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## Project 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 CO<sub>2</sub> Pipeline system. The pipeline system would be capable of receiving carbon dioxide (CO<sub>2</sub>) volumes from sources in the Heartland Industrial Region of Alberta and delivering them to various sequestration points in southern and western areas of Alberta. The pipeline proposed at this stage will be receiving carbon dioxide (CO<sub>2</sub>) volumes from the Agrium Fertilizer Complex and the North West Upgrader currently under construction both just south of Redwater and delivering them to points near Clive, Alberta. For an overview of the proposed pipeline system please see the map of the proposed pipeline route on page 8.

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 CO<sub>2</sub> 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 CO<sub>2</sub> pipeline proposed by Enhance connects the Alberta Heartland Industrial Region to the oil production fields just southeast of Clive, Alberta. The Alberta Heartland Industrial Region consists of the area between the Town of Redwater and the City of Fort Saskatchewan. 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 and about the Enhance CO<sub>2</sub> Pipeline Project, please visit

**[www.enhanceenergy.com](http://www.enhanceenergy.com)**



The Enhance CO<sub>2</sub> 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 socio-economic benefits of this project will be substantial, as CO<sub>2</sub> capture and transmission through the proposed Enhance CO<sub>2</sub> Pipeline system will contribute to decreasing overall emissions, reducing energy usage, and increasing oil recovery.

The Enhance Pipeline system once constructed will receive CO<sub>2</sub> volumes from the Agrium Redwater Complex and will later collect volumes from the North West Upgrader once it becomes operational. The volumes will pass through a pump station in an area east of the City of Fort Saskatchewan and deliver CO<sub>2</sub> volumes to points near Clive, Alberta (please see route map at the end of this document).

The proposed route for this system travels north of the Agrium and North West Upgrader sites and then east along a new proposed railway route to a crossing of the North Saskatchewan River. From there, it turns south along a route to the pump station site in the Heartland Region east of Fort Saskatchewan. From the pump station, the route travels east and then turns south once passing the east boundary of Elk Island Park and continues south past Tofield. Once past Tofield, the right of way turns west and continues until it connects with the current north-south pipeline corridor that travels from Red Deer to Edmonton. The Enhance CO<sub>2</sub> Pipeline route then follows this current 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 240 km.

An alternate route option was considered for this project that started in the Heartland Industrial Region and followed a pipeline corridor from Fort Saskatchewan to Edmonton, south between Sherwood Park and Edmonton and continued south along the current pipeline corridor from Edmonton to Clive, Alberta. Even though shorter, this route was eliminated due to the high congestion of pipelines in the area from Fort Saskatchewan to south of Edmonton and significant residential land development in the Edmonton region.

### The Enhance CO<sub>2</sub> Pipeline System will consist of:

- drying and compression facilities at the north end in the Heartland Industrial Region on the Agrium and North West Upgrader sites, which will process the CO<sub>2</sub> that will be collected and bring the product up to pipeline specifications;
- a pump station east of Fort Saskatchewan in the Heartland Industrial Region, to be called the Elk Island Pump Station, that will boost pressure on the pipeline system;
- the pipeline operations and control centre located at the Elk Island Pump Station;
- receipt facilities at the south end of the system near Clive, which will allow distribution of the CO<sub>2</sub> to the conventional oil and gas fields in the area; and
- a high vapour pressure (HVP) pipeline between the source and the delivery point, connecting the north and south facilities.



The north end drying and compression facilities of the Enhance CO<sub>2</sub> Pipeline will be located at the supply sources, on industrial zoned lands in Sturgeon County, in an area south of the Town of Redwater and north of the City of Fort Saskatchewan. The supply source that will initially be connected to the Enhance CO<sub>2</sub> Pipeline System will come from the Agrium Redwater Fertilizer Complex, and the Enhance facility site will be within the existing plant site located at 17-56-21 W4M. Plans are also in place to connect an additional source of CO<sub>2</sub> from the Northwest Upgrader Project, currently under construction, just west of the Agrium facility.

The pipeline system will be monitored and controlled 24 hours a day, seven days a week. The Elk Island Pump Station will be the operations centre for the pipeline system, which will be located on approximately 20 acres (8 hectares) in the area east of the City of Fort Saskatchewan. The pipeline will be equipped with emergency shut down valves located at the supply points, the pump station and at regular intervals along the right of way.

The south end receiving facility of the Enhance Pipeline will be located on a current oil processing and gas compression facility site located about 8 km (5 miles) south east of Clive, Alberta. The Enhance receiving facility site will be located at 4-15-40-24 W4M. The CO<sub>2</sub> from the receiving facility will be distributed to new and current well sites in the Clive oil fields. New pipeline systems will be used to distribute the CO<sub>2</sub> to the well head locations. The distribution system at the south end of the Enhance pipeline will be applied for under a separate application from other business partners.

## Enhance CO<sub>2</sub> Pipeline: Regulatory Considerations

The Enhance CO<sub>2</sub> Pipeline system will be designed to meet and exceed all applicable professional codes and standards.

The Enhance CO<sub>2</sub> Pipeline system will be designed, submitted for regulatory approval, constructed, and operated as a High Vapour 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 on each side of the pipeline 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 CO<sub>2</sub> Pipeline System will be correlated with similar features of a propane pipeline, considering that the properties of the CO<sub>2</sub> product include one major exception: that CO<sub>2</sub> is a non-flammable gas.

Depending on the ultimate delivery capacity selected by Enhance, the pipeline is expected to be conventional carbon steel pipe 406.4 mm (16 inch) and 323.9 mm (12 inch) diameter size. The design capacity of the Enhance CO<sub>2</sub> Pipeline system is 15000 T/d (300 mmscfd) and the initial planned throughput of the system is expected to be approximately 5000 T/d (100 mmscfd). There are options to increase the design capacity to more than 25,000 T/d with the addition of pumping capacity at the midpoint and quarter point locations along the pipeline route. There will be no flaring or odours from the operation of the Enhance CO<sub>2</sub> Pipeline System.

Traffic during construction will increase for a short period of time at the sites and along the pipeline route. The majority of the construction equipment will be moved along the right of way. Throughout construction, Enhance will coordinate with the local authorities to maintain traffic control and safety. Once the pipeline system is in operation, the right of way will be periodically inspected by the operation staff, who will travel daily to the facility sites.

Enhance intends to proceed with regulatory applications for the proposed project in the Spring 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. The project also requires an Alberta Environment approval for Conservation and Reclamation planning for construction of the pipeline system.

An additional, separate project information document will be issued with regard to the Enhance CO<sub>2</sub> Pipeline north end compression facilities and the Elk Island Pump Station. These documents will provide area residents with detailed technical information and answers regarding any potential impacts to the general area. 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 CO<sub>2</sub> Pipeline: Public Consultation Process



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Enhance is committed to ensuring that the Enhance CO<sub>2</sub> 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 for this fall 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.

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



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## Health, Safety, and Environment Programs

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

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 CO<sub>2</sub> Pipeline: Project Schedule

Enhance is currently proceeding with landowner and other stakeholder consultations along the pipeline right-of-way that is 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 during the second quarter of 2010, with project startup in mid-2011. The public consultation program will ensure that the public remains informed and involved throughout the development, construction, and operation of this proposed project.

## ERCB D56 Public Involvement Documentation Included

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)



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## Enhance CO<sub>2</sub> 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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