operations. The consultation process will be based upon open, two-way communication. Presentations and face-to-face meetings will be held throughout the development of the project, in order to understand and immediately address any stakeholder issues or concerns associated with the proposed pipeline project.

There are a series of public open houses planned during October and November to allow for an exchange of information between the public and the project team. An announcement regarding the time and location of the open houses will be published in the local newspapers.

The following information from the Alberta Energy Resources Conservation Board (ERCB) Directive 56 is enclosed with this project description document:

- Letter from the Chairman of the ERCB.
- Brochure: Understanding Oil and Gas Development in Alberta
- EnerFAQ No. 7: Proposed Oil and Gas Development: A Landowner's Guide

Other ERCB information that is also available upon request:

- EnerFAQ No. 4: All About Critical Sour Wells
- EnerFAQ No. 5: Explaining ERCB Setbacks
- EnerFAQ No. 6: Flaring and Incineration
- EnerFAQ No. 8: Coalbed Methane
- EnerFAQ No. 9: The ERCB and You: Agreements, Commitments, and Conditions
- EnerFAQ No. 10: Public Health and Safety: Roles and Responsibilities of Agencies That Regulate Upstream Oil and Gas
- EnerFAQ No. 11: All About Appropriate Dispute Resolution (ADR)

Our highest values are:
open communication, co-operation,
and social responsibility.



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Enhance CO₂ Pipeline: Project Route Map



For information additional to this document, please contact the project team by calling the key contacts directly at the numbers listed here:

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