



SNC • LAVALIN

## FINAL SUMMARY – REVISION 1

Project Description pursuant to the *Canadian Environmental Assessment Act (CEAA 2012)*

Construction of Fertilizer Plant in Bécancour, Québec

The logo for IFFCO Canada, featuring the text "IFFCO CANADA" in green capital letters inside a white speech bubble shape with a red and green border.

IFFCO CANADA



# ENVIRONMENT

February 2013

FINAL SUMMARY – REVISION 1

Project n° 611020





SNC • LAVALIN

**Project Description pursuant to the *Canadian Environmental Assessment Act (CEAA 2012)***

**Construction of Fertilizer Plant in Bécancour, Québec**

February 2013  
FINAL SUMMARY – REVISION 1  
N° 611020

## ENVIRONMENT

**Prepared by:**

MAYA BRENNAN JACOT, M.SC., M.ENV.

Biologist

Environmental Specialist

**Verified by:**

LINA LACHAPELLE, ENG.

Project Director



## BACKGROUND

This **Project Description**, prepared pursuant to the *Canadian Environmental Assessment Act* (2012) (L.C. 2012, ch. 19, art. 52), concerns the construction of a urea production plant in the Bécancour industrial park.

It has been drafted in accordance with the Prescribed Information for the Description of a Designated Project Regulations (DORS/2012-148) and the Guide to Preparing a Description of a Designated Project Under the Canadian Environmental Assessment Act (CEAA, 2012), made available to project proponents by the Canadian Environmental Assessment Agency (hereafter, CEAA).

While the description reflects currently available technical information, it should be noted that the preliminary engineering and the social and environmental impact assessment for the project have not yet been completed. It provides an overview of the general characteristics of the project and its environment and should therefore enable a better understanding of the main project anticipated impacts on components that are within federal jurisdiction, including those related to:

- fish and fish habitat;
- other aquatic species;
- migratory birds;
- federal lands;
- effects that cross provincial or international boundaries;
- effects that impact on Aboriginal peoples, such as their use of lands and resources for traditional purposes;
- changes to the environment that are directly linked to or necessarily incidental to any federal decisions about a project.

## IMPORTANT NOTICE

This document is a revision of the project description submitted to the CEAA in November 2012. Following a further detailed analysis of environmental and technical issues of the project site, IFFCO Canada decided to change site for the establishment of its fertilizer plant construction project in Bécancour. The exercise that led to this site selection is summarized in section 3.2 of this document.

Many sections of this revised document are identical to the initial project description, filed in November 2012. In fact, the project nature and activities are the same and the study area remains unchanged.



## TABLE OF CONTENT

|   | Page      |
|---|-----------|
| <b>BACKGROUND.....</b>  | <b>i</b>  |
| <b>1 GENERAL INFORMATION AND CONTACTS.....</b>  | <b>1</b>  |
| <b>2 PROJECT INFORMATION .....</b>  | <b>2</b>  |
| 2.1 PROJECT OBJECTIVE AND RATIONALE.....  | 2         |
| 2.2 APPLICATION OF REGULATIONS DESIGNATING PHYSICAL ACTIVITIES.....                                       | 4         |
| 2.3 COMPONENTS AND ACTIVITIES.....  | 4         |
| 2.3.1 Physical Works Associated with Project.....   | 4         |
| 2.3.2 Production Capacity and Process .....   | 5         |
| 2.3.3 Project Activities .....  | 6         |
| 2.4 EMISSIONS, DISCHARGES AND WASTE .....   | 6         |
| 2.5 TIMETABLE.....  | 8         |
| <b>3 PROJECT LOCATION.....</b>  | <b>8</b>  |
| 3.1 LOCATION .....  | 8         |
| 3.2 SITE SELECTION.....   | 9         |
| 3.3 PROPERTY OWNERSHIP AND LAND USE .....   | 11        |
| <b>4 FEDERAL GOVERNMENT INVOLVEMENT.....</b>  | <b>11</b> |
| 4.1 FINANCIAL SUPPORT .....   | 11        |
| 4.2 FEDERAL LANDS.....  | 11        |
| 4.3 LEGISLATIVE OR REGULATORY REQUIREMENTS.....   | 11        |
| <b>5 ENVIRONMENTAL EFFECTS.....</b>   | <b>12</b> |
| 5.1 DESCRIPTION OF THE ENVIRONMENT .....  | 12        |
| 5.1.1 Physical Environment.....   | 12        |
| 5.1.2 Biological Environment.....   | 13        |
| 5.1.3 Human Environment.....  | 20        |
| 5.2 DESCRIPTION OF ENVIRONMENTAL EFFECTS.....   | 21        |
| <b>6 ENGAGEMENT AND CONSULTATION WITH ABORIGINAL GROUPS.....</b>  | <b>22</b> |
| 6.1 CONSULTATION APPROACH .....   | 22        |
| 6.2 PARTICIPANTS.....   | 22        |
| 6.3 TRADITIONAL ACTIVITIES .....  | 23        |
| 6.4 UPCOMING CONSULTATIONS.....   | 23        |
| <b>7 CONSULTATION WITH THE PUBLIC AND OTHER PARTIES (OTHER THAN<br/>    ABORIGINAL CONSULTATION).....</b> | <b>23</b> |
| 7.1 APPROACH TO CONSULTATION .....  | 23        |
| 7.2 PARTICIPANTS.....   | 23        |
| 7.3 MAINS OBSERVATION AND PREOCCUPATIONS .....  | 24        |
| <b>8 REFERENCES.....</b>  | <b>26</b> |

## LISTE OF TABLES

|          | <b>Page</b>   |
|----------|---|
| Table 1  | Contact information of project proponent ..... 1  |
| Table 2  | Contact information of consultant mandated by project proponent ..... 2                     |
| Table 3  | Emissions, discharges and waste related to the IFFCO Canada project ..... 7                 |
| Table 4  | Preliminary timetable for project implementation..... 8                                     |
| Table 5  | Comparison of lots n°3 and 4 and lot n°6..... 10  |
| Table 6  | List of special-status flora species inventoried by CDPNQ in study area..... 15             |
| Table 7  | Breeding waterfowl species..... 17  |
| Table 8  | Fish species identified in the creeks and ditches of the Bécancour Industrial park ..... 19 |
| Table 9  | Special-status wildlife species found in study area ..... 20                                |
| Table 10 | Environmental effects of the projects ..... 21  |
| Table 11 | Preoccupations identified during the exploratory consultations..... 25                      |

## LIST OF APPENDICES

|            |                    |
|------------|--------------------|
| Appendix A | Project Study Area |
|------------|--------------------|



## 1 GENERAL INFORMATION AND CONTACTS

IFFCO Canada's project, entitled *Construction of a Fertilizer Production Plant* consists in the construction and the operation of a plant to produce urea from natural gas, the most widely used raw material for producing commercial nitrogen fertilizers. The project site is in the Bécancour Waterfront Industrial Park.

The project proponent is IFFCO Canada Enterprise Limited, (hereinafter named "IFFCO Canada"). IFFCO Canada was registered in Montreal in July 2012. To carry out the project, a joint venture has been established between Kisan International Trading FZE (KIT), of Dubai, and Pacific Gateway Energy Ltd., of Calgary.

KIT, the majority shareholder, is a wholly owned subsidiary of parent company Indian Farmers Fertiliser Cooperative Limited (IFFCO), a cooperative involved in the production, importing, exporting, shipping and logistics of various fertilizers and the raw materials used to produce them.

An agreement in principle regarding the financial participation of Investissement Québec in the project was been reached and confirmed by Decree 829-2012 (August 1, 2012). A second agreement in principle with La Coop fédérée, made public on October 9, 2012, confirms the desire of all parties to establish a partnership. The Coop has committed to the distribution of 500,000 tons of urea through its network, which covers Quebec and the eastern of Canada and the northeast of the United States.

Contact information for the project proponent and the consultant are given in Tables 1 and 2.

**Table 1 Contact information of project proponent**

|                         |  |
|-------------------------|--|
| <b>Name:</b>            | IFFCO Canada Enterprise Limited  |
| <b>Civic address:</b>   | 600 De Maisonneuve Boulevard West, Suite 2810,<br>Montreal, Quebec, Canada H3A 3J2 |
| <b>Project manager:</b> | Mr. Birinder Singh   |
| <b>Telephone:</b>       | + 91 98 18 38 51 61  |
| <b>E-mail:</b>          | bsingh@iffcocan.com  |

**Table 2 Contact information of consultant mandated by project proponent**

|                         |  |
|-------------------------|--|
| <b>Name:</b>            | SNC-Lavalin Environment,<br>Division of SNC-Lavalin Inc.                           |
| <b>Civic address:</b>   | 550 Sherbrooke Street West, 1st floor<br>Montreal, Quebec,<br>Canada H3A 1B9       |
| <b>Project manager:</b> | Lina Lachapelle,<br>Project Director   |
| <b>Telephone:</b>       | 514-393-8000, ext. 5103  |
| <b>Fax:</b>             | 514-392-4785   |
| <b>E-mail:</b>          | <a href="mailto:lina.lachapelle@snclavalin.com">lina.lachapelle@snclavalin.com</a> |

The planned project to build a urea plant with an annual production capacity of over 1.3 million tons of urea is subject to the environmental impact assessment and review procedure of the Province of Quebec. Once the government decree has been issued, IFFCO Canada will be able to apply for the various permits and certificates of authorization required to carry out the project. Certificates of authorization will be required, under section 22 of the Environment Quality Act (EQA), for the preparation and development of the site, installation of the equipment and operation of the plant, and under sections 48 and 32 for the atmospheric emission and liquid effluent treatment equipment. Obtaining the certificates of authorization from the *Ministère du Développement Durable, de l'Environnement, de la Faune et des Parcs* (MDDEFP) is conditional on obtaining a certificate of compliance with municipal by-laws.

According to information provided by the Canadian Environmental Assessment Agency (CEAA), no regional environmental studies have been conducted in the study area in Quebec under the Canadian Environmental Assessment Act.

## **2 PROJECT INFORMATION**

### **2.1 PROJECT OBJECTIVE AND RATIONALE**

The objective of the project is to build and operate a fertilizer, more specifically urea, a nitrogen based fertilizer, production plant having a capacity of 1.3 million tons per year in the Bécancour Waterfront Industrial Park in Quebec (*Parc industriel et portuaire de Bécancour*, hereafter PIPB). Carrying out the project will require investment in the order of \$1.2 billion.

The planned plant primarily targets urea production and will in priority serve Quebec, eastern Canada and northeastern United States markets. Canada is both a urea producer and importer. Production centers are based in the western part of the country. On the other hand, Quebec must fill 100 % of its needs by imports. In 2010 and 2011, more than 400 000 tons of urea were imported each year, mainly from the Middle East and Northern Europe. Partner of the project, the Coop fédérée has committed in distributing 500 000 tons per year of urea produced by the plant in its network. Urea production in Quebec will therefore meet a need while ensuring the supply for agricultural producers in Quebec and in Eastern Canada. It will also allow Quebec to

position itself advantageously in the northeastern United States. market and to make itself a place on the global market, as a part of the production will also serve international markets, particularly India.

Commercial fertilizer production is crucial to ensure world food supply security. Global population growth, coupled with the limited availability of arable land, is putting pressure on agricultural producers to maximize their crop yields and the use of fertilizers is a recognized way to do so. According to the Canadian Fertilizer Institute, an estimated 40% of yield increases achieved by Canadian farmers are a direct result of commercial fertilizers. Demand for food grains is expected to rise sharply over the next few years, which means fertilizer demand will rise accordingly.

In addition to use as fertilizer, representing nearly 90% of the urea consumed in the world, urea enters in the manufacture of multiple products, including synthetic resins based on urea formaldehyde for industry wood, melamine, some pharmaceuticals and cosmetics, for textile pigment and the manufacture of feed for ruminants (urea being a nitrogen source and therefore a nutritional additive).

In liquid form, urea is also an ingredient in the composition of Diesel Exhaust Fluid (DEF) used in the catalytic converter systems of diesel-powered vehicles. DEF is a mixture composed of 32.5% urea and 67.5 % purified water. Adding DEF to diesel engine exhaust facilitates the breakdown of nitrogen oxides (NO<sub>x</sub>) into hydrogen and water through catalytic reduction (SCR-Selective Catalytic Reduction). As a result of current legislation regarding pollutant emissions from highway vehicles in both Canada and the United States (*On-Road Vehicle and Engine Emission Regulations*, in Canada, and the Environmental Protection Agency (EPA) Emissions Standards, 2010, in the USA), as well as in Europe, the DEF market is booming. The IFFCO Canada project intends to produce and distribute DEF as a secondary product.

Producing fertilizer requires a major source of energy and carbon, which in many countries is gas extracted from coal. The project being proposed in Quebec will produce urea through the conversion and use of a much less-polluting resource, which is natural gas. Besides having well-developed infrastructures for the distribution of various types of energy, Canada ranks third in the world as a natural gas producer and is regarded as a strategic location for a urea plant. Quebec's natural gas distribution network is supplied from western Canadian markets as well as from markets in the eastern and central United States. In addition, Quebec offers the advantage of a reliable electrical power generation and distribution system.

By choosing a site in the Bécancour Waterfront Industrial Park, which is served by a deep-water port and well-developed road and rail systems, IFFCO Canada will benefit from the advantages of an excellent transportation network, which will facilitate distribution of its product on both national and international markets.

## 2.2 APPLICATION OF REGULATIONS DESIGNATING PHYSICAL ACTIVITIES

Under the new *Canadian Environmental Assessment Act* (CEAA, 2012) and the *Regulation Designating Physical Activities*, the construction and operation of a facility for the manufacture of chemical products with a production capacity of 250,000 t/yr or more (article 20, paragraph d) may be subject to the environmental assessment process.

A project proponent may proceed with a “designated project” only if the CEAA decides that an environmental assessment is not required or if, in the event that an environmental assessment is required, the proponent has fulfilled all the conditions set out in the CEAA’s decision.

## 2.3 COMPONENTS AND ACTIVITIES

### 2.3.1 Physical Works Associated with Project

The project involves the construction and operation of a fertilizer production plant consisting of two process units, one for ammonia and the other for urea, in the PIPB.

Manufacturing urea from natural gas requires the installation of a variety of infrastructure and major equipment:

- Ammonia unit;
- Urea unit;
- Two 10,000-metric-ton ammonia storage tanks and two 75,000-metric-ton urea silos;
- Inert gas (nitrogen) storage and generation facility, and a compressed air facility;
- Emergency diesel generator and a transformer;
- Switch yard for importing power;
- Raw water treatment, demineralization and conditioning installations;
- Water treatment facility for industrial wastewaters;
- Conveyor system (over distance of 4.4 km) and installations for bulk loading onto ships;
- Compressor house for air compressor, synthesis gases, ammonia refrigeration and CO<sub>2</sub> compressors;
- Natural gas supply terminal;
- Buildings for various operating functions (central control room, maintenance shop, warehouse, laboratory, cafeteria, fire station, nursing station and administration);
- Sidings for the loading and shipping of urea by railcar.

Most of the infrastructures will be located on the part of the site previously developed for Norsk Hydro’s industrial activities, an area that is now backfilled and leveled.

The railway loading tracks on the project site will be linked to the exiting branch of the Windsor-Halifax branch that serves the PIPB. This branch is used for transportation of goods and is dedicated to the exclusive use of the PIPB. The sidings on site will be used for the storage and assembly of the railcars. They are an integral part of the IFFCO Canada project, and will be owned by IFFCO Canada.

The raw water required for equipment cooling, for feeding the boiler and as process water, will come from the *Société du Parc Industriel et Portuaire de Bécancour* (SPIPB) pumping station. Drinking water will be supplied by the City of Bécancour.

Natural gas will be used as the main raw material in the manufacturing process and as a source of fuel for the boiler. The gas will be distributed through the Gaz Métro network. It is estimated that 2.1 to 2.5 million standard cubic metres will be used per day.

### **2.3.2 Production Capacity and Process**

The nominal capacity of the two process units will be of 2 200 and 3 850 metric tonnes per day of ammonia and of urea, respectively. All the ammonia produced will be used during urea production.

The mean annual production capacity will vary between 1.3 and 1.6 million tons of granulated urea and will be able to produce up to 760 000 tons of liquid urea (DEF).

The urea will be produced using known, proven technology; urea has been commercially manufactured for more than a century. The process involves a reaction between hydrogen and nitrogen, at high temperature and pressure, with the presence of catalysts. Production of granular urea is a two-stage process:

#### ***Production of anhydrous ammonia***

Methane, the main constituent of natural gas, is converted into hydrogen when it reacts with steam at high temperature. The carbon monoxide produced in the first stage mixes with water to form carbon dioxide, that will be entirely consumed in the urea production unit. The hydrogen is then mixes with nitrogen (present in the air) to form ammonia. The gas is finally cooled, and the ammonia changes to a liquid state.

#### ***Production of urea***

The liquid ammonia reacts with carbon dioxide at high temperature and pressure to form urea. The impurities are then extracted from the mixture in a distillation tower. The main impurities are water and unconsumed reagents (ammonia and carbon dioxide). They are recycled back into the process. The urea solution and an anti-caking agent are fed into a granulation chamber in which there is a counter-current flow of fluidized air. The pulverized suspension becomes granulated in the flow of air. The urea particles are cooled as they move sideways across the chamber. This extracts all the humidity and the urea particles turn into granules, which are then transported by a conveyor system to a storage site.

Production of liquid urea (DEF) is done before the granulation step, by mixing the urea solution with water to obtain a 32.5% urea and water mixture.

The main product, solid granular urea, will be transferred to the port by a conveyor system (to be loaded onto ships) or else loaded onto railcars or trucks for shipping. Secondary product, DEF will be sold in tankers (trucks).

### **2.3.3 Project Activities**

#### *2.3.3.1 Construction Phase*

Construction will begin with site preparation work. Vegetation cover will be cleared from areas that are still covered with vegetation, the north and southwestern sections of the site, and the entire site will be levelled. A sedimentation basin will be built for the construction phase of the project, to ensure the sedimentation of suspended matter in site drainage water; this will occur primarily during the site preparation phase. After clearing and levelling have been completed, the large-scale excavation work required for the buildings and process units will be done, and the foundations will be poured. Subsequently, the following stages will be carried out: mechanical installation of equipment and piping, electrical work and instrumentation, and the erection of buildings.

Approximately 185 support structures will need to be put in place for the construction of the conveyor (one each 24 m).

Systems will also have to be connected to existing service infrastructures (water, electricity, sewer, effluent discharge pipes, etc.).

Around 1,000 workers will be required, on average, for the duration of the construction phase of the project, with 1,500 needed at the peak.

#### *2.3.3.2 Operation Phase*

Following completion of the equipment acceptance phase, the production equipment will be commissioned. The plant will operate continuously. Shutdown periods ranging from three to four weeks in length will be required every two years for inspection and preventive maintenance. Equipment rebuilding will be planned in order to extend service life.

IFFCO Canada will employ approximately 250 people during plant operation.

#### *2.3.3.3 Decommissioning and Closure Phase*

Should the fertilizer production plant have to close, the industrial installations would be dismantled, and the site would be characterized and decontaminated as needed. The expected service life of the project is of 35 to 40 years.

## **2.4 EMISSIONS, DISCHARGES AND WASTE**

The emissions, discharges and waste generated during the construction and the operation of the plant are presented in Table 3.

**Table 3 Emissions, discharges and waste related to the IFFCO Canada project**

| Type of emission or discharge | Description  |
|-------------------------------|--|
| Atmospheric emissions         | <p>During construction :</p> <ul style="list-style-type: none"> <li>• Exhaust fumes from the vehicles and equipment used for construction work</li> </ul> <p>During operation :</p> <ul style="list-style-type: none"> <li>• NO<sub>x</sub> and CO<sub>2</sub> generated by the burning of natural gas to produce steam (boiler) and ammonia.</li> <li>• CO<sub>2</sub> resulting from the conversion of natural gas into ammonia will be recovered and used completely to produce urea.</li> <li>• Urea particles and ammonia emissions generated during granulation, and emission of urea particules during manutention.</li> <li>• A wet scrubber will reduce ammonia emissions and dust collectors will collect urea emissions.</li> <li>• Flare to burn residual gas that could be emitted under abnormal operating conditions.</li> <li>• Use of Low NO<sub>x</sub> -emission burners.</li> <li>• Total greenhouse gas (GHG) emissions from the plant are estimated at 650 000 tons per year (CO<sub>2</sub> eq. /yr) and will put IFFCO Canada in the category of major emitters of GHGs. They should account for less than 1% of total Quebec emissions and less than 0.3% of total Canadian emissions.</li> <li>• IFFCO Canada's plant will be amongst the most efficient in the world in terms of GHG emissions, with a ratio of 0.41 t CO<sub>2</sub>eq./t of urea</li> </ul> |
| Technological risk            | <ul style="list-style-type: none"> <li>• Technological risk analysis to evaluate different accident scenarios that can result from the production and the use of hydrogen and ammonia and of any other hazardous material.</li> <li>• Two ammonia tanks will be installed in order to reduce the maximum inventory in each reservoir and reduce the consequence of an accidental discharge. This will also allow to carry out the timely inspection of ammonia tanks as required by the code of practice.</li> <li>• Strict operational control measures in place.</li> <li>• Development of an emergency response plan up in conjunction with the appropriate authorities and the consequences of accidental scenarios.</li> </ul>  |
| Liquid discharge              | <p>During construction:</p> <ul style="list-style-type: none"> <li>• Settling basin to reduce release of suspended solids in the stream during site preparation activities.</li> </ul> <p>During operation :</p> <ul style="list-style-type: none"> <li>• Process effluents (mainly condensates and boiler blowdown) will be treated and re-used as make-up water in the demineralization unit</li> <li>• The only liquid discharges will result from cooling tower blowdown, demineralization unit rinse water and surface water runoff from the industrial site</li> <li>• Equalization and holding tank before discharge into the St. Lawrence through the existing outfall belonging to the SPIPB.</li> <li>• Low concentrations of ammonia nitrogen, of minerals present in the water and residue from products used to condition the water needed for the steam and cooling systems.</li> <li>• The final effluent will be free of acute toxicity.</li> </ul>  |
| Waste                         | <ul style="list-style-type: none"> <li>• The urea production process will not generate any continuous production waste.</li> <li>• Used catalysts will either be returned to the supplier to be regenerated, or be sent to duly authorized companies for recycling or elimination.</li> <li>• The service life of catalysts is approximately 5 years.</li> <li>• Some hazardous residual materials will be generated through the maintenance and operation of plant equipment, including waste oil, used filters, batteries and dirty rags.</li> <li>• Residual materials will be put into barrels, removed from the site by an authorized company and managed in compliance with applicable regulations.</li> </ul>   |

## 2.5 TIMETABLE

Table 4 presents the main stages of the project.

**Table 4 Preliminary timetable for project implementation**

| Time period                    | Activities  |
|--------------------------------|---|
| <b>September 2012</b>          | Filing of project notice with Quebec's MDDEFP   |
| <b>Summer/Fall/Winter 2012</b> | Field surveys<br>Preliminary engineering and selection of company to provide technology.<br>Preparation of impact assessment study<br>Information and consultation of local stakeholders                      |
| <b>Winter 2013</b>             | Filing of impact assessment study with appropriate authorities  |
| <b>Spring/Summer/Fall 2013</b> | Preparation and filing of supplementary documentation (addenda)<br>Environmental analysis of impact assessment study<br>Public hearings – BAPE if necessary<br>Detailed engineering<br>Procurement activities |
| <b>Spring 2014</b>             | Beginning of Plant construction   |
| <b>Spring 2017</b>             | Commissioning and start-up of commercial production<br>Maintenance, control and monitoring  |
| <b>2052 to 2057</b>            | End of operations followed by dismantlement (if judged non profitable)  |

## 3 PROJECT LOCATION

### 3.1 LOCATION

The plant will be built on plot n°6 of the PIPB, previously used for Norsk Hydro's industrial activities. The central point is located at coordinates 72° 24' 31" W, 46° 22' 19" N.

The PIPB was established by the Government of Quebec and is administered by the *Société du Parc Industriel et Portuaire de Bécancour* (SPIPB). In addition to the advantages associated with its natural gas supply, the industrial park is equipped with a deep-water seaport and well developed railway and highway networks. IFFCO Canada will take advantage of an excellent transport network, which will facilitate both obtaining supplies of goods and services as well as distributing its output to both local and international markets.

The project site has an area of approximately 70 ha, bounded to the south by the Raoul-Duschene Boulevard. The site is confined between the Mayrand Brook, to the west, and the SINTRA property, to the east. The buildings and equipments will be concentrated in the southeastern part of the site, a backfilled and leveled area previously used for Norsk Hydro's industrial activities.



A conveyor system will be required to transport the urea from the production site to jetty B-1, where a ship loading system will also be needed. The conveyor routing will measure 4.4 km and is shown on Maps 1 and 2 in Appendix A.

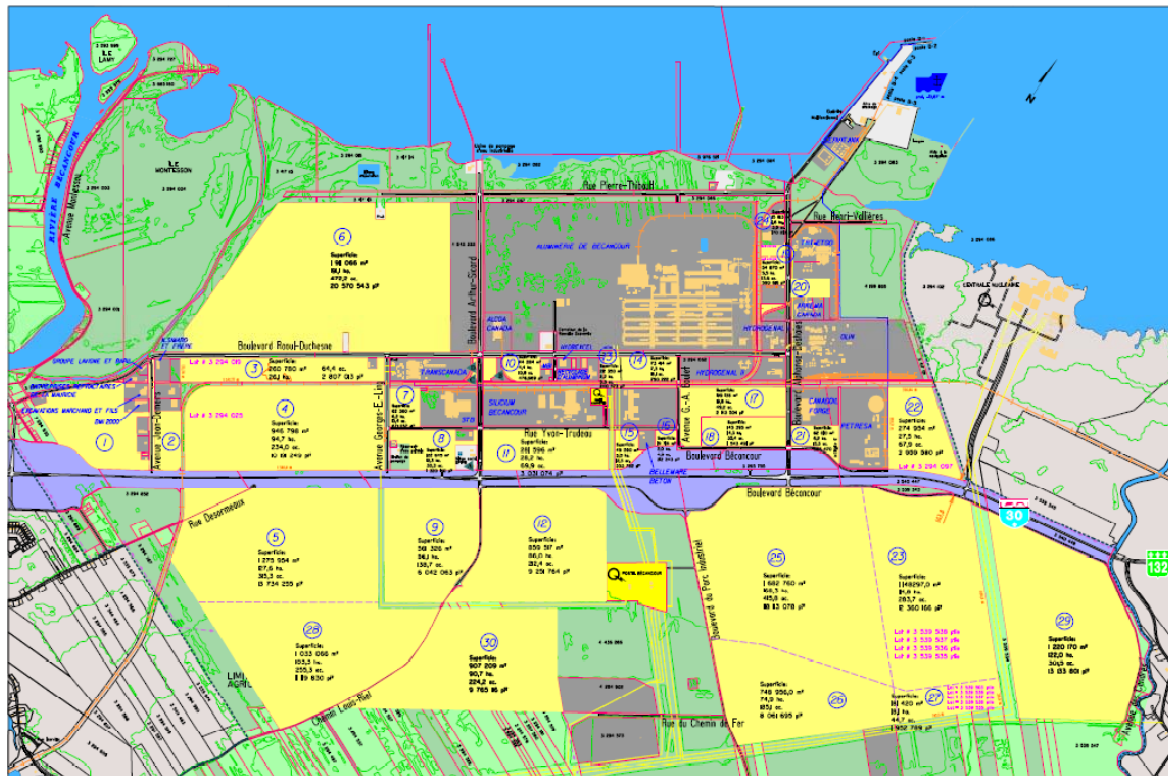
The closest residence lies approximately 1660 m from the limits of the project site and should be over 2 km away from the ammonia tanks. Also, the First Nations reserve of Wôlinak is located about 4 km from the project site (see Map 2, Appendix A).

### 3.2 SITE SELECTION

Many sites available within the PIPB were examined. The main limiting factors were site size and the current zoning. The chosen site had to be big enough for the project infrastructures and IFFCO Canada wanted to avoid sites that would require a change in zoning or the expropriation of local land owners.

Consideration of these initial criteria amongst sites in the PIPB left IFFCO Canada with two available sites to choose from: lots n°3 & 4 and lot n°6 (Figure 1).

**Figure 1** Lots available in the PIPB territory



Source: SPIPB, 2012.

Initially selected, lots n° 3 and 4 were the object of a more detailed environmental assessment which allowed the identification of a certain number of constraints. A comparative assessment with lot n°6 was then carried out. The results are presented in Table 5. It is important to note that the elements presented below apply to all the area covered by the lot. However, only part of the lots will need to be developed for the purpose of the project. Lot n°6 was finally chosen by IFFCO Canada for the construction of its project.

**Table 5 Comparison of lots n°3 and 4 and lot n°6**

| Environmental and Technical Aspects             | Lots n° 3 and 4  | Lot n°6  |
|---|--|--|
| <b>Wetlands</b>                                 | <ul style="list-style-type: none"> <li>Large area covered in wetlands</li> <li>Wetlands mainly on the eastern part of the lots.</li> <li>Wetlands of poor ecological value</li> <li>Construction in wetland cannot be avoided because of buffer zone with populated areas</li> </ul> | <ul style="list-style-type: none"> <li>Limited area of wetlands</li> <li>Wetlands mainly on the northern part of the lot.</li> <li>Wetlands of high ecological value</li> <li>Construction in wetlands can be avoided in great part. Construction will be concentrated in section previously developed</li> </ul>  |
| <b>Floodplain</b>                               | <ul style="list-style-type: none"> <li>Higher elevation.</li> <li>Small area in the north west of the site is within the 0-20 year floodplain.</li> <li>Construction in the floodplain can be avoided.</li> </ul>  | <ul style="list-style-type: none"> <li>Lower elevation.</li> <li>North part of the lot in the 0-20 year floodplain.</li> <li>Construction in floodplain can be avoided in great part.</li> <li>Small encroachments in the 0-2 years and 0-20 years</li> </ul>  |
| <b>Special status species</b>                   | <ul style="list-style-type: none"> <li>No known special status species on site</li> <li>Poor potential of finding special status fauna or flora species on site</li> </ul>   | <ul style="list-style-type: none"> <li>Presence of a species likely to be designated threatened or vulnerable in Quebec (CDPNQ): the River-bank lyme grass, <i>Elymus riparius</i>.</li> <li>Presence of a fish species likely to be designated threatened or vulnerable (CDPNQ); and designated of intermediate priority 2 (COSEPAC): the Brassy minnow, (<i>Hybognathus hankinsoni</i>)</li> </ul> |
| <b>Watercourses and fish habitats</b>           | <ul style="list-style-type: none"> <li>Presence of two watercourses on lots</li> <li>Two branches of the Mayrand Brook on the site can be kept intact</li> <li>Zéphirin-Deshaies Brook on site would need to be diverted</li> <li>Fish habitat loss</li> </ul>                       | <ul style="list-style-type: none"> <li>Presence of three water courses and one drainage ditch on lot</li> <li>No encroachment in existing watercourses and ditch</li> </ul>  |
| <b>Habitat loss</b>                             | <ul style="list-style-type: none"> <li>Installations on previously undeveloped land, covered in natural vegetation.</li> <li>Larger area deforested</li> <li>Larger habitat loss.</li> </ul>   | <ul style="list-style-type: none"> <li>Installations mainly on part of the lot previously develop for industry</li> <li>Almost no deforestation required</li> <li>Lower habitat loss</li> </ul>  |
| <b>Proximity to the port</b>                    | <ul style="list-style-type: none"> <li>Farther from the port.</li> <li>Greater cost of urea conveyer to the port.</li> </ul>   | <ul style="list-style-type: none"> <li>Closer to the port.</li> <li>Lower cost of urea conveyer to the port.</li> </ul>  |
| <b>Railway access</b>                           | <ul style="list-style-type: none"> <li>Railway already passes through the site</li> </ul>  | <ul style="list-style-type: none"> <li>Requires an extension of the railway present south of the lot of about 200 m.</li> </ul>  |
| <b>Land use and designation</b>                 | <ul style="list-style-type: none"> <li>Zoned for heavy industrial activities</li> </ul>  | <ul style="list-style-type: none"> <li>Zoned for heavy industrial activities</li> <li>Presence of four right-of-ways dividing the lot</li> <li>Revalorization of old industrial site</li> </ul>  |
| <b>Previous use and environmental liability</b> | <ul style="list-style-type: none"> <li>Greenfield</li> <li>Owned by SPIPB</li> <li>No previous contamination</li> </ul>  | <ul style="list-style-type: none"> <li>Brownfield site, levelled and stabilized, which will require less earth-moving.</li> <li>Privately owned</li> <li>Characterization and remediation work completed show low risks of contamination</li> </ul>  |
| <b>Technological risk</b>                       | <ul style="list-style-type: none"> <li>Ammonia tanks located 2.2 km away from urban area and 1.4 km from isolated farms</li> </ul>   | <ul style="list-style-type: none"> <li>Greater distance between ammonia tanks and population</li> <li>Ammonia tanks located 3 km away from urban area and 2 km from isolated houses</li> </ul>   |

| Environmental and Technical Aspects | Lots n° 3 and 4  | Lot n°6  |
|-------------------------------------|--|--|
| <b>Social acceptability</b>         | <ul style="list-style-type: none"> <li>Concerns expressed during the first phase of consultation about the loss of wetlands, deforestation and the conveyor routing (option no.1) due to the presence of a silver maple grove.</li> <li>Preference expressed for the use of the Norsk Hydro site (lot 6) rather than an undeveloped site.</li> </ul> | <ul style="list-style-type: none"> <li>Almost 70% of the project infrastructures being on a parcel of land previously used and developed for industrial purposes, the site should be more acceptable.</li> </ul> |

### 3.3 PROPERTY OWNERSHIP AND LAND USE

The site is located in an industrial area. Under the Bécancour Regional County Municipality (RCM) land use and development plan and the City of Bécancour zoning plan, the area is zoned for heavy industry. The site lies within the limits of the SPIPB and was previously used for Norsk Hydro's industrial activities that ceased its activities in 2007. The site was thereafter completely dismantled and rehabilitated. It does not encroach in any way on agricultural or other land. The site is served by the main industrial services (natural gas, water, electricity, railway, road access, etc.).

#### **Plot n° 6**

This plot belonged to Statoil, formerly Norsk Hydro. IFFCO Canada purchased the land in January 2013.

#### **Right-of-way for Conveyor System**

Rights-of-way were negotiated with the SPIPB for the planned routing of the conveyor system.

## 4 FEDERAL GOVERNMENT INVOLVEMENT

### 4.1 FINANCIAL SUPPORT

No financial support from the federal government or any of its agencies has been proposed or is anticipated for the fertilizer plant construction project.

### 4.2 FEDERAL LANDS

No federal lands will be used for the purpose of carrying out the project.

### 4.3 LEGISLATIVE OR REGULATORY REQUIREMENTS

Federal authorizations may be required pursuant to the following pieces of legislation:

- *Fisheries Act* (R.S.C., c. F-14) if Fisheries and Oceans Canada deems that the project causes harmful alteration, disruption or destruction of fish habitat;
- *Species at Risk Act* (R.S.C. 2002, c. 29) if it turns out that the project could have an impact on one of the species included on the official list of species at risk;

- *Migratory Birds Convention Act, 1994* (S.C. 1994, c. 22) if it turns out that the project could have an impact on migratory birds;
- *Canada Transportation Act (1996, c.10)*, par. 98, in relation to the construction of a railway line.

In addition, an emergency response plan that meets the requirements of the *Environmental Emergency Regulations* (SOR/2003-307) will be drawn up in cooperation with the appropriate authorities.

## 5 ENVIRONMENTAL EFFECTS

### 5.1 DESCRIPTION OF THE ENVIRONMENT

This section provides an overview of the physical, biological and socioeconomic components of the environment on the site where the plant is to be built and in a wider study area that encompasses all of the environmental components that could be affected by construction and operation of the planned facility. This description is based on the documentation consulted so far and will be further detailed following supplementary research conducted as part of the environmental study.

Different Maps are included in Appendix A. Map 1 presents a general view of the study area, whereas Map 2 illustrates some elements of interest within the study area. Map 3 presents the different sectors of the projects site.

#### 5.1.1 Physical Environment

##### ***Air quality***

Air quality in the Bécancour region was subject to a special monitoring program carried out from 1995 to 2008. Between 1995 and 2008, pollutant concentrations overall remained stable and below the ambient air standards set out in the *Regulation respecting the quality of the atmosphere*. However, PM<sub>10</sub> concentrations over a 24-hour period did occasionally exceed MDDEFP guidelines. The results of the Bécancour air quality monitoring program show that the region's industrial activities have little impact on the air quality of urbanized areas surrounding the industrial sector (Bisson, Busque and Therrien, 2009).

##### ***Physiography***

The study area is located in the geological province of the St. Lawrence Lowlands. The Lowlands consist of series of terraces, beginning at an altitude of 14 m above the level of Lac Saint-Pierre (St-Lawrence River). The City of Bécancour sits at an altitude of about 18 m. Generally, the land of the valley slopes gently down towards the St. Lawrence River. There are rock outcroppings in the north, near the St. Lawrence, notably in the industrial park.

## **Geology and Geomorphology**

The main geomorphic units in the area of the industrial park are two till units (Bécancour and Gentilly), clays from the Champlain Sea, high terrace sands and rock. The thickness of the loose deposits varies between 3 m and 6 m, and tends gradually to increase in the estuary zone.

## **Hydrography**

The PIPB is located on the south shore of the St. Lawrence. The study area's hydrographic system drains into the river. Its main components are the Bécancour River, approximately 2.3 km west of the site, and the Gentilly River, approximately 5 km to the east. A number of ditches and drainage canals crisscross the industrial park, following the old divisions of agricultural land. They generally run either parallel or perpendicular to the St. Lawrence and flow toward it.

The Mayrand Brook surrounds the project site in its southwestern section and then passes through it in a north-south angle. A large drainage ditch also passes through the site in the northern part, in a west-east direction. Additionally, two small unnamed watercourses join the south-north branch of the Mayrand Brook (see Map 3 in Appendix A).

## **Floodplain Area**

Low-lying areas of the industrial park can be periodically flooded during spring high water or during episodes of important rainfall. The flood-prone areas are associated to the shorelines of the main watercourses, notably along the St. Lawrence and in the lower reaches of the Bécancour River.

Some sections of the project site are within the 0-2 yr, 2-20 yr and 20-200 yr floodplains. The 0-2 yr recurrence floodplain covers a total area of 2 ha inside the site limits. It is located in the south-western sector, south of the bend in the Mayrand Brook (0.5 ha), in the north sector, west of the Mayrand Brook (0.5 ha), as well as in a small section south of the drainage ditch that passes through the site from east to west (1 ha). This last area is in the Norsk Hydro sector and was previously backfilled by Norsk Hydro (see Map 3, Appendix A). The 2-20 yr. recurrence zone covers an area of 15.2 ha inside the project site.

The conveyor routing also crosses areas that lie within the 0–2-yr and 0–20-yr floodplains. The height of the conveyor will be such that only the pillars would be located in the flood plain.

## **5.1.2 Biological Environment**

### **5.1.2.1 Vegetation**

The study area is located in the temperate Nordic vegetation zone and in the deciduous forest sub-zone. It also belongs to the bioclimatic field of the sugar maple–basswood forest. The flora is highly diversified in this field, and several species are at the northern limit of their distribution area.

Three distinct zones occupied by characteristic vegetation were observed in the study area. They are:

- The flood plain, on either side of the river, occupied by patches of vegetation adapted to very wet conditions;
- The agricultural zone, where there are uncultivated areas in regeneration that facilitate the establishment of pioneer species; and
- The upper terrace situated in the south end of the study area, occupied by forests of broad-leaved trees of tolerant and intolerant species, maple groves and conifer stands.

The proposed site for the IFFCO Canada facilities is composed in great part of land previously used for industrial purposes (Norsk Hydro sector). This part of the site, the former Norsk Hydro plant site, covers 44.9 ha that have been backfilled and levelled in the recent past. The area is now covered with herbaceous plants typical of open areas. The site's dismantling phase having been completed in 2010, vegetation on this part of the site has only grown for 3 or 4 years.

Natural environments present in the section southwest of the project site were previously characterized in 2008 for the count of the SPIPB (AECOM, 2009). This survey consisted in an exhaustive survey of floristic species for each vegetation layer. It also aimed at identifying and delimitating wetlands present. According to this study, this section is composed of a mix of herbaceous fallow land and of immature forest dominated by red ash. No wetlands were identified in this sector.

Vegetation in the northern undeveloped part of the site, for its part, was partially characterized in 2002 (Stantec, 2003). This survey led to the identification of almost the same two types of vegetation in this section of the project site, i.e. young forest, dominated by red ash, and shrubby fallow land. No wetlands were identified in this study.

Surveys carried out in the northern section of the site in 2002 (Stantec, 2003), confirmed the presence of two flora species of interest. First, a diffuse population of about 30 stems of the Riverbank wild-rye was identified, near an abandoned ditch. Riverbank wild-rye is a species likely to be designated threatened or vulnerable in Quebec. It is typically associated with the banks of watercourses, but can also be found in humid forests or shrubs (Dignard et al., 2008).

Secondly, small patches of ostrich fern were identified in that same part of the project site, covering the ground of wooded areas. This species is classified as vulnerable to harvesting by the MDDEFP.

The habitats on site do not seem favourable to the presence of other special interest flora species.

On another hand, the *Centre de données sur le patrimoine naturel du Québec* (CDPNQ, Quebec environmental heritage data centre) and various studies have registered five other special-status species in the study area. They are listed in Table 6. These species are typical of wetlands and are found in the flood-prone areas along the Bécancour River and the

St. Lawrence. The wetlands and terrestrial (upland) environments on the project site have little ecological value and are unlikely to be home to special-status flora species.

**Table 6 List of special-status flora species inventoried by CDPNQ in study area**

| Common name                        | Scientific name                              | Provincial status        | Federal status       | Details  |
|------------------------------------|--|--------------------------|----------------------|--|
| Ostrich Fern <sup>1</sup>          | <i>Matteuccia struthiopteris</i>             | Vulnerable to harvesting |                      | <b>Project site :</b><br>✓ Individuals observed on northern part of project site (2002)  |
| Riverbank wild rye <sup>12</sup>   | <i>Elymus riparius</i>                       | SLDTV                    |                      | <b>Project site:</b><br>✓ Diffuse population of around 20 to 30 specimens in the northern part of the site (2002).                             |
| Branched bur-reed <sup>2</sup>     | <i>Sparganium angrocladum</i>                | SLDTV                    | priority 3 candidate | <b>1 report:</b><br>✓ City of Bécancour, right bank of Bécancour River. Marsh on edge of pond. A hundred or so specimens.                      |
| Yellow water-crowfoot <sup>1</sup> | <i>Ranunculus flabellaris</i>                | SLDTV                    |                      | <b>1 report:</b><br>✓ City of Bécancour, approximately 370 m south of Bécancour bay. Some 50 specimens in a stand of silver maple and red ash. |
| Water speedwell <sup>2</sup>       | <i>Veronica anagallis-aquatica</i>           | SLDTV                    |                      | <b>1 report:</b><br>✓ Bécancour, mouth of Bécancour River. Point of Chemin de l'Anse, in a sandy wetland.                                      |
| Annual wild rice <sup>2</sup>      | <i>Zizania aquatica</i> var. <i>aquatica</i> | SLDTV                    |                      | <b>1 report:</b><br>✓ Bécancour RCM, mouth of Bécancour River, Île Lamy sud, on the point at the end of Chemin de l'Anse.                      |
| False pimpernel <sup>3</sup>       | <i>Lindernia dubia</i> var. <i>Inundata</i>  | SLDTV                    |                      | <b>1 report:</b><br>✓ Bécancour RCM, east of the industrial park port, on either side of the Gentilly power station.                           |

**Note:** SLDTV – Species on the list of species likely to be designated threatened or vulnerable.

**Source:** <sup>1</sup>Stantec, 2003

<sup>2</sup>Centre de données sur le patrimoine naturel du Québec, 2012.

<sup>3</sup>Génivar, 2008

### 5.1.2.2 Wildlife

#### Terrestrial Wildlife

Large terrestrial fauna in the study area is represented by the white-tailed deer, the moose and the black bear. A white-tailed deer yard is present in the southern part of the study area, which represents the only terrestrial wildlife habitat, as defined in the *Regulations respecting wildlife habitats*, within the study area (see Map 2, Appendix A).

Amongst small terrestrial fauna species, the muskrat is the most abundant species and the one most sought after by trappers. The other species often trapped are racoon, beaver, red fox, coyote and fisher. Weasel, mink, skunk, squirrel, otter and American marten are also trapped, but in lesser quantities. Potential habitat for most of these species is more limited (CRRNT, 2010).

Besides the species targeted by trappers, some small mammals, including the southern red-backed vole, the meadow vole, the deer mouse, the meadow jumping mouse and the cinereus shrew (Maisonneuve et al., 1996), are also found in the region.

No habitats of interest are found within the project site, most of the area already being deforested. However, the remaining forested habitats and shrubby fallow land can shelter different common species, such as white-tailed deer and beavers, which were reported in the past during different field surveys on site carried out by SNC-Lavalin Environment or other consultants (AECOM, 2008; Stantec, 2003).

### **Birds**

A total of 187 bird species have been observed within the limits of the study area since 1981 (RQO, 2012). Many of these species use the study area for breeding purposes. According to the *Quebec Breeding Bird Atlas* (QBBA, 1995), 114 species potentially breed within the reference territory, corresponding to two 100 km<sup>2</sup> squares that encompass the study area. Of these 114, 31 are possible breeders, 38 are probable breeders and 36 are confirmed breeders. The majority of these species (91) are considered to be migratory.

The wetlands of the study area provide suitable habitat for the feeding and staging of waterfowl during spring and fall migrations. In addition, wetlands and surrounding environments, including prairies and mature forests (tree-nesting ducks), can also constitute together excellent habitats for the nesting and staging of aquatic species. Within the study area are two recognized waterfowl gathering areas (WFGA), as defined in the *Regulation respecting wildlife habitats* (MRN, 2012). The two areas extend along the south shore of the St. Lawrence (Map 2, Appendix A).

Among waterfowl species, the Canada goose, nine species of diving ducks and nine species of dabbling ducks breed in the Central Quebec region, which includes the study area (Table 7).



**Table 7 Breeding waterfowl species**

| Common english name           | Latin name                   |
|-------------------------------|------------------------------|
| <b>Dabbling ducks</b>         |                              |
| American wigeon               | <i>Anas americana</i>        |
| Wood duck                     | <i>Aix sponsa</i>            |
| Gadwall                       | <i>Anas strepera</i>         |
| Mallard                       | <i>Anas platyrhynchos</i>    |
| American black duck           | <i>Anas rubripes</i>         |
| Northern pintail              | <i>Anas acuta</i>            |
| Northern shoveler             | <i>Anas clypeata</i>         |
| Blue-winged teal              | <i>Anas discors</i>          |
| Green-winged teal             | <i>Anas crecca</i>           |
| <b>Diving ducks</b>           |                              |
| Ring-necked duck              | <i>Aythya collaris</i>       |
| Canvasback                    | <i>Aythya valisineria</i>    |
| Greater scaup                 | <i>Aythya marila</i>         |
| Greater scaup or lesser scaup | <i>Aythya sp.</i>            |
| Lesser scaup                  | <i>Aythya affinis</i>        |
| Common golden eye             | <i>Bucephala clangula</i>    |
| Bufflehead                    | <i>Bucephala albeola</i>     |
| Common merganser              | <i>Mergus merganser</i>      |
| Hooded merganser              | <i>Lophodytes cucullatus</i> |

Source : CRRNT, 2010, according to Canadian Wildlife Service (CWS) helicopter inventory, Central Quebec, 2004–2008

### **Fish**

The fish community observed in the section of the St. Lawrence between Trois-Rivières and Gentilly counts 64 fish species. Most of them are common to southwestern Quebec.

According to a study conducted by the MRN in 2001 as part of the *Réseau de Suivi Ichtyologique* (RSI, fish monitoring system), the species most often caught in the stretch of the St. Lawrence between Bécancour and Batiscan were yellow perch, shorthead redhorse, walleye, sauger, lake sturgeon and white sucker (MRN, 2008). Alternatively, shore species (caught by seine fishing) were banded killifish, perch, bluntnose minnow and tessellated darter.

Most recently, in 2008, seine fishing was carried out on the south shore of the St. Lawrence, between the mouth of the Bécancour River and the port of Bécancour. These inventories allowed to capture the following species: perch, banded killifish, spottail shiner, alewife, golden shiner, bluntnose minnow, tessellated darter, round goby, pumpkinseed sunfish and fallfish (Pascale Dombrowski, MRN, personal communication, 2012).

The floodplain and small watercourses (brooks and drainage canals) can represent spawning or nursery areas important for the survival of many fish species. In fact, it was demonstrated that these habitat constitute potential spawning area, namely for the channel catfish, spottail shiner, perch, northern pike, carp, redhorse, rainbow smelt and lake whitefish (see Map 2, Appendix A) (Armellin and Mousseau, 1998). Secondly, confirmed spawning areas for white sucker, northern sucker, silver redhorse, shorthead redhorse, river redhorse, walleye, smallmouth bass and channel catfish are also present in the Bécancour River (Alliance Environnement, 2005; Armellin and Mousseau, 1998). Thirdly, multispecific spawning sites (Castonomidés sp., lake whitefish, carp, cyprinid sp, walleye sp., northern pike, darter sp., killifish, channel catfish and perch) were also registered in the area of the Gentilly nuclear power station (Alliance Environnement, 2007).

Data extracted from 2011 activity reports on scientific, educational or wildlife management fishing (SEG permits) and from summary sheets on watercourses produced by Gaz Métropolitain for the environmental assessment of its pipeline crossing the PIPB (2003) provide information on fish species present within the SPIPB's small watercourses. These studies show that at least 26 species are potentially found in the small watercourses and ditches of the industrial park. Among these, 16 species were specifically fished in the Mayrand Brook and in the northern ditch on the project site. Table 8 lists the species registered in the small streams and ditches of the industrial park and specifies the ones present in the stream and the ditch on the project site.

Areas of the project site located in the 0-2 yr recurrence floodplain (2 ha) can be considered as fish habitat. However, these areas were already largely disturbed by past industrial activities, 1 ha having been backfilled during the Norsk Hydro plant dismantlement. The 0-2 yr floodplain areas in the south-west and north sectors (1 ha) were not previously disturbed. They are composed of forested areas dominated by red ash, considered as terrestrial environments.

**Table 8 Fish species identified in the creeks and ditches of the Bécancour Industrial park**

| Common name            | Scientific name                | Mayrand Brook | Ditch north of site | Other creeks and ditches of the industrial park |
|------------------------|--------------------------------|---------------|---------------------|---|
| White sucker           | <i>Catostomus commersoni</i>   | X             | X                   | X   |
| Brook stickleback      | <i>Culaea inconstans</i>       | X             |                     | X   |
| Common carp            | <i>Cyprinus carpio</i>         | X             | X                   | X   |
| Banded killifish       | <i>Fondulus diphanus</i>       | X             | X                   | X   |
| Pumpkinseed sunfish    | <i>Lepomis gibbosus</i>        | X             |                     | X   |
| Yellow perch           | <i>Perca flavescens</i>        | X             | X                   | X   |
| Northern redbelly dace | <i>Phoxinus eos</i>            | X             |                     | X   |
| Fathead minnow         | <i>Pimephales promelas</i>     | X             |                     | X   |
| Creek chub             | <i>Semioilus atromaculatus</i> | X             | X                   | X   |
| Central mudminnow      | <i>Umbra limi</i>              | X             | X                   | X   |
| Bluntnose minnow       | <i>Pimephales notatus</i>      | X             |                     | X   |
| Northern pike          | <i>Esox lucius</i>             | X             |                     | X   |
| Sunfish spp            | <i>Lepomis sp.</i>             | X             |                     | X   |
| Brassy minnow          | <i>Hybognathus hankinsoni</i>  | X             |                     |   |
| Brown bullhead         | <i>Ameiurus nebulosus</i>      |               |                     | X   |
| Spotfin shiner         | <i>Cyprinella spiloptera</i>   |               |                     | X   |
| Golden shiner          | <i>Notemigonus crysoleucas</i> |               |                     | X   |
| Spottail shiner        | <i>Notropis hudsonius</i>      |               |                     | X   |
| Finescale dace         | <i>Phoxinus neogalus</i>       |               |                     | X   |
| Common shiner          | <i>Luxilus cornutus</i>        |               |                     | X   |
| Emerald shiner         | <i>Notropis atherinoides</i>   |               |                     | X   |
| Johnny Darter          | <i>Etheostoma nigrum</i>       |               |                     | X   |
| Bluegill               | <i>Lepomis macrochirus</i>     |               |                     | X   |
| Ninespine stickleback  | <i>Pungitius pungitius</i>     |               |                     | X   |
| Burbot                 | <i>Lota lota</i>               |               |                     | X   |

Source: MRN, 2012

### Special-Status Wildlife Species

The presence of eight bird species and nine fish species having a special status under the federal *Species at Risk Act* (SRA) or under the Quebec *Act respecting threatened or vulnerable species* (Table 9) was confirmed in the study area. Among these, one fish species, the brassy minnow, was registered the Mayrand Brook, on the project site. All the other special-status fish were caught in the St. Lawrence.

**Table 9 Special-status wildlife species found in study area**

| COMMON ENGLISH NAME                      | SCIENTIFIC NAME               | FEDERAL STATUS                                | PROVINCIAL STATUS |
|--|-------------------------------|---|-------------------|
| <b>Breeding birds</b>                    |                               |   |                   |
| Peregrine falcon                         | <i>Falco peregrinus</i>       | Special concern                               | Vulnerable        |
| Short-eared owl                          | <i>Asio flammeus</i>          | Special concern                               | SLDTV             |
| Least bittern                            | <i>Ixobrychus exilis</i>      | Threatened                                    | Vulnerable        |
| Chimney swift                            | <i>Chaetura pelagica</i>      | Threatened                                    | SLDTV             |
| Barn swallow                             | <i>Hirundo rustica</i>        | Threatened                                    | SLDTV             |
| Canada warbler                           | <i>Wilsonia canadensis</i>    | Threatened                                    | SLDTV             |
| Bobolink                                 | <i>Dolichonyx oryzivorus</i>  | Threatened                                    | SLDTV             |
| Eastern meadowlark                       | <i>Sturnella magna</i>        | Threatened                                    | SLDTV             |
| <b>Fish</b>                              |                               |   |                   |
| American shad                            | <i>Alosa sapidissima</i>      | Intermediate priority (2)                     | Vulnerable        |
| American eel                             | <i>Anguilla rostrata</i>      | Being studied (SRA) Special concern (COSEWIC) | SLDTV             |
| Striped bass (St. Lawrence pop.)         | <i>Morone saxatilis</i>       | Extirpated                                    | -                 |
| River redhorse                           |                               | Special concern                               | SLDTV             |
| Eastern sand darter                      |                               | Endangered                                    | SLDTV             |
| Rainbow smelt (estuary south shore pop.) |                               | -   | Vulnerable        |
| Lake sturgeon                            |                               | -   | SLDTV             |
| Channel darter                           |                               | Endangered                                    | Vulnerable        |
| Brassy minnow                            | <i>Hybognathus hankinsoni</i> | Intermediate priority (2)                     | SLDTV             |

**Note:** SLDTV – Species on the list of species likely to be designated threatened or vulnerable.

### 5.1.2.3 Protection and Conservation Areas

The project site does not lie within a protection or conservation area. However, there are a few wildlife habitats designated in Quebec under the *Regulation respecting wildlife habitats* in the study area. They are shown on the Map 2 in Appendix A. Also, the Montesson Island has a “conservation” designation according to the Bécancour RCM’s land use plan.

### 5.1.3 Human Environment

#### **Archaeological and Heritage Sites**

Eight archeological sites are recorded in the study area. These are identified in Map 2 (Appendix A). Still undeveloped areas on the project site and along the conveyor routing have a prehistoric and historic archeological potential. The area previously developed and backfilled by Norsk Hydro however, has been too disturbed to have an archeological or historical potential.

IFFCO Canada is committed to following the recommendations made by Arkéos in its assessment of archaeological potential (Arkéos, 2012), namely, to conduct archaeological inventories in the previously undeveloped areas before starting work.

**First Nations**

The Wôlinak Abenaki First Nation reserve, which has an area of 1.5 km<sup>2</sup>, is an enclave within the Bécancour RCM. Under federal jurisdiction, the reserve is located in the study area, to the south of the Bécancour sector, on the west bank of the Bécancour River. The reserve is found about 4 km to the south-west of the planned site for IFFCO Canada's urea plant. The CN railway that will be used to ship urea product crosses part of the reserves territory.

**5.2 DESCRIPTION OF ENVIRONMENTAL EFFECTS**

The changes to fish and their habitat, aquatic species and migratory birds that may be caused by the project are summarized in Table 10.

**Table 10 Environmental effects of the projects**

| Environmental components                                 | Anticipated impacts  |
|--|--|
| <b>Effects on Fish and Fish Habitat</b>                  | <ul style="list-style-type: none"> <li>• Loss and disruption of habitat as a result of the construction of infrastructures in the 0-2 yr. recurrence floodplain of the St-Lawrence River on the project site, covering an area of 2 ha;</li> <li>• Of this 2 ha, an area of 1 ha is found in the Norsk Hydro sector and was previously backfilled. An area of 0.5 ha is found in the south-west sector and an area of 0.5 ha is located in the north sector (see Map 3)</li> <li>• Loss and disruption of habitat as a result of the erection of support pillars for the conveyor system in the flood plain: temporary impact related to temporary access road and footings, and permanent impact of about 53 m<sup>2</sup>, related to the installation of 322 columns of 0.16 m<sup>2</sup> in the 0-2 year floodplain</li> <li>• Temporary degradation of habitat by the input of fine particulate matter in watercourses on the plant site during construction is also anticipated</li> </ul>  |
| <b>Effects on Aquatic Species</b>                        | <ul style="list-style-type: none"> <li>• Five at-risk aquatic species identified in the study area: striped bass (St. Lawrence population), river redhorse, eastern sand darter, bridle shiner and channel darter;</li> <li>• All caught in the St. Lawrence, except the eastern sand darter, found in the Bécancour and Gentilly Rivers;</li> <li>• The Brassy minnow, a mid priority candidate species of the species specialists subcommittee (SSC) candidate list, ranked as likely to be designated threatened or vulnerable in Quebec, was registered in the Mayrand Brook, on the project site.</li> <li>• Loss and disruption of potential habitat as a result of the erection of support pillars for the conveyor system and of the construction of plant infrastructures in the 0-2 year floodplain;</li> <li>• The potential use of these environments by at risk aquatic species will be evaluated during the impact assessment;</li> <li>• Recent fish surveys (2011 SEG permits, MRNF 2012) on the project site did not reveal the presence of aquatic species at risk</li> <li>• No deterioration of water quality in the St.-Lawrence or toxicity is anticipated.</li> </ul> |
| <b>Effects on Migratory Birds</b>                        | <ul style="list-style-type: none"> <li>• Bird life disturbance by construction work;</li> <li>• Habitat loss related to clearing of site very limited, most of the site having already been cleared in the pass.</li> </ul>  |
| <b>Effects on Federal Lands and Areas Outside Quebec</b> | <ul style="list-style-type: none"> <li>• No direct impact is anticipated on federal lands, in another province or beyond Canada's borders;</li> <li>• An indirect transboundary impact, including potentially on global climate change, could result from GHG emissions from the fertilizer production plant;</li> <li>• Annual emissions of GHGs are evaluated at 650 000 t (CO<sub>2</sub>eq.)</li> <li>• Total quantity of GHGs should represent less than 1% of total Quebec emissions and less than 0.3% of total Canadian emissions.</li> </ul>  |

| Environmental components             | Anticipated impacts  |
|--------------------------------------|--|
| <b>Effects on Aboriginal Peoples</b> | <ul style="list-style-type: none"> <li>• The First Nations reserve of Wôlinak is located 4 km from the project site;</li> <li>• No anticipated impacts of noise or atmospheric emissions from the plant on the Aboriginal community;</li> <li>• The site of the future plant lies within a vast hunting and trapping area of the Abenakis of Odanak and Wôlinak. No impact is anticipated because hunting and fishing are prohibited on the SPIPB's land located north of highway 30;</li> <li>• Impacts related to the increase in train traffic crossing the Wolinak reserve on aboriginal people will be evaluated in the environmental assessment study.</li> <li>• Positive impacts related to job creation and boost in economic activity resulting from the construction and operation of the plant;</li> <li>• Targeted archaeological inventories will be done of the areas of prehistoric and historic potential in the plant construction site and along the conveyor before the construction work begins.</li> </ul> |

## 6 ENGAGEMENT AND CONSULTATION WITH ABORIGINAL GROUPS

### 6.1 CONSULTATION APPROACH

Consultations were held with the Grand Council of the Waban-Aki Nation. As for the consultations with non-Aboriginal stakeholders, the main objectives of the meeting were to:

- Deepen knowledge of the environment;
- Identify the concerns and expectations of the Grand Council of the Waban-Aki Nation that should be taken into consideration during the development phases of the project;
- Take note of the suggestions and expectations of the Grand Council of the Waban-Aki Nation regarding the other consultation phases to come;
- Establish a relationship between IFFCO Canada and the Grand Council of the Waban-Aki Nation, chiefly through open, constructive dialogue.

### 6.2 PARTICIPANTS

The Grand Council of the Waban-Aki Nation represents two Abenaki band councils: Odanak and Wôlinak. The latter community is the one located close to IFFCO Canada's future site. The Odanak community lies about 40 km west of the study area, in the vicinity of Pierreville.

A meeting about the project was held with the Grand Council on October 16, 2012. The main comments and concerns expressed at that meeting will be presented in the social and environmental impact assessment (SEIA) for the project.

### 6.3 TRADITIONAL ACTIVITIES

According to the Grand Council of the Waban-Aki Nation, the planned site of IFFCO Canada's production facility, like all of the land belonging to the SPIPB, lies on ancestral lands of the Abenaki communities. At present, no official land claim has been made regarding this territory, but research is under way to gather evidence of the historical use and occupancy of the territory by the Abenakis.

No hunting is allowed on land within the industrial park, north of Highway 30, where the project will be located. Thus, no impact is anticipated on aboriginal hunting or trapping activities.

### 6.4 UPCOMING CONSULTATIONS

Consultations with the Odanak and Wôlinak band councils are planned to in the next few months. SNC-Lavalin's project team is currently deciding on the best way to consult the band councils, taking into consideration the recommendations made by the Grand Council of the Waban-Aki Nation.

## 7 CONSULTATION WITH THE PUBLIC AND OTHER PARTIES (OTHER THAN ABORIGINAL CONSULTATION)

### 7.1 APPROACH TO CONSULTATION

Public consultation is part of the process of assessing the project's social and environmental impacts. The main purpose is to provide the different stakeholders with objective information so that the concerns and expectations they express can be taken into consideration right from the project design stage.

The consultation process for the project has two main components: issues scoping consultations followed by targeted information, consultation and public information activities. The scoping consultations phase is already completed.

Public hearings could also be held by the *Bureau des audiences publiques sur l'environnement* (BAPE), once the impact study has been filed with the proper provincial authorities and made public.

### 7.2 PARTICIPANTS

The consultation process provides opportunities to meet with the various stakeholders concerned in the administrative regions of Central Quebec and the Mauricie. Stakeholders fall into the following categories:

- Political: Federal MPs and Quebec MNAs;
- Project partners: Main partners in the project;
- Public administration: Officials from Government of Quebec ministries and agencies, as well as representatives of cities, towns and regional county municipalities (RCM);
- Residents: A sampling of residents living within the study area;

- Industries: Industries located near IFFCO Canada's planned future site in Bécancour;
- Environment: Various environmental groups;
- Economic: Main economic organizations in these regions;
- Education: Main educational organizations and institutions in these regions;
- Social: Main social service agencies in these regions;
- First Nations: Representatives of Aboriginal communities (see Section 6);
- Infrastructure: Organizations whose infrastructure and services will be relied upon in project development.

Officials from the Bécancour RCM, the City of Bécancour and the MDDEFP have also been consulted to identify, using their knowledge of the territory, development issues.

### **7.3 MAINS OBSERVATION AND PREOCCUPATIONS**

The main issues identified by stakeholders up until now, during the exploratory consultations, are listed hereunder. It must be noted that the site presented during the scoping consultations was composed of lots 3 and 4, south of the site finally chosen. However, preoccupations expressed can entirely be applied to the present project. The opinions expressed were grouped by themes in order to present a general synthesis of the meetings, but also to ensure the information shared remain anonymous.



**Table 11 Preoccupations identified during the exploratory consultations**

| Theme                        | Description   |
|------------------------------|---|
| <b>Economic issues</b>       |   |
| Local economic spinoffs      | Ensuring host community truly benefits from the project (jobs and sub-contracts)  |
|                              | Support for local industrial development (especially in a context of plant closings)                                    |
|                              | Social implication of the project proponent in the local host community   |
| Workforce                    | Competition among industries with respect to qualified labor availability   |
|                              | Employability of specialized workers trained for specific needs in other industries                                     |
|                              | Unilingual workforce faced to foreign investors   |
|                              | Loss of labor in traditional sectors in favor of more competitive industries  |
| Partners                     | Capacity for local project partners to better compete   |
| Agriculture                  | Strengthening of local, provincial and national supply of urea  |
|                              | Decrease in production costs for urea users   |
| <b>Sociopolitical issues</b> |   |
| Host community support       | Project well perceived and openness to the arrival of industrial projects in the Bécancour Industrial Park.             |
|                              | Great consumption of natural gas and perception of an increase in pressure for the development of shale gas.            |
|                              | Importance of a good understanding of the project and its impacts by the host community                                 |
|                              | Justification of chemical fertilizer in a sensitive environment regarding sustainable development                       |
|                              | Consideration of the impact of plant construction on landscape  |
|                              | Establishment of good relations with the city of Bécancour and other industries   |
| Life quality                 | Preservation of life quality for neighbors of the SPIPB (including North Shore)   |
|                              | Increase of traffic in the region, particularly trucks  |
|                              | Preservation of infrastructure, recreational and vacation areas   |
| Newcomers                    | Adaptation and integration of IFFCO to Quebec   |
|                              | Local infrastructure capacity for hosting new workers   |
| Political support            | Consideration of the regional socioeconomic climate (affected by the closing of Gentilly-2 nuclear power plant)         |
|                              | Long term support from Quebec government  |
| First Nations                | Recruitment of Aboriginal workers and contractors   |
| <b>Environmental issues</b>  |   |
| Industrial risks             | Management and handling of chemical products, notably ammonia, in the urea production process.                          |
|                              | Risks and nuisances associated with transportation of urea (truck, train, ship)   |
| Emissions and pollutants     | Management of urea plant emissions and effluents  |
|                              | Increase of Quebec's greenhouse gas (GHG) emissions   |
|                              | Environmental impacts related to the use of chemical fertilizers  |
|                              | Consideration of cumulative impacts of related to the arrival of several major projects in Bécancour                    |
| Conservation                 | Integration to the region's sustainable development, notably in regards to energy efficiency                            |
|                              | Protection of natural environments within and around the Industrial Park (Montesson Island, Bécancour River, wetlands). |

## 8 REFERENCES

- ALLIANCE ENVIRONNEMENT. 2007. Projet de modification des installations de stockage des déchets radioactifs et réfection de la centrale nucléaire de Gentilly-2. Rapport annuel 2006, Activités de suivi environnemental. Révision 3, juin 2007.
- ARMELLIN, A. et P. MOUSSEAU, 1998. Synthèse des connaissances sur les communautés biologiques du secteur d'étude Trois-Rivières–Bécancour. Zones d'intervention prioritaire 12 et 13. Environnement Canada - Région du Québec, Conservation de l'environnement, Centre Saint-Laurent. Rapport technique. 256 p.
- AECOM, 2009. Caractérisation environnementale. Terrain vacant de Norsk-Hydro, Parc industriel et portuaire de Bécancour. Présenté à la Société du parc industriel et portuaire de Bécancour, 15 p.
- ASSOCIATION QUÉBÉCOISE DES GROUPES D'ORNITHOLOGUES (AQRO), 1995. Atlas des oiseaux nicheurs du Québec méridional (AQGO). Banque informatisée de données. Association québécoise des groupes d'ornithologues, Société québécoise pour la protection des oiseaux, Service canadien de la faune d'Environnement Canada, région du Québec.
- BISSON, M., BUSQUE, D. et THERRIEN, M., 2009. La qualité de l'air à Bécancour entre 1995 et 2008, Québec, ministère du Développement durable, de l'Environnement et des Parcs, Direction du suivi de l'état de l'environnement, ISBN : 978-2-550-56760-8 (PDF), 12 p. et 1 annexe.
- CENTRE DE DONNEES SUR LE PATRIMOINE NATUREL DU QUEBEC (CDPNQ), 2012. Espèces à statut particulier- Parc industriel- Bécancour. Système géomatique de l'information sur la biodiversité. 5 p.
- CANADIAN ENVIRONMENTAL ASSESSMENT AGENCY (CEAA), 2012. Guide to Preparing a Description of a Designated Project Under the Canadian Environmental Assessment Act (2012). July 2012. 12 p.
- CHERRADI, M. 1987. Étude de l'abondance et de la diversité des poissons du fleuve Saint-Laurent dans le secteur de la centrale nucléaire de Gentilly. Québec, Université du Québec. 119 p.
- COMMISSION REGIONALE SUR LES RESSOURCES NATURELLES ET LE TERRITOIRE DU CENTRE-DU-QUEBEC (CDPNQ), 2010. Portrait faunique du Centre-du-Québec. Document produit par la Fédération québécoise des chasseurs et pêcheurs, région 17. 119p.
- COUTURE, R., J. LAPERRIÈRE et G. VAILLANCOURT, 1976. Secteur du fleuve Saint-Laurent, région du complexe nucléaire Gentilly 1975-1976. Études ichtyologiques. Université du Québec à Trois-Rivières. 130 p.
- FOURNIER, D., MAILHOT, Y. et D. BOURBEAU, 1997. Rapport d'opération du réseau de suivi ichtyologique du fleuve Saint-Laurent : Échantillonnage des communautés ichtyologiques du tronçon Gentilly – Batiscan en 1996. Ministère de l'Environnement et de la Faune, Direction de la faune et des habitats, Direction régionale Mauricie - Bois-Francs. 61 p.

- GAZ MÉTROPOLITAIN, 2003. Projet gazoduc Bécancour. Étude d'impact sur l'environnement. Consulté en ligne : <http://www.bape.gouv.qc.ca/sections/mandats/gazoduc-becancour/> 8 janvier 2013.
- GENIVAR, 2008. Programme décennal de dragage d'entretien des installations portuaires de Bécancour. Étude d'impact sur l'environnement déposée à la ministre du Développement durable, de l'Environnement et des Parcs. Rapport principal et annexes. Société du parc industriel et portuaire de Bécancour.
- HYDRO-QUEBEC, 1990. Étude de la végétation riveraine près de la centrale nucléaire Gentilly 2 et importance des habitats pour la faune ichthyenne, Nove environnement inc., 62 p.
- LAMONTAGNE, G. et S. LEFORT, 2004. Plan de gestion de l'original 2004-2010. Ministère des Ressources naturelles, de la Faune et des Parcs, Direction du développement de la faune. 265 p.
- LAMONTAGNE, G., H. JOLICOEUR et S. LEFORT, 2006. Plan de gestion de l'ours noir 2006-2013. Ministère des Ressources naturelles et de la Faune, Direction du développement de la faune. 487 p
- MAISONNEUVE, C., DESROSIERS, A., MCNICOLL, R. et M. LEPAGE, 1996. Évaluation de la diversité faunique des plaines inondables du sud du Québec : avifaune et micromammifères. Ministère de l'Environnement de la Faune du Québec, Direction de la faune et des habitats, Québec. 102 p.
- MINISTERE DES RESSOURCES NATURELLES (MNR), 2012. Données des rapports d'activité 2011 des permis pour la capture de poissons à des fins scientifiques, éducatives ou de gestion de la faune (SEG). Transmis par Mme Pascale Dombrowski. Direction régionale du Centre-du-Québec
- MUNICIPALITÉ RÉGIONALE DE CONTÉ (MRC) DE BÉCANCOUR, (2006). Schéma d'aménagement et de développement révisé de la MRC de Bécancour
- PLAN SAINT-LAURENT, 2008. La réintroduction du bar rayé dans le Saint-Laurent. Plan Saint-Laurent, Gouvernement du Québec et Gouvernement du Canada.
- REGROUPEMENT QUEBEC OISEAUX (RQO), 2012. Rapport de l'Étude des populations d'oiseaux du Québec (ÉPOQ). Liste des espèces du secteur de Bécancour.
- SOCIETE DE LA FAUNE ET DES PARCS DU QUEBEC (FAPAQ), 2002. Plan de développement régional associé aux ressources fauniques du Centre-du-Québec. Société de la faune et des parcs du Québec, Direction de l'aménagement de la faune Mauricie-Centre-du-Québec. 86 p.



**Maps of the Study Area and Project Site**





**PROJECT**

- Study Area
- Project Site
- Conveyor

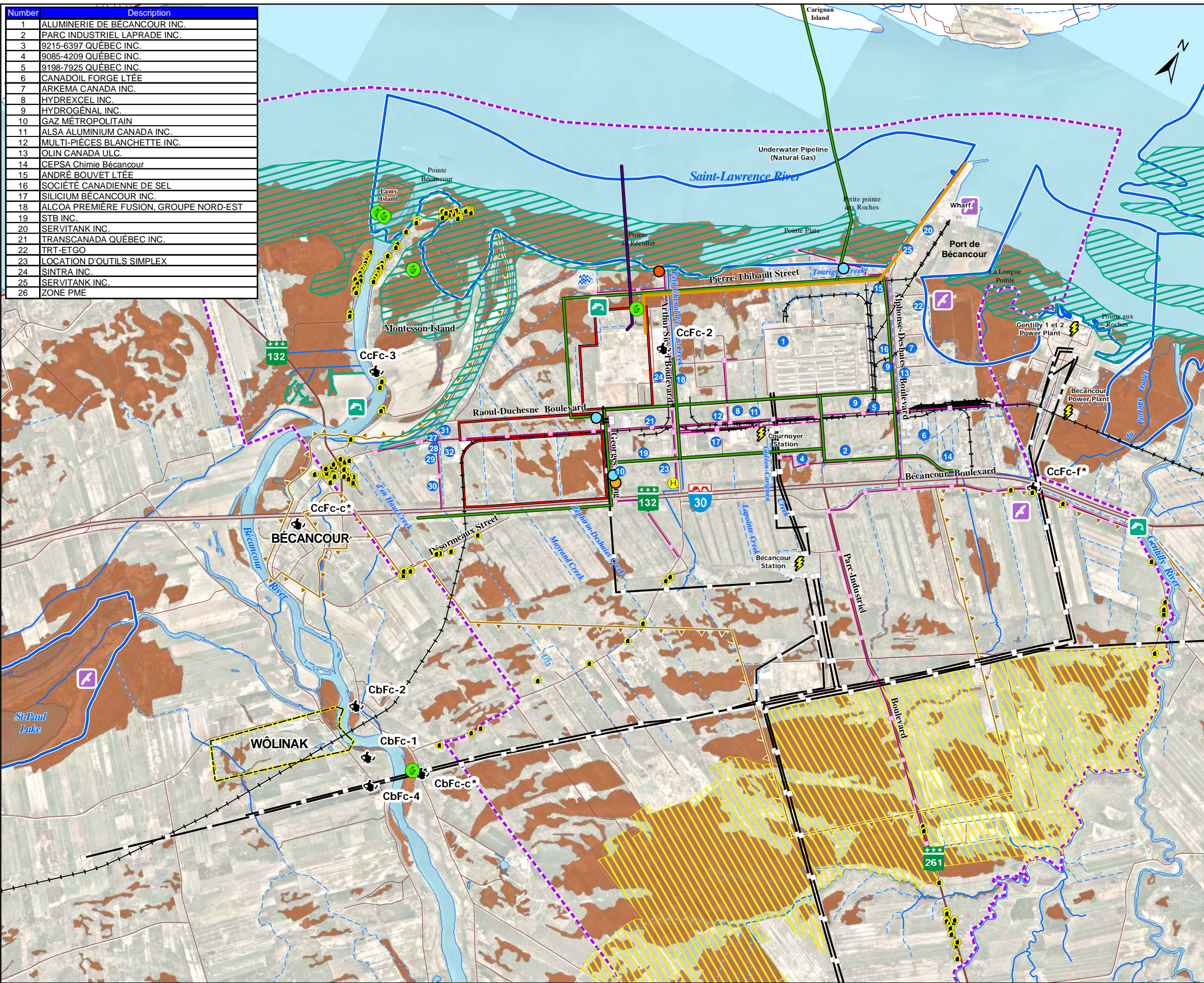
**INFRASTRUCTURES AND LIMITS**

- Highway
- National Road
- Secondary Road
- Railway
- Electricity Transmission Line
- Bécancour Waterfront Industrial Park Limit
- Protected Agricultural Area Limit

Cartographic Basemap:  
BDTQ, 1 : 20 000, MRNF Québec ,  
Orthophoto: Bécancour RCM, 2010

|   |                |                                    |       |          |
|---|----------------|------------------------------------|-------|----------|
| Title   |                |                                    |       |          |
| <b>Study Area and Project Site</b>                    |                |                                    |       |          |
| Project   |                |                                    |       |          |
| <b>FERTILIZER PLANT CONSTRUCTION<br/>IN BÉCANCOUR</b> |                |                                    |       |          |
| Project Manager                                       | Drawn by       | Verified by                        |       |          |
| L. Lachapelle   | H. Dubois      | M. Brennan Jacot                   |       |          |
| Client  |                | Consultant                         |       |          |
| <b>IFFCO Canada</b>                                   |                | <b>SNC-LAVALIN<br/>Environment</b> |       |          |
| Scale   | Project Number | Filename                           |       |          |
| 0 500 1 000 m   | <b>611020</b>  | Map01_StudyArea.mxd                |       |          |
|   |                |                                    |       |          |
| 01  | 01/28/2013     | Preliminary                        | H. D. | M. B. J. |
| No.   | Date           | Description                        | Drawn | Verified |

| Number | Description                            |
|--------|--|
| 1      | ALUMINERIE DE BÉCANCOUR INC.           |
| 2      | PARC INDUSTRIEL LAPRADE INC.           |
| 3      | 9215-6397 QUÉBEC INC.                  |
| 4      | 9085-4209 QUÉBEC INC.                  |
| 5      | 9198-7925 QUÉBEC INC.                  |
| 6      | CANADOIL FORGE LTÉE                    |
| 7      | ARKEMA CANADA INC.                     |
| 8      | HYDREXCEL INC.                         |
| 9      | HYDROGÉNAL INC.                        |
| 10     | GAZ MÉTROPOLITAIN                      |
| 11     | ALSA ALUMINIUM CANADA INC.             |
| 12     | MULTI-PIÈCES BLANCHETTE INC.           |
| 13     | OLIN CANADA ULC.                       |
| 14     | CEPSA Chimie Bécancour                 |
| 15     | ANDRÉ BOUVET LTÉE                      |
| 16     | SOCIÉTÉ CANADIENNE DE SEL              |
| 17     | SILICIUM BÉCANCOUR INC.                |
| 18     | ALCOA PREMIÈRE FUSION, GROUPE NORD-EST |
| 19     | STB INC.                               |
| 20     | SERVITANK INC.                         |
| 21     | TRANSCANADA QUÉBEC INC.                |
| 22     | TRT-ETGO                               |
| 23     | LOCATION D'OUTILS SIMPLEX              |
| 24     | SINTRA INC.                            |
| 25     | SERVITANK INC.                         |
| 26     | ZONE PME                               |



**PROJECT**

- Project Site
- Conveyor

**INFRASTRUCTURES AND LIMITS**

- Highway
- National Road
- Secondary Road
- Railway
- Bécancour Waterfront Industrial Park Limit
- Indian Reserve

**INDUSTRIAL INFRASTRUCTURES**

- Electricity Station / Power Plant / Cogeneration
- Gaz Métro Station
- Heliport
- Industrial Water Pumping Station
- Potable Water Pumping Station
- Purification Sewage
- 120kV-230kV Power Line
- 600V-25kV Power Line
- Natural Gas
- Outfall

**HUMAN ENVIRONMENT**

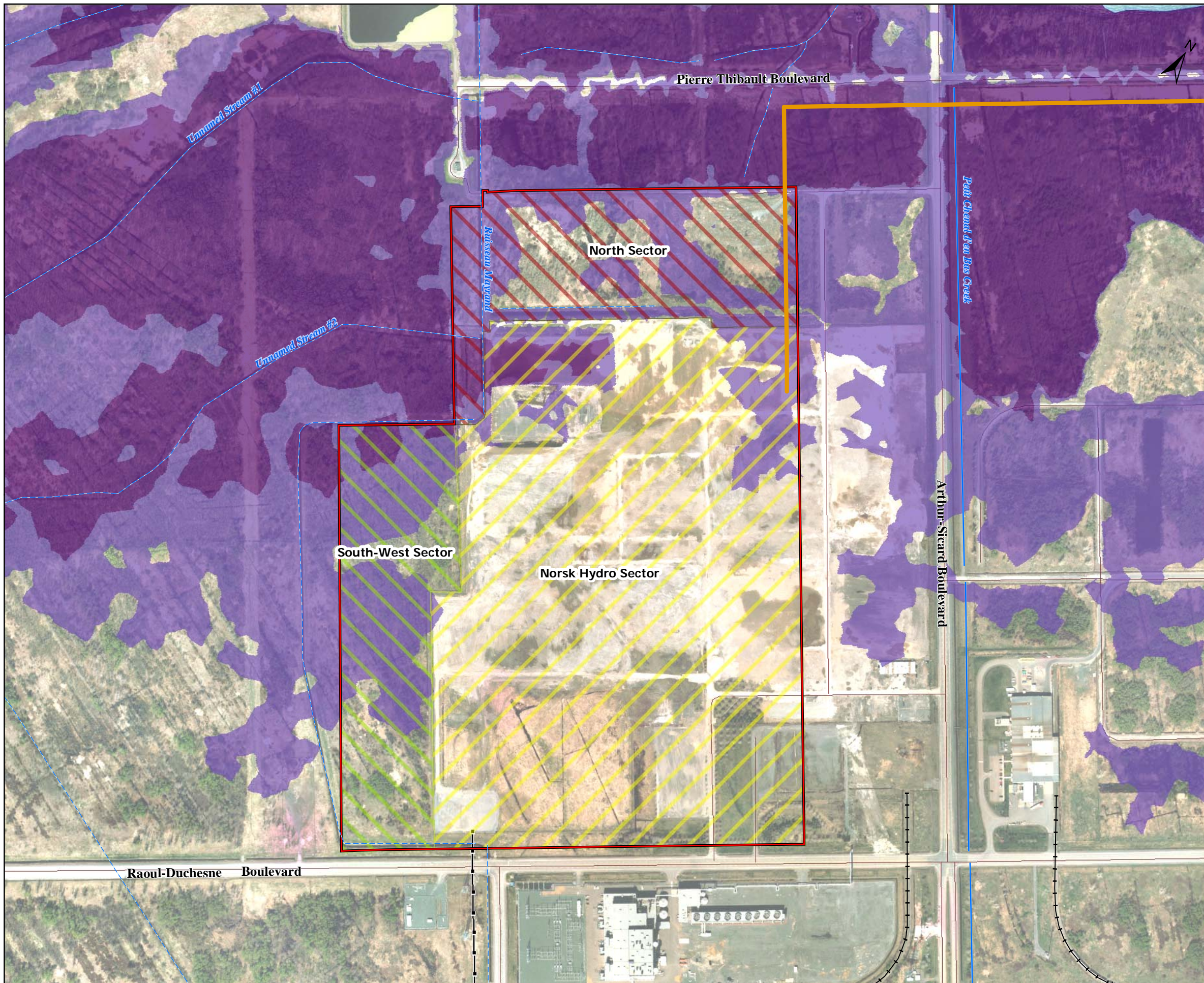
- Residence in the Industrial Park
- Archeological Site

**BIOLOGICAL ENVIRONMENT**

- Wetland
- Wildlife Habitats**
  - White-tailed Deer Yard
  - Water Fowl Gathering Area
  - Potential Fish Spawning Area
- Special Status Species**
  - Flora with Special-Status
  - Breeding Bird with Special-Status
  - Fish Species with Special-Status

|  |                |                      |       |          |
|--|----------------|----------------------|-------|----------|
| Title  |                |                      |       |          |
| <b>Project Study Area and Elements of Interest</b> |                |                      |       |          |
| Project  |                |                      |       |          |
| <b>FERTILIZER PLANT CONSTRUCTION IN BÉCANCOUR</b>  |                |                      |       |          |
| Project Manager                                    | Drawn by       | Verified by          |       |          |
| L. Lachapelle                                      | H. Dubois      | M. Brennan Jacot     |       |          |
| Client   |                | Consultant           |       |          |
| IFFCO Canada Ltée                                  |                |                      |       |          |
| Scale  | Project Number | Filename             |       |          |
| 0 300 600 900 m                                    | 611020         | Map02_Study_Area.mxd |       |          |
| 01   | 01/28/2013     | Préliminaire         | H. D. | M. B. J. |
| No.  | Date           | Description          | Drawn | Verified |





**PROJECT**

- Project Site
- Conveyor Path

**PROJECT SECTORS**

- Norsk Hydro Sector
- North Sector
- South-West Sector

**INFRASTRUCTURES AND LIMITS**

- Highway
- Secondary Road
- Railway
- Electricity Transmission Line

**PHYSICAL ENVIRONMENT**

- Watercourse
- Intermittent Watercourse
- Floodplain 0-2 years
- Floodplain 2-20 years

Cartographic Basemap:  
BDTQ, 1 : 20 000, MRNF Québec,  
Orthophoto: Bécancour RCM, 2010

|   |                |                   |       |          |
|---|----------------|-------------------|-------|----------|
| Title   |                |                   |       |          |
| <b>Sectors of Project Site</b>                        |                |                   |       |          |
| Project   |                |                   |       |          |
| <b>FERTILIZER PLANT CONSTRUCTION<br/>IN BÉCANCOUR</b> |                |                   |       |          |
| Project Manager                                       | Drawn by       | Verified          |       |          |
| L. Lachapelle   | H. Dubois      | M. Brennan Jacot  |       |          |
| Client  |                | Consultant        |       |          |
| <b>IFFCO Canada</b>                                   |                |                   |       |          |
| Scale   | Project Number | Filename          |       |          |
| 0 100 200 m   | 611020         | Map03_Sectors.mxd |       |          |
| 01  | 28/01/2013     | Preliminary       | H. D. | M. B. J. |
| No.   | Date           | Description       | Drawn | Verified |





**SNC • LAVALIN**

550 Sherbrooke West  
Montreal Qc Canada H2A 1B9  
514-393-1000 - 514-392-4758