NAPANEE GENERATING STATION PROJECT DESCRIPTION

Prepared For:

Canadian Environmental Assessment Agency

Prepared By:

TransCanada
and
SENES Consultants

October 2013

SENES Consultants
Specialists in Energy, Nuclear & Environmental Sciences

TransCanada
In business to deliver

NAPANEE GENERATING STATION
PROJECT DESCRIPTION

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ACRONYMS AND ABBREVIATIONS

Agency	Canadian Environmental Assessment Agency
AAQC	Ambient Air Quality Criteria
ASME	American Society of Mechanical Engineers
CCME	Canadian Council of Ministers of the Environment
CEAA	*Canadian Environmental Assessment Act*
CES	Clean Energy Supply
CFB	Canadian Forces Base
CO	carbon monoxide
CO_2	carbon dioxide
CPUE	catch per unit effort
CRCA	Cataraqui Region Conservation Authority
CSA	Canadian Standards Association
EA	Environmental Assessment
EAAB	Environmental Assessment and Approvals Branch
ECA	Environmental Compliance Approval
EPA	Environmental Protection Act
ERR	Environmental Review Report
ESA	Environmentally Significant Area
ESDM	Emission Summary and Dispersion Modelling
GS	Generating Station
ha	Hectares
HRSG	Heat Recovery Steam Generators
IESO	Independent Electricity System Operator
IPSP	Integrated Power System Plan
IPZ	intake protection zone
ISO	International Organization for Standardization
km	Kilometres
kV	Kilovolt
L	Litres
L/min	litre(s) per minute
m	Metres
MISA	Municipal Industrial Strategy for Abatement
mg	Milligrams
mg/L	Milligrams per litre
mmBtu/hr	million British thermal units per hour

MNR	Ontario Ministry of Natural Resources
MOE	Ontario Ministry of the Environment
MTO	Ontario Ministry of Transportation
MW	Megawatt
N_2	nitrogen gas
NH_3	Ammonia
NFPA	National Fire and Protection Association
NO_2	Nitrogen
NO_x	nitrogen oxide
NPC	Noise Pollution Control
NPRI	National Pollutant Release Inventory
O. Reg.	Ontario Regulation
O_2	oxygen gas
O_3	Ozone
OEAA	*Ontario Environmental Assessment Act*
OPA	Ontario Power Authority
OPG	Ontario Power Generation Inc.
OWRA	*Ontario Water Resources Act*
PM	Particulate Matter
PM_{10}	Particulate Matter smaller than 10 µm
$PM_{2.5}$	Particulate Matter smaller than 2.5 µm
POI	Point-of-Impingement
PTTW	Permit to Take Water
PWQO	Provincial Water Quality Objectives
RO	Reverse Osmosis
SARA	*Species at Risk Act*
SCR	Selective Catalytic Reduction
SO_2	sulphur dioxide
SPM	Suspended Particulate Matter
SVOC	Semi-Volatile Organic Compounds
TSSA	Technical Standards and Safety Authority
TransCanada	TransCanada Energy Ltd.
VOC	Volatile Organic Compounds

1.0 GENERAL INFORMATION AND BACKGROUND

Under the *Canadian Environmental Assessment Act, 2012* (*CEAA 2012*) a federal environmental assessment (EA) may be required for a designated project linked to the Canadian Environmental Assessment Agency (the Agency). As such, in order to determine if a federal EA is required a Screening is conducted by the Agency. As per section 8 of *CEAA 2012* the Screening is initiated with the submission by the proponent of a Project Description that includes information prescribed by regulations.

This is the Project Description for the Napanee Generating Station and has been prepared in accordance with the *Prescribed Information for the Description of a Designated Project Regulations* (SOR.2012-148).

1.1 GENERAL DESCRIPTION OF THE PROPOSED PROJECT

Project Name

Napanee Generating Station

Nature of the Project and Location

TransCanada Energy Ltd. (TransCanada) proposes to construct and operate the Napanee Generating Station (or the Project), a natural gas-fuelled electricity generating station with a net output of 970 megawatts (MW) at average ambient conditions located on the existing Ontario Power Generation Inc. (OPG) Lennox Generating Station (Lennox GS) site in the Town of Greater Napanee in the Province of Ontario (Figure 1). The Project is a combined cycle facility, which uses both gas and steam turbines to very effectively and efficiently produce power. The Project will be an essential component of Ontario's electrical system. It will replace retired coal capacity, help manage changes in nuclear capacity due to planned refurbishments/retirements over the next 15 years, address rising electricity demand and provide a source of on-demand power to backstop wind and solar generation.

The Project site is approximately 38 hectares (ha) in size located immediately to the east of OPG's Lennox GS on the north side of Loyalist Parkway (Highway 33) east of County Road 21 (Figure 2).

Figure 1 Location of the Project

Figure 2 Location of the Project and Lennox Generating Station

1.2 PROPONENT AND CONTACT INFORMATION

Name of the Proponent

The proponent of the Project is TransCanada Energy Ltd (TransCanada).

Proponent Address

TransCanada – Napanee Generating Station Project
Royal Bank Plaza, 24th Floor, South Tower
200 Bay Street, P.O. Box 43
Toronto, ON M5J 2J1

Principal Contact

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Chief Executive Officer – TransCanada Energy Ltd

Mr. Russell K. Girling
President & Chief Executive Officer

Project Website: www.NapaneeGS.com

1.3 STAKEHOLDER AND ABORIGINAL CONSULTATION

TransCanada has for a long time recognized the importance of consulting with area residents, local communities, Aboriginal groups, government agencies and others in order to learn more about their respective interests, and to share Project information during the course of project development. Stakeholder and Aboriginal consultation activities commenced in October of 2012 and will continue throughout the course of permitting, construction, and into operations. A list of stakeholders, including Aboriginal groups is provided below. The list of Aboriginal groups was developed in consultation with CEA Agency. Refer to section 6.1 for a complete list of stakeholders including citizen's groups, community groups, environmental groups, media, businesses, and others engaged to date.

List of Stakeholders

- Aboriginal Groups
  - Mohawks of the Bay of Quinte
  - Métis Nation of Ontario Region 6
  - Curve Lake First Nation
  - Hiawatha First Nation
  - Alderville First Nation
  - Mississaugas of Scugog Island First Nation
  - Kawartha Nishnawbe First Nation

- Provincial and Federal Agencies
  - Aboriginal Affairs and Northern Development Canada
  - Canadian Environmental Assessment Agency
  - Environment Canada
  - Ontario Ministry of Aboriginal Affairs
  - Ontario Ministry of Agriculture, Food & Rural Affairs
  - Ontario Ministry of the Environment
  - Ontario Ministry of Energy
  - Ontario Ministry of Infrastructure
  - Ontario Ministry of Municipal Affairs and Housing
  - Ontario Ministry of Natural Resources

  - Ontario Ministry of Transportation
  - Ontario Ministry of Tourism, Culture and Sport
  - Ontario Provincial Police
  - Ontario Ministry of Northern Development and Mines
- Town and County Elected Officials and Staff
- Conservation Authority
- Area Residents and Site Neighbours
- Citizen's/Community/Environmental Groups
- General Public
- Media
- Businesses, Vendors, Suppliers, Consultants, and Contractors
- Unions
- Economic Development organizations and the Chamber of Commerce

A description of TransCanada's Aboriginal engagement and public consultation activities to date are provided in Chapters 5.0 and 6.0 respectively.

1.4 ENVIRONMENTAL ASSESSMENT AND OTHER REGULATORY APPROVALS AND PERMITTING

The Project is subject to EA requirements set out in Ontario Regulation (O.Reg.) 116/01 (the Electricity Projects Regulation) under the Ontario *Environmental Assessment Act* and subject to the Environmental Screening Process set out in the Ministry of the Environment's (MOE's) "Guide to Environmental Assessment Requirements for Electricity Projects". TransCanada has elected to undertake a more comprehensive environmental assessment and will prepare an Environmental Review Report (ERR). TransCanada has further voluntarily agreed to develop a draft ERR for agency and public review before the submission of the final ERR. A copy of the Draft ERR and all Supporting Documents are available for review and download on the Project website (http://www.NapaneeGS.com/environment/environmental-studies/) and have been provided to stakeholders.

Other approval or permitting requirements include:

- Environmental Compliance Approval (ECA) (for air, noise, industrial sewage) from the MOE issued under the *Environmental Protection Act* (*EPA*).
- *Planning Act* approvals, which include Consent to Sever, Minor Variances, Site Plan Approval and acquisition of one or more building permits.
- Aeronautical Obstruction Clearance from Transport Canada.
- Land Use Proposal Submission to Nav Canada for the Project stacks.

- Ontario Ministry of Transportation (MTO) entrance signage permits and/or access/use permits for heavy load transportation on Provincial roads.
- Ontario Ministry of Tourism Culture and Sport clearance letters for archaeological and cultural heritage resources.
- Cataraqui Region Conservation Authority (CRCA) permits under the *Conservation Authorities Act* O.Reg. 162/06 Generic Regulation and "Regulation of Development, Interference with Wetlands and Alterations to Shoreline and Watercourses".
- Permit to Take Water (PTTW) issued under the *Ontario Water Resources Act* (*OWRA*). TransCanada will operate under OPG's existing PTTW for the Lennox GS. A temporary permit may be needed for pumping of groundwater during construction.
- For facilities located within 100 km of the Canada-U.S. border and that potentially have a nitrogen oxide (NO_x), sulphur dioxide (SO_2), suspended particulate matter (SPM), or volatile organic compound (VOC) emission rate of greater than 90 tonnes per year (t/yr), notification is made to Environment Canada pursuant to the Canada-U.S. Air Quality Agreement.

1.5 REGIONAL ENVIRONMENTAL STUDIES

The Project is not located in an area that has been nor is currently the subject of a regional environmental study.

1.6 FEDERAL INVOLVEMENT

Financial Support

No financial support will be provided by the federal government for the purposes of carrying out the Project. TransCanada as the Proponent will finance the construction, operation and maintenance of the Project.

Federal Lands

No federal lands will be used for the purpose of carrying out the Project or any granting of interest for purposes of an easement, or right of way, or transfer of ownership of federal land.

Federal Permits or Licences

There are no federal permits or licenses anticipated to be required in order for the Project to proceed either in whole or in part. However, for facilities located within 100 km of the Canada-U.S. border and that potentially have a nitrogen oxide (NO_x), sulphur dioxide (SO_2), suspended particulate matter (SPM), or volatile organic compound (VOC) emission rate of greater than 90 tonnes per year (t/yr), notification is made to Environment Canada pursuant to the Canada-U.S. Air Quality Agreement.

2.0 PROJECT INFORMATION

2.1 GENERAL DESCRIPTION CONTEXT AND OBJECTIVES

TransCanada will plan, develop, construct, commission, own, operate and maintain the Project. Each component of the Project throughout each of the various project stages (construction, commissioning, operation, and maintenance) will be under the care and control of TransCanada.

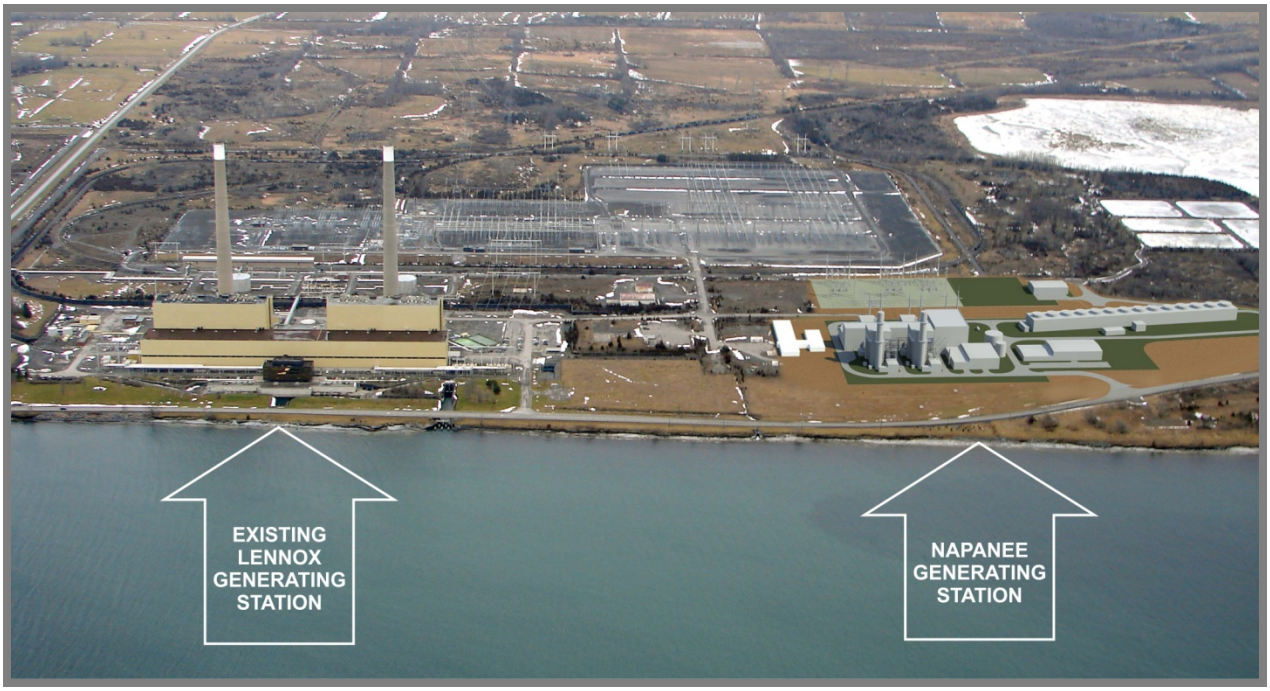
The Project is a 970 MW (net output under average ambient conditions) natural gas-fuelled electricity generating station located on the existing OPG Lennox GS lands. The Project is a combined cycle facility, which uses both gas and steam turbines to effectively and efficiently produce power.

The Project site is approximately 38 ha in size located immediately to the east of Lennox GS facility on the north side of Loyalist Parkway east of County Road 21 (see Figure 3 for artist rendering). The Project and its associated components will occupy approximately 11 ha of the western portion of the Project site. Natural gas will be supplied through an existing Union Gas connection (approximately 200 metres (m) north of the Project's generating equipment). Electrical connection will be through Hydro One Network Inc.'s (Hydro One's) existing electrical transmission switchyard located at the Lennox GS site immediately adjacent the Project site and approximately 100 m north of the Project's switchyard. Water supply and water return will be from existing Lennox GS forebay and to the existing discharge channel, respectively.

Also located adjacent to the Project site is an existing rail line. The rail line on the Lennox GS property is owned and maintained by OPG. TransCanada's use of the on-site rail line is governed by their agreements with OPG. Use of the rail line for the Project will be limited to the delivery of select equipment during construction, and it is anticipated that these few incremental trips will result in negligible environmental effects.

The Project will be an essential component of the Ontario electrical system delivering on-demand power to meet the daily workday power requirements, replace retired coal, help manage changes in nuclear capacity due to planned refurbishments/retirements over next 15 years, address rising electricity demand and provide a source of on-demand power to backstop intermittent wind and solar generation. It is expected to start and stop each workday to meet the daily demand for power in the province

Figure 3 Napanee Generating Station and Adjacent Lennox Generating Station



2.2 REGULATIONS DESIGNATING PHYSICAL ACTIVITIES

The Project is a designated project as per the *Regulations Amending the Regulations Designating Physical Activities*. It is listed under item 2(a) in the schedule of physical activities forming part of the Regulations:

> *The construction, operation, decommissioning and abandonment of a fossil fuel-fired electrical generating station with a production capacity of 200 MW or more.*

2.3 PROJECT LOCATION

The following provides a description of the location of the Project, including geographic coordinates and legal description, proximity to other projects, residences and federal lands. Figure 4 shows the Project site and immediate surrounding area.

Geographic Coordinates

The geographic coordinates for the centre of the Project site are:
Latitude: 44° 9'3.55"N
Longitude: 76°50'20.53"W

Legal Description

The legal description of land to be used for the Project is as follows:

- Parts of Lots 19, 20, 21 and 22, Concession 1, Geographic Township of South Fredericksburg, Town of Greater Napanee.

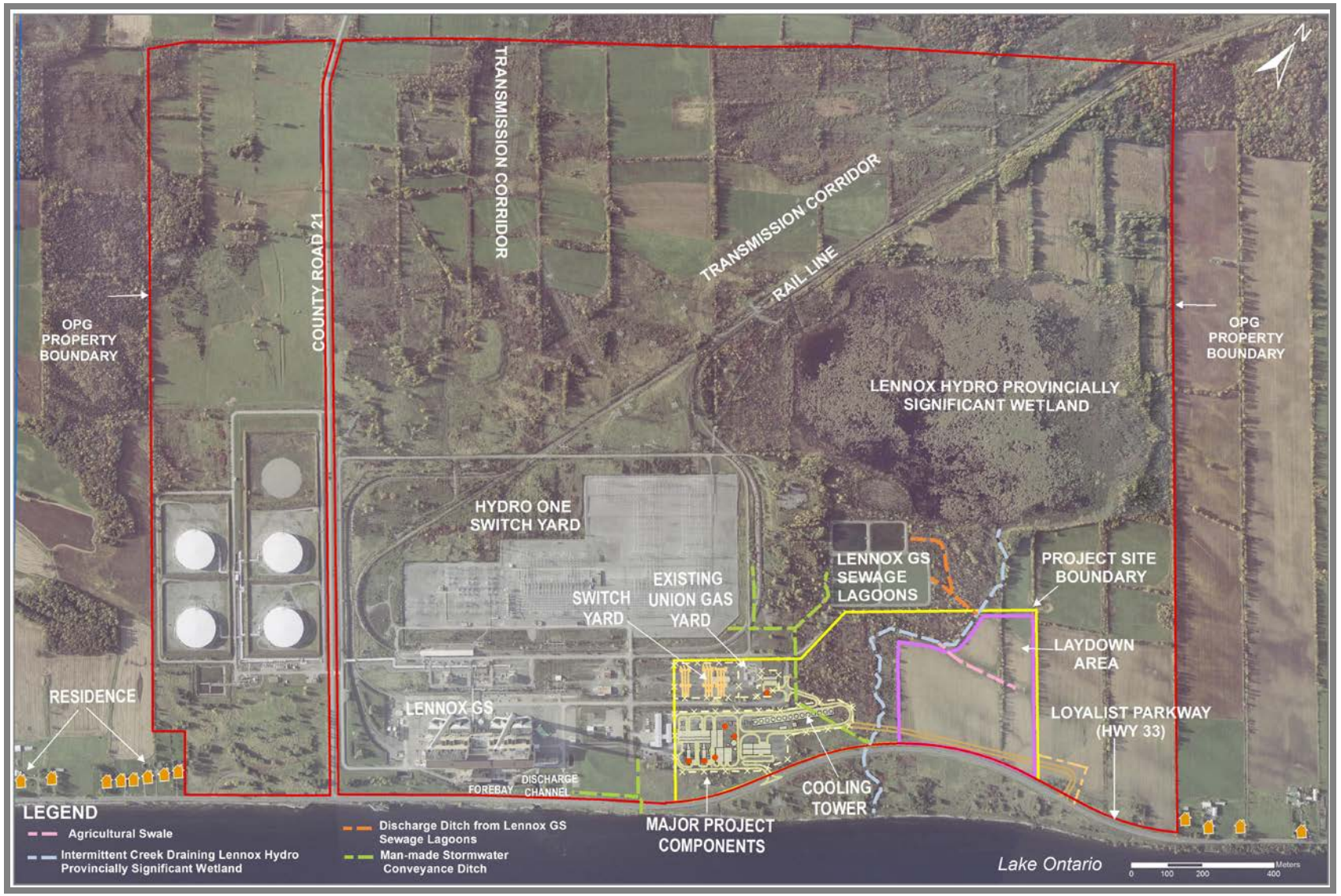
The Project site is located entirely on privately-owned land.

Proximity to Other Projects and Residences

The Project is located adjacent to the existing OPG Lennox GS and on lands designated Industrial in the Official Plan for the Town of Greater Napanee. The Amherst Island wind farm development is a known proposed project located approximately 3.5 km from the Project site; however, the Greater Napanee Council recently passed a resolution stating the Municipality is an unwilling host for the development of industrial wind farms.

The closest residence is located approximately 1 km northeast of the Project's easternmost component. The location of nearby residences is provided in Figure 4.

Figure 4 Project Site and Surrounding Area



Proximity to Federal Lands, Reserves and Traditional Territories

The Project is not located on Federal lands. The closest federal lands include the Millhaven Institute and Canadian Forces Base (CFB) Kingston located approximately 9 km and 30 km east of the Project site, respectively, and CFB Trenton located 60km west of the Project site. The closest Federal First Nation Reserve lands are the lands of the Mohawks of the Bay of Quinte First Nation located 25 km west of the Project site (Figure 5).

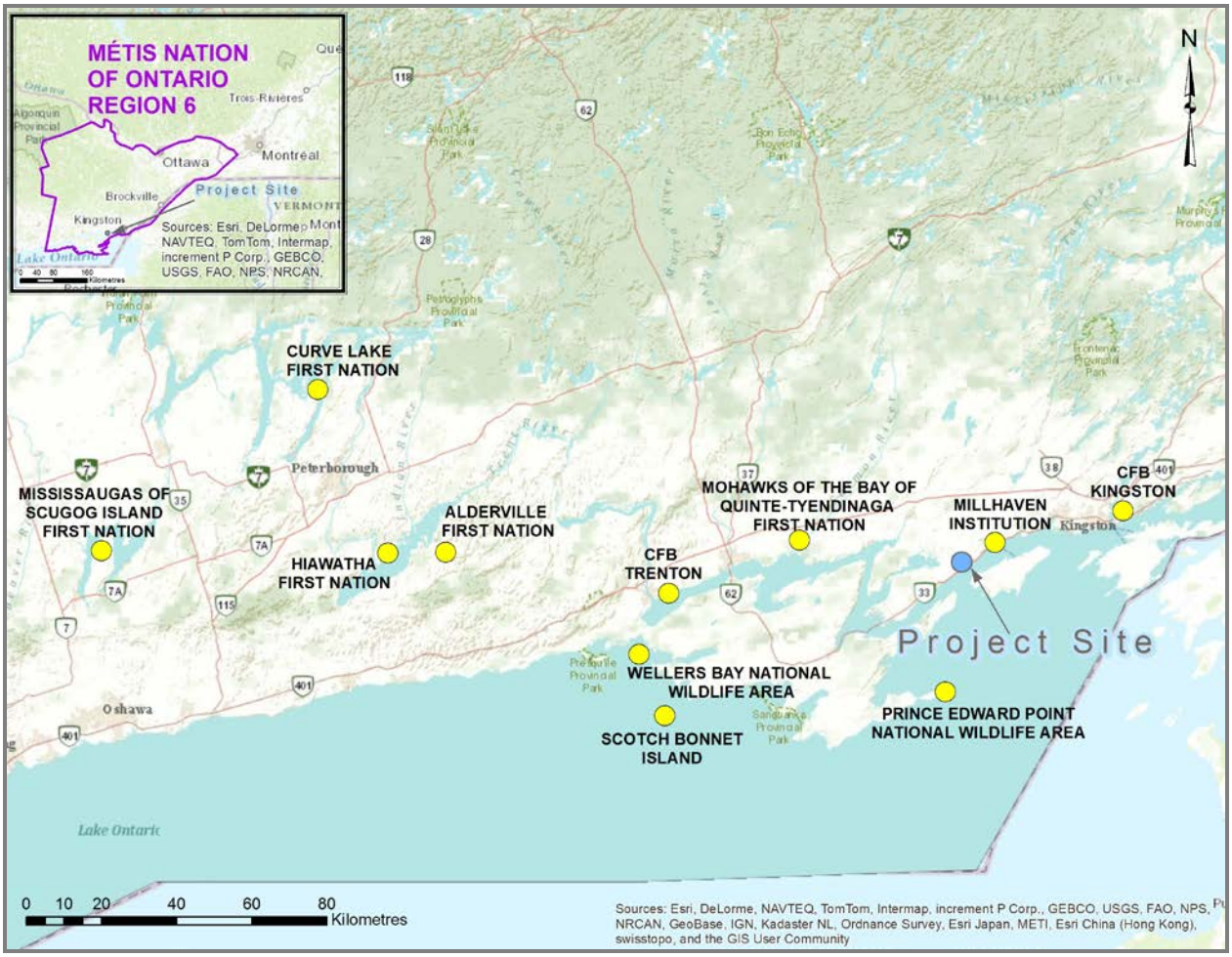
The Mohawks of the Bay of Quinte First Nation, which is based in Tyendinaga Mohawk Territory, is located along the shores of the Bay of Quinte approximately 25 km north and west of the Project site (Figure 5). The next closest First Nations are located approximately 100 km or more from the Project site, including:

- Hiawatha First Nation is based on the north side of Rice Lake in Peterborough County and located approximately 100 km north west of the Project;
- Alderville First Nation is based on the south side of Rice Lake near Roseneath in Peterborough County and located 108 km north west of the Project;
- Curve Lake First Nation is based on two islands and a peninsula in Buckhorn Lake, 15 km north of Peterborough and approximately 125 km to the north west of the Project; and,
- Mississaugas of Scugog Island First Nation is located on north end of Scugog Island, 42 km west of Peterborough and 160 km to the north and west of the Project site.

In addition to the above is the Kawartha Nishnawbe First Nation. The Kawartha Nishnawbe First Nation community is centred in and around Burleigh Falls in the Greater Peterborough Area. The Kawartha Nishnawbe First Nation community does not have reserve land under the *Indian Act*.

There is an overlap of interest between the Mohawks of the Bay of Quinte and Alderville First Nation. The area of the site was under the domination of the Mohawks (Iroquois) from the time of early European contact until the end of the 1600s. Though suffering some setbacks in war the Iroquois managed to secure by diplomacy what they had not secured by military might. Through the Nanfan (Treaty of Albany) Treaty with the English and the 1701 Treaty Council at Montreal with the French, in exchange for the cessation of war they received recognition from the English, the French and their Indian allies for Iroquois hunting territories north of Lake Ontario. The Nanfan Treaty dealt with lands north of Lake Erie and the western part of Lake Ontario and the Council at Montreal conceded the Iroquois interests in hunting grounds in the remaining area of Ontario north of Lake Ontario.

Figure 5 Project Site and Proximity of Reserve and Federal Lands



Following the peace, established Mississauga Indians who had previously been driven north and west began to appear in southern Ontario. The Alderville First Nation was once known as the Bay of Quite Mississaugas and had several sites in and around Belleville, Prince Edward County and some islands in Lake Ontario. The Crown made several attempts through the Gun Shot Treaty and the Crawford Purchases to obtain title to territories claimed by the Mississaugas in order to make way for the influx of United Empire Loyalists to the area. The Mohawks of the Bay of Quinte were granted lands under the Simcoe Treaty later confirmed by Sir Frederick Haldimand in 1784 as a reward for service to the British Crown during the American Revolution of 1775-6. These were lands known to the Mohawks as their hunting territory.

There is one known Aboriginal burial ground located immediately south of the Project site on the south side of Loyalist Parkway.

The Project site is also located within the Métis Nation of Ontario's Region 6 area.

The Project site is not currently being used for traditional purposes (e.g., hunting, fishing, trapping and collecting plants for medicinal or ceremonial uses) by Aboriginal peoples or the subject of any land claims.

3.0 PROJECT WORKS AND ACTIVITIES

The principle components of the Project are:

- gas turbine building containing two dry low NO_x (DLN) combustion gas turbines and generators;
- steam turbine building containing one steam turbine and generator;
- two heat recovery steam generators, which utilize waste heat in the exhaust of the respective gas turbine and generator and, each of which is equipped with a duct burner and with selective catalytic emission reduction;
- one natural gas-fuelled auxiliary boiler with low NO_x burners housed in a building;
- water treatment building;
- administration/control building;
- warehouse;
- natural gas compressor building containing three electrically driven compressors;
- mechanical draft evaporative cooling tower; and
- electrical switchyard.

Figure 6 provides an artist's preliminary rendering of the principal components of the Project.

3.1 SITE LAYOUT

The Project will consist of equipment housed inside various buildings around the site as well as weatherproof equipment situated outdoors. Key features of the site layout include:

- The gas turbine and generator sets and the majority of the associated auxiliary skids will be housed in manufacturer-provided acoustical enclosures placed inside the gas turbine building.
- The heat recovery steam generators will be located outdoors along with various auxiliary equipment.
- The steam turbine generator will be located inside the steam turbine building, along with various auxiliary equipment such as the condensate pumps and condenser.

- The mechanical draught evaporative cooling tower will be located east of the steam turbine building and north of the administration building and warehouse.
- Raw water treatment equipment and laboratory facilities will be housed in the water treatment building.
- The auxiliary boiler will be housed in the auxiliary boiler building.
- Administration/warehouse and station control facilities will be located inside the administration building.
- Gas metering and conditioning equipment associated with the Union Gas high pressure gas supply will be located indoors, while gas conditioning equipment will be located outdoors.
- Three electrically driven gas compressors will be located in the gas compressor building.
- The fire protection pump house will be a pre-engineered enclosure adjacent to the service/fire water tank, housing jockey (i.e., electrical fire water pump), main electric, and an emergency diesel fire pump.
- The switchyard and related equipment will be located in a fenced area at the northwest end of the Project site adjacent to the Union Gas metering station.
- The temporary laydown area required during construction will be located at the east end of the Project site.

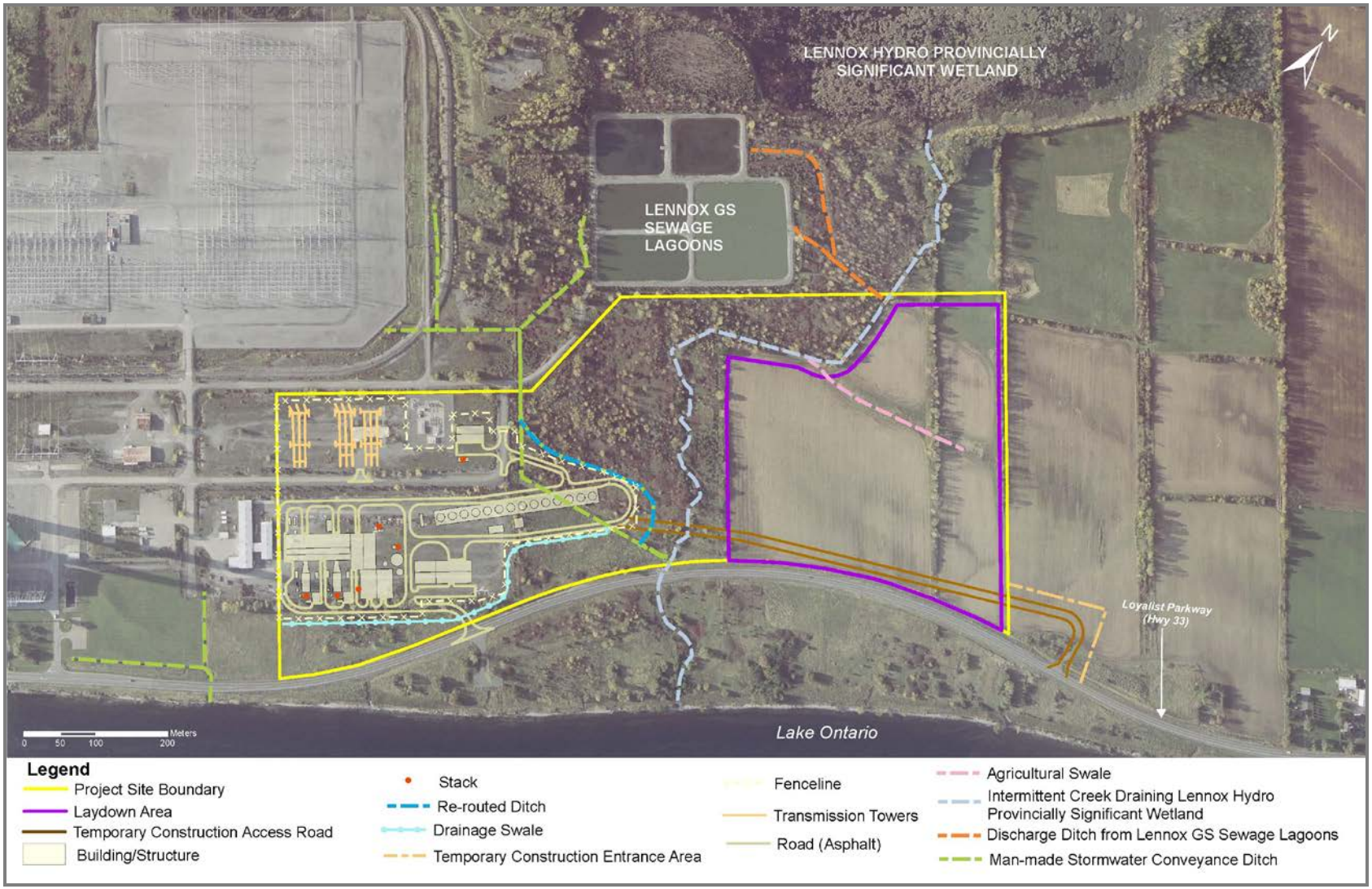
The Project when completed will be located within a fenced area of approximately 11 ha. Stormwater management is designed to control stormwater post-development runoff peak rates (100 yr flow) to pre-development rates. The stormwater management system will consist of underground storm sewers, ditches and swales sized to accommodate up to a 100-year storm event. There will be three in-line Stormceptor systems, to achieve 80% long-term average Total Suspended Solids (TSS) removal of fine particles from stormwater runoff (i.e., enhanced treatment). The stormwater management system will discharge via the existing OPG-owned stormwater ditch to Lake Ontario. Stormwater from the temporary laydown area will also be directed into the stormwater management system.

The Project site plan is provided in Figure 7. Engineering drawings of the Project site plan are provided in Appendix A.

Figure 6 Major Components of the Project (Artist's Preliminary Rendering)

1. Gas turbine building containing two combustion gas turbines and generators
2. Steam turbine building containing one steam turbine and generator
3. Heat recovery steam generators with emission reduction
4. Auxiliary boiler building
5. Raw water treatment building
6. Administration/control building
7. Warehouse
8. Natural gas compressor building containing three electrically driven natural gas compressors
9. Mechanical draft, evaporative cooling tower
10. Electrical switchyard

Figure 7 Project Site Plan



3.2 SITE PREPARATION

The entire Project site will be prepared prior to construction activities and protection measures will be taken in accordance with an Erosion and Sediment Control Plan. These activities include:

- Clearing of vegetation: Areas allocated for the construction and operation will be cleared of existing surface vegetation.
- Implementation of erosion and sediment control: During the site preparation phase, sediment control measures in advance of major earthwork will be implemented including the installation of silt fencing in concert with the existing perimeter fencing around the Project site, temporary ditches; local runoff protection including fiber rolls and ditch checks will be used in this transitory stage to minimize any sediment and runoff to adjacent properties.
- Soil excavation and grading: The site is relatively flat (has less 4 m elevation change from north to south) allowing for the utilization of basic site grading promoting stormwater drainage via sheet flow. Approximately 60,000 m^3 of material will be excavated, through mechanical means or blasting and about 25,000 m^3 of this excavated material will be removed from the site during construction. Soil stockpiles will be located away from watercourses and stabilized against erosion.
- Construction of laydown, parking areas and temporary access points: The site will be prepared for construction worker and equipment access and movement of the construction workers around the site. The eastern portion of the site (approximately 8 ha) will be prepared as a temporary laydown and parking areas.
- Construction of temporary road and watercourse crossing: A temporary road connecting the laydown area and the Project construction site will be built and will include one temporary road crossing of an intermittent creek by way of one or more 1,200 mm diameter culverts.

3.3 CONSTRUCTION ACTIVITIES

Construction of the Project will be completed in several phases. As part of the planning of the site construction, an Environmental Management Plan will be prepared by the selected contractor. After the contractor's initial mobilization to site, the construction and commissioning of the Project will take approximately 32 months. Construction activities include:

- Implementation of additional erosion and sediment control measures and construction of the permanent stormwater management system: During project construction, additional erosion and sediment controls will be implemented in parallel with construction of the permanent stormwater management system. This process is detailed in the Erosion and Sediment Control Plan and the Stormwater Management (SWM) Plan, respectively (see

Appendix F of the *Aquatic Assessment for the Napanee Generating Station Supporting Document 3* (Supporting Document 3) (SENES 2013c) for further details).

- Foundation installation: Shallow foundations bearing on a sound limestone bedrock surface will be established to support structures and equipment. Deeper foundations will require the removal of bedrock material to reach the founding depth. Bedrock will be removed by mechanical means as well as blasting when required to break the rock up for removal.
- Installation of underground utilities: This will include connection from the on-site Union Gas line, sewage system, water intake and discharge structures, as well as electrical and piping internal to the plant, etc. Deep underground installations will require the removal of bedrock material to reach the installation depths. Bedrock will be removed by mechanical means as well as blasting when required to break the rock up for removal.
- Construction of buildings and installation of equipment: This includes the construction of all buildings (turbine buildings, administrative building, cooling towers, etc.) and installation of equipment (turbines and generators, heat recovery system, compressors, etc.).
- Switchyard construction: Construction of the 500 kilovolt (kV) substation will occur near the end of the installation of on-site equipment. It is through the step up generators connected to the substation where electricity generated by the three on-site generators is elevated to transmission voltage for connection to the Hydro One 500 kV grid.
- Construction of site access point: Two access entrances (one permanent, one for construction only) from Highway 33 will be constructed to permit access to the Project site.
- Connecting to existing Lennox GS forebay and discharge channel: A water supply pipe and pumps will be constructed to supply water from the Lennox GS forebay and a discharge pipe will be constructed to connect to the Lennox GS discharge channel.
- Site restoration and landscaping: The Project site will be landscaped in character with the surrounding area, with the main goal to screen the plant from the Loyalist Parkway (Highway 33) as well as the local neighbours to the northeast. The landscaping is being developed in consultation with key stakeholders through an Architectural and Landscape Advisory Committee. Upon completion of construction activities, the laydown area, construction trailer and parking areas will be restored to their original condition.

The majority of construction equipment, materials and Project components will be delivered to the Project site via the existing road network. Where possible, larger material and equipment will be delivered by rail to the existing rail line on OPG property or by barge to the existing wharf at Lafarge and transported by road to the Project site. The wharf is owned and maintained by Lafarge and the rail line on the Lennox GS property is owned and maintained by OPG. TransCanada's use of the on-site rail line is governed by their agreements with OPG.

TransCanada will use a licensed transportation, shipping and handling service to deliver any larger equipment or components to the Project site by rail or barge.

3.4 COMMISSIONING PHASE

Following the installation of all major equipment and when the connections between the equipment are complete, the start-up and commissioning phase will begin. During commissioning, all operating aspects of the Project are tested to ensure they are operating to their required level or guaranteed value. All tests are completed in accordance with equipment specifications and contract performance guarantees. The commissioning activities are completed following a pre-established commissioning and start-up schedule. Commissioning and testing of the entire Project are anticipated to take up to nine months. If all performance guarantees are met and the equipment is operating properly, the substantial completion milestone will be declared and the Project will enter into commercial operation.

3.5 OPERATION

3.5.1 Facility Description

The Clean Energy Supply (CES) Contract for the Project between the Ontario Power Authority (OPA) and TransCanada requires TransCanada to offer capacity into the Ontario Energy Market administered by the Independent Electricity System Operator (IESO) at all times when the Project is available to operate. The Project will be dispatched by the IESO as required by the electricity system. It is projected that the Project will typically operate between 11% and 67% of the time on an annual basis. For the purposes of compliance, the Project is being assessed to meet all environmental regulatory requirements for 100% operation.

The Project will generate electricity using combined cycle technology employing both a gas turbine cycle and a steam turbine cycle. In the gas turbine cycle, air is compressed then heated through the combustion of natural gas. The expansion of gases turns the turbine, which drives a generator, producing electricity. Heat created in the gas turbine cycle, which would otherwise be wasted, is recovered to produce steam used in the steam turbine cycle. This steam is provided to a steam turbine. Similar to the gas turbine cycle, the expansion of steam turns a steam turbine which drives a generator, producing electricity. The addition of the steam turbine cycle increases the amount of electricity generated from a given amount of natural gas which results in greater fuel efficiency and fewer emissions per unit of electricity. A process diagram is provided in Figure 8.

The Project is capable of generating a net electrical output of 970 MW of electricity at average ambient environmental conditions. The expected net output of 970 MW is derived from two

271 MW gas turbine and generators and one 457 MW steam turbine and generator less auxiliary loads (approximately 29 MW) used by the Project. Equipment design and operation has been selected to prevent and/or minimize effects to the environment. The key pieces of equipment are as follows:

- Two industrial GT/Gs rated nominally at 271 MW each, using natural gas as the only fuel.
- Two horizontal heat recovery steam generators (HRSGs) in multiple-pressure configuration which utilize waste heat in the GT/G exhaust gas to generate steam to feed the ST/G. Two low NO_x duct burners, one in each HRSG. The exhaust flow through each HRSG stack comprises the GT/G exhaust flow along with the exhaust from the duct burner operating at 100%. Each HRSG stack has an inner diameter of 6.4 m and extends 61 m above grade. One ST/G rated nominally at 457 MW. The ST/G accepts steam from the two HRSGs.
- A Selective Catalytic Reduction (SCR) system will be installed within each HRSG to reduce the NO_x emissions from the exhaust gas streams of each GT/G, including that produced in the duct burner exhaust. Under normal operating conditions, the SCR will reduce NO_x emissions to 2.5 parts per million (ppm) leaving each HRSG exhaust stack, when the GT/Gs are operating at and above 60% of GT/G base load, with or without duct firing.
- One rectilinear, multi-fan mechanical draught, evaporative cooling tower. The tower consists of a single bank of 14 cells, one fan per cell providing the means to condense steam from the exhaust of the steam turbine (condensate) thus providing non-contact cooling for the NGS. This is accommodated by continuously circulating water through the condenser (tube side), to condense the entering turbine exhaust steam (shell side). The heated circulating water is routed through the cooling tower and back to the condenser, with heat rejected to the atmosphere in the tower by evaporation. The cooling tower is designed to operate with six cycles of concentration, optimizing use of circulating water supplied from Lake Ontario. The condensate is re-used in the HRSG steam cycle. The cooling tower is approximately 14.5 m above grade, 230 m long and 20 m wide.
- Other auxiliaries, including those providing compressed air supply, electric power supply and distribution, transformers, natural gas filtering, compression and heating, water treatment and purification, and wastewater collection and processing, will exist on-site to support operations of the two GT/Gs, two HRSGs and the ST/G. These other auxiliaries are described below. Primary control of the Project will occur from a main control room located in the administration building on-site.
- One natural gas-fuelled auxiliary boiler equipped with low NO_x burners, exhausting to the atmosphere through a stack extending 40m above grade.
- One emergency standby diesel generator rated at 2 MW, firing ultra low sulphur diesel fuel and exhausting through a stack extending 4.6 m above grade. Emissions were

conservatively modelled at these maximum (100% load) conditions, although the diesel generator will be tested for approximately 1 hour per week at 50% electrical load during normal operation of the Project which results in operation of less than 60 hours per year. This generator will provide power to critical auxiliaries during times when power supply via the Ontario grid is not available.

- One natural gas-fuelled dew point heater (DPH) exhausting through a stack extending 4.6 m above grade.
- Natural gas-fuelled internally suspended, wall-, or roof-mounted comfort heaters for the main buildings with a total capacity not expected to exceed 8GJ/hr HHV (7.5 MMBtu/hr).
- Three electrically driven 3.6 MW natural gas compressors to boost the natural gas pressure.
- Three generator step-up transformers increasing the voltage of the electricity produced by the three on site generators from 21kV to 500 kV.
- One 500 kV switchyard, wherein electricity generated by the Project is connected to the 500 kV Ontario transmission grid.
- One 280 kilowatts (kW) (nameplate) emergency diesel fire pump as part of the fire protection system exhausting through a stack extending 4.6 m above grade.
- One raw water system for supply and treatment located in the pumphouse for the treatment of raw water from the Lennox GS intake channel for cooling, fire protection, and process uses.
- One potable water treatment system for treatment of raw water for potable water usage.
- Two 100% capacity filtration, reverse osmosis (RO) and mixed bed demineralizer water treatment trains to make de-ionized water from raw water for make-up to the steam cycle and other uses.

Emergency stand-by diesel generators are specifically exempt from O.Reg. 419/05 (MOE 2009a) when operated less than 60 hours per year for testing purposes. Emissions from the diesel fire pump are considered insignificant. Despite the emissions from the emergency equipment being exempt and insignificant compared to the other Project emissions; the emissions from the emergency equipment are included in the air quality assessment that has been completed as part of the Provincial Environmental Assessment process. The emergency standby diesel generator and the emergency diesel fire pump will not be tested at the same time. Neither piece of emergency equipment will be tested during an MOE "Smog Alert".

Raw water will be drawn through the existing Lennox GS water intake structure supplying the Lennox GS. New pumping equipment will be installed within space existing in the Lennox GS pumphouse and will consist of 50% capacity pumps dedicated to serve the NGS and controlled and powered by NGS. From the pumphouse an existing 915 mm carbon steel coupled to an asbestos/cement pipeline will be replaced with a new 610 mm pipe to supply water to the site. A

trash rack and traveling water screen will be installed to remove any debris from the lake water entering the pumps. The traveling water screen will have a mesh spacing of 9.5 mm. At the lowest predicted water height within the forebay, the estimated velocity through clean screens will be 0.162m/s. Beyond screening and chlorination to prevent the build-up of zebra mussels and other biofouling organisms within the water intake system, no other water treatment is planned at the pumphouse. The location of the Project intake and discharge is provided in Figure 9.

Primary control of the Project will occur from a main control room located in the administration building on-site. The Project will also undergo regular maintenance over the course of its 30 year operating life.

3.5.2 Safety

The Project will be operated and maintained in a manner that will facilitate the protection, safety and well-being of the operations staff, neighbours, general public, surrounding properties, and the environment.

The gas turbines and generators and duct burners in the heat recovery steam generators will utilize natural gas fuel only. There will be no natural gas storage on-site except for that volume that might exist within the piping, compression and gas treatment equipment. Comprehensive gas detection and isolation systems will be employed.

Emergency Response

A Spills Emergency Preparedness and Response Plan, Hazardous Materials Management Plan, Waste Management Plan will be prepared for construction and operation phases of the Project. The objective of these plans will be to prevent any threats to the environment or human safety from hazardous substances.

Chemicals and lubricants used in various on-site processes and Project equipment (such as in the turbines, fuel gas compressors, electric pumps and other smaller equipment) will be appropriately stored at the Project site and will be kept to a minimum to avoid potential spill volume. Operating staff will be trained in spill response and will have the necessary equipment to contain and clean up any spill that could occur.

A Spills Emergency Preparedness and Response Plan will be coordinated with Lennox GS and local emergency response agencies, including police and fire department. Emergency response plans, including those related to environmental emergencies (e.g., spills) will be auditable to environmental management system standards (International Organization for Standardization (ISO) 14000). In the unlikely event that an incident or spill occurs, the site Spills Emergency

Preparedness and Response Plan will be put into effect using trained staff. The MOE Spills Action Centre will also be informed of reportable spills.

The Project will be equipped with on-site private fire protection (detection and suppression) and gas detection systems for immediate response to any fire or natural gas, hydrogen, or ammonia leakage condition. The generating units will be equipped with vendor designed fire detection and suppression systems. The fire system will have interfaces to allow continued fire suppression by the responding Town fire department (e.g., hydrants and Siamese connections).

The closest fire station to the Project site is located in the Town of Bath approximately 7 km away at 241 Church St, Bath, Ontario. There are also fire stations located at 66 Advance Avenue, Napanee, Ontario, approximately 18 km away, and at 2956 South Shore Road, Napanee, approximately 18 km away. The nearest police station to the Project site is located approximately 18 km away at 86 Advance Avenue, Napanee, Ontario. TransCanada will hold regular emergency response exercises including training and will invite local emergency response personnel to participate.

Figure 8 Project Process Diagram

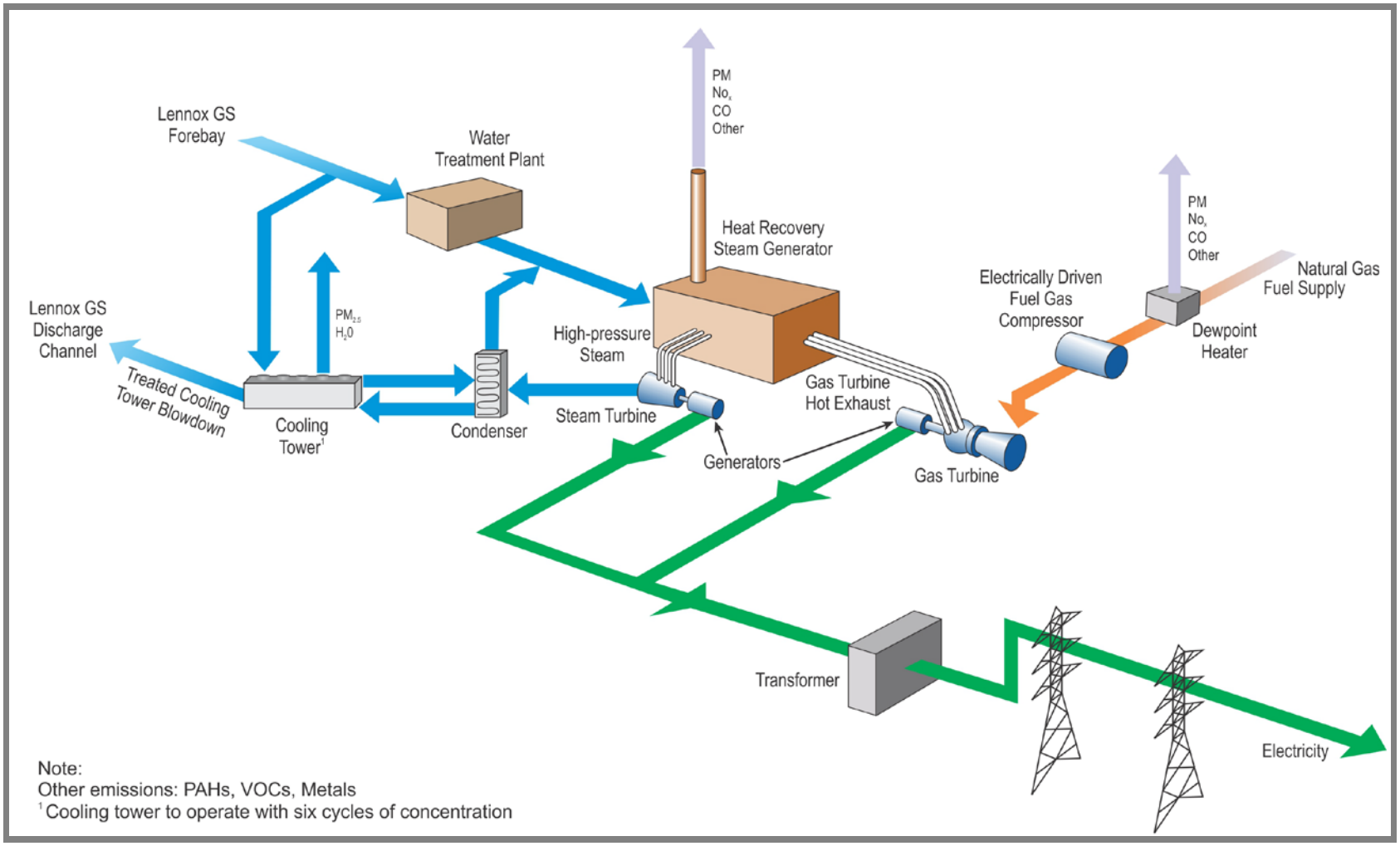


Figure 9 Location of Project Intake and Discharge Within Existing Lennox GS Forebay and Discharge Channel

3.6 DECOMMISSIONING

TransCanada is committed to environmental protection through all Project phases, including decommissioning. A Decommissioning Plan will be developed in accordance with applicable environmental protection standards to minimize and mitigate the effects of any decommissioning activities prior to decommissioning of the Project.

Decommissioning will begin after a decision has been made to cease operating the Project. It is assumed that decommissioning would begin in late 2047 or early 2048 (based on a 30 year operating life and operating start in the fall of 2017). Decommissioning will entail the dismantling of all systems and structures, removal of all operating equipment, furniture, supplies, electrical cables, buried structures, roads, the demolition of all buildings, management of waste (using licensed waste disposal/recycling firms and licensed facilities) and the regrading and restoration of the Project site.

3.7 EMISSION DISCHARGES AND WASTE MANAGEMENT

3.7.1 Wastewater Collection, Treatment, and Discharge

Wastewater generated by the Project will consist of the following three primary waste streams:

- Industrial wastewater – mainly generated from cooling tower blowdown and other process water-related discharges such as the heat recovery steam generator and auxiliary boiler blowdown, RO reject water, backwash flows from the water treatment filtration process and intermittent effluent from floor drains);
- Stormwater runoff; and
- Domestic sanitary sewage.

Cooling tower blowdown along with other process water discharges will be discharged via a new 457 mm discharge pipeline to the existing Lennox GS discharge channel. Prior to entering the discharge channel, effluent treatment using "best available technology" will be used to ensure the effluent will meet MOE regulated effluent criteria (quality and temperature) and that the cumulative effects of discharges from the Lennox GS and the Project will have not have an adverse effect on Lake Ontario receiving waters.

The criteria for the effluent quality will be the Municipal Industrial Strategy for Abatement (MISA) requirements which are:

- Total Suspended solids: Maximum daily 70 mg/L; Monthly Average: 25 mg/L
- Aluminum: Maximum daily 13mg/L; Monthly average: 4.5 mg/L
- Iron: Maximum daily 2.5 mg/L; Monthly average: 1 mg/L

- Oil and grease: Maximum daily 29 mg/L; Monthly average: 13 mg/L
- pH: 6.0 -9.5
- Effluent must be non-acutely lethal to rainbow trout and Daphnia Magna

The discharge objective for temperature will meet Provincial Water Quality Objectives (PWQO) standards within the mixing zone in the lake. The mixing zone will take into consideration discharges from Lennox GS combined with those from the Project.

A monitoring location will be installed within the Project discharge pipeline within which in-line monitoring of pH, conductivity total residual chlorine and temperature will be installed. As well, it will be possible to conduct grab sampling at this location for acute lethality, total iron, total suspended solids, total aluminum and oil and grease.

Stormwater runoff generated from impervious areas of the developed site (i.e., building and parking lots) will be routed to local catch basins, and conveyed through adequately designed ditches, swales and subsurface piping to the existing stormwater culvert located to the south-west corner of the site. End-of-pipe stormwater quality control measures, such as the use of oil/grit separator devices (e.g., Stormceptors) will be installed for the removal of any possible oil/grit contaminated runoff prior to discharge to the Lake via the existing Lennox GS stormwater discharge ditch and the existing culvert under Highway 33. The oil/grit separators will be designed to produce at least an *enhanced* level of treatment (i.e., 80% removal of total suspended solids). Stormwater runoff velocities will be controlled to ensure safe conveyance through the existing culvert and also provide adequate sediment and erosion control through ditches and swales. Drainage from undeveloped areas will mimic natural drainage patterns in order to minimize disturbance to existing hydrological features of the site.

Waste streams resulting from drains located in washroom, kitchen and any other domestic facilities will be collected and conveyed in a new totally independent system that will be routed to the existing Lennox GS sanitary sewer collection and treatment system (i.e., sewage lagoons) located north of the Project site. The existing Lennox GS sewage treatment system was designed to accommodate the construction crew (1,000 plus employees) for the Lennox GS. The Lennox GS has a full time staff compliment of approximately 170 employees, well below the design capacity. The Project during operation will employ approximately 30 employees. As such, the existing Lennox GS sewage treatment system is sufficiently sized to accommodate the additional number of staff located on site during the Project's operation. During construction, contractors will provide temporary portable toilet facilities with holding tanks for the construction work force. The sewage will be collected regularly and hauled to a licensed off-site sewage treatment facility.

The management of other liquid waste streams is discussed in Section 3.7.4.

3.7.2 Air and Noise Emissions

The Project will require an ECA for air emissions from all combustion equipment as required under Section 9 of the Ontario *EPA*. The ECA application will include detailed technical information on both atmospheric emissions (e.g., NO_x, SO_2, CO, SPM, VOCs, ammonia (NH_3), and other trace constituents) from on-site sources and noise emissions from operating equipment.

Air emissions will be assessed by the MOE in consideration of (i) point of impingement (POI) standards (O.Reg. 419/05) (MOE 2012); (ii) end-of-stack standards (MOE Guidelines A-9 (MOE 2001) and A-5 (MOE 1994)), and CCME National Emission Guidelines for Stationary Combustion Turbines (CCME 1992) and the National Emission Guideline for Commercial/Industrial Boilers and Heaters (CCME 1998) on which the MOE A-5 and A-9 Guidelines, respectively, were founded), and (iii) Provincial Ambient Air Quality Criteria (AAQC) (MOE 2012) as well as Canadian Ambient Air Quality Standards (CAAQS) (CCME 2012). Table 1 provides the standards and criteria that will be met by the Project.

Table 1 AAQC Limits for Conventional Pollutants and VOCs

Contaminant	CAS #	Averaging Period	Summary of O.Reg. 419/05 Standards and AAQC (µg/m^3)[1]	National Ambient Air Quality Objectives Maximum Acceptable Level (MAL) (µg/m^3)[2]	Canadian Ambient Air Quality Standard (µg/m^3)[3]
NO_x	10102-44-0	1 hr	400 *	400	-
		24 hr	200 *	-	-
		Annual	-	100	-
		1/2 hr (Emergency Generator)	1,880 [4]	-	-
CO	630-08-0	½ hr	6,000 *	-	-
		1 hr	36,200 [5]	35,000	-
		8 hr	15,700 [5]	15,000	-
SPM	-	24 hr	120 *	70	-
$PM_{2.5}$	-	24 hr	25/30 [7]	-	28 (by 2015) 27 (by 2020)
PM_{10}	-	24 hr	50 [6]	-	-
SO_2	7446-09-5	1 hr	690 *	900	-
		24 hr	275 *	300	-
		Annual	55 [8]	60	-
NH_3	7664-41-7	24 hr	100 *	160	-

Notes: NO_x – nitrogen oxides – sum of nitrogen dioxide (NO_2) and nitric oxide (NO), SO_2 – sulphur dioxide, CO – carbon monoxide.
PM_{10} includes all particulate matter with an aerodynamic diameter less than 10 µm.
$PM_{2.5}$ includes all particulate matter with an aerodynamic diameter less than 2.5 µm
- Indicates no criterion available.
* Indicates Schedule 3 of O.Reg. 419/05 (MOE 2012b).
[1] MOE 2012a, MOE 2012b.
[2] NAAQO means National Air Quality Objectives (Maximum Acceptable Level).
http://www.hc-sc.gc.ca/ewh-semt/pubs/air/naaqo-onqaa/index-eng.php
[3] CCME 2012 – 98th percentile 24-hour averaged over 3 consecutive years.
[4] MOE Approvals limit applies when the emergency generator is being tested and is only applicable to non-sensitive receptors. MOE 2010.
[5] CO AAQC for multiple sources.
[6] Interim Ambient Air Quality Criteria for Ontario (guide for decision making) - source Ontario's Ambient Air Quality Criteria.
[7] Guides for Decision Making – 25 µg/m^3 for primary particulate emissions from a single facility and 30 µg/m^3 for ambient air quality ambient - source Ontario's Ambient Air Quality Criteria (footnote 8).
[8] Ambient Air Quality Criteria for Ontario.

The MOE approvals process requires that an air emissions summary and dispersion modelling report be completed and submitted with the application package for technical review by the MOE (MOE 2009b,c). The modelling has been conducted in consideration of emission abatement measures in place during operation such as the low NO_x duct burners, and SCR system.

Mechanical draught evaporative cooling towers rely on the latent heat of evaporation to provide cooling to the water stream. With a mechanical draught evaporative cooling tower, in addition to the water vapour, water droplets are entrained in the air stream and may be carried out of the tower as "drift" droplets. There are potential effects of fogging and icing due to the water vapour plume emitted from a cooling tower. Under certain meteorological conditions, there will be a visible water vapour plume extending some distance from the tower. The drift droplets contain dissolved solids that will result in particulate emissions as the water droplets evaporate. The cooling tower will operate whenever the GT/Gs are operating.

Due to their relatively large size, many of the drift droplets drop out very close to the cooling tower. The SACTI modelling of the Project mechanical draught evaporative cooling tower showed that under the worst case conditions there is the potential for fogging of five to 20 hours per year and icing of two to 10 hours per year over Loyalist Parkway if the Project operated for 365 days per year continuously. The results of the model are conservative since the Project is expected to operate between 11 and 67% of the time. Thus, no plume abatement measures are proposed.

The effect of development and operation of the Project is expected to have a minimal effect on the local air quality, as the Project will be designed to meet or be below O.Reg. 419/05 and all other applicable regulatory requirements. Modelling results show that the Project's air emissions are well within those regulatory requirements for all parameters, even when background is added in. A more detailed description of the air quality assessment is provided in the *Air Quality Assessment for the Napanee Generating Station Supporting Document* (Supporting Document 1) (SENES 2013a).

Noise emissions have been assessed through comparison to existing noise levels at the closest residential area. Noise emissions from the Project are evaluated against the MOE Noise Pollution Control (NPC) 232 criteria for daytime (45 dBA), evening and night-time operating periods (40 dBA) at the closest residential receptors (MOE 1995). Noise levels from the Project are designed to meet or be lower than the MOE criteria at the closest residential receptor and modelling undertaken for the ERR confirms that these criteria are met. A more detailed description of the acoustic assessment is provided in the *Acoustic Assessment for the Napanee Generating Station* (Supporting Document 2) (SENES 2013b).

Noise is considered a contaminant under the Ontario *EPA* and as such, noise emissions also require approval under Section 9 of the Ontario *EPA*. Noise emissions are typically approved in parallel with air emissions by the MOE Environmental Assessment and Approvals Branch (EAAB). The noise component of the ECA application will include the ambient noise level survey; a noise impact assessment including modelling to determine potential noise impacts at the critical off-site receptors; and noise mitigation measures, if applicable. The noise survey, assessment results and any required mitigation are detailed in the ERR which will be the basis for the ECA application. Noise levels from the Project are being designed to meet or be lower than the MOE criteria at the closest residential receptor.

3.7.3 Solid Waste

The Project is expected to generate only non-hazardous solid waste. Wastes will be minimized to the extent possible through re-use and recycling programs. Waste rock from the installation of foundations will be crushed and re-used as aggregate for road beds or as a surface material for the construction laydown area. Other construction wastes (including those from site remediation activities) such as wood, scrap metal, temporary road and laydown surface material, concrete will be separated and sent to appropriate re-use facilities. All residual wastes remaining after diversion programs (e.g. food waste, packaging material) will be collected regularly by licensed contractors and transferred to appropriately licensed off-site disposal facilities. No waste disposal facilities will be located on the Project site.

3.7.4 Liquid Waste

Other liquid waste streams (not included in section 3.7. 1) periodically generated include oil and grit collected in the oil/water and oil/grit separators or gas turbine drain tank and detergent-laden water (gas turbine water wash fluid) which is not consumed in the wash process. Lubricants will be used to maintain gas turbine equipment, the emergency standby diesel generator, and other operating equipment. Since drains associated with this equipment could be potentially contaminated with lubricants, water flowing through these specific drains will pass through an oil/water separator. After separation, clear water discharge from the separator will be pumped to the wastewater collection basin, then to the cooling tower basin for reuse in the cooling tower and ultimately to Lake Ontario as part of the cooling tower blowdown discharge. Oil collected and retained in the oil/water and oil/grit separators and oil collected and retained in the gas equipment drains will be removed from collection vessels via vacuum truck and disposed of at an appropriate off-site facility.

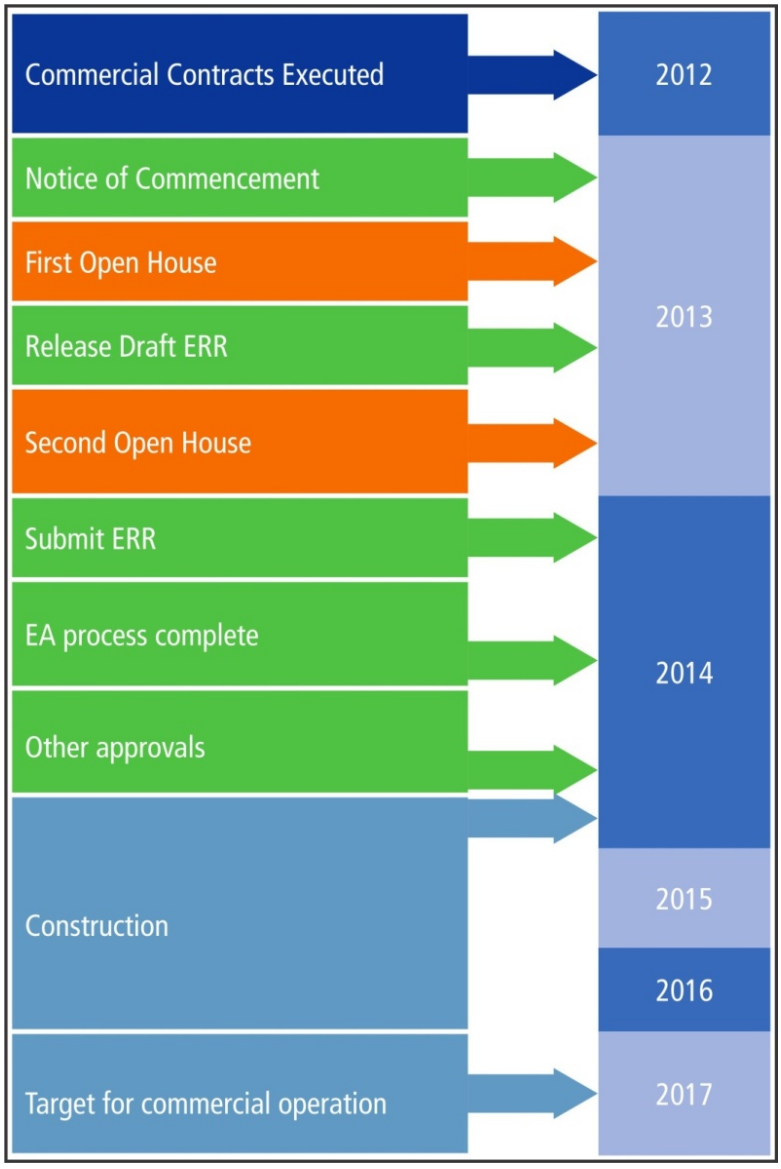
3.8 PROJECT PHASES AND SCHEDULE

Site Preparation and Construction: Fall 2014, Winter 2015 until early 2017

Commercial Operation: Fall 2017

Decommissioning: Start Fall 2047 (based on a 30 year operating life)

The overall Project schedule, including Open Houses and review of the draft and final ERR is provided in the diagram below.



4.0 ENVIRONMENTAL EFFECTS

4.1 PHYSICAL AND BIOLOGICAL SETTING

The existing physical and biological setting in the area including geology and hydrology, atmospheric, terrestrial and aquatic environments and water quality are described below.

4.1.1 Land Use, Resource Management and Conservation Plans

The Project site is located on an existing power generating facility site of approximately 485 ha surrounded by a rural farming community. The Project site (approximately 38 ha) is comprised of roughly 30% cultivated agricultural lands (location of construction laydown area), 30% undeveloped wooded areas with poor drainage, and 30% that forms part of Lennox GS storage yards (location of the major Project components), the Union Gas natural gas pipeline and connection yard, and a Rogers' communications tower (see Figure 10).

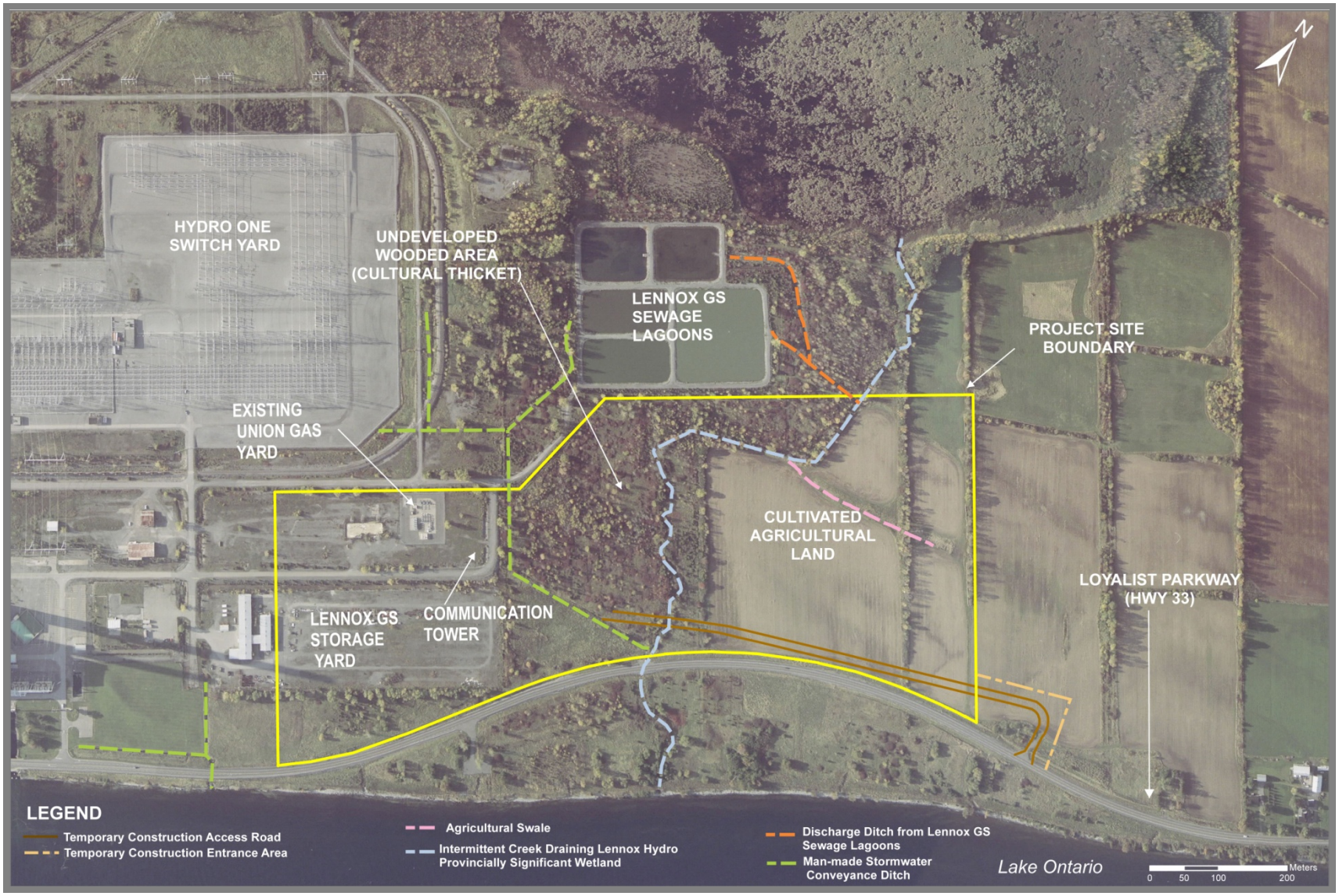
The Project site is designated Industrial in the Official Plan for the Town of Greater Napanee and zoned General Industrial Exception 2 (M2-2-H) Holding in the Town of Greater Napanee Zoning By-law. Permitted uses include non-nuclear electrical power generation. The Project site has been used for power generation for over 35 years and has all the necessary connections and services specifically for power generation such as electrical transmission and natural gas pipeline interconnections.

The Project is located within the planning area for the Bay of Quinte Remedial Action Plan (RAP) and the Cataraqui Source Protection Plan intake protection zone (IPZ) 1. The RAP focuses on recommendations for preparing and implementing pollution prevention and control plans for municipalities located along the Bay of Quinte. The purpose of the Source Protection Plan is to protect existing and future drinking water sources. An IPZ represents either a set distance (i.e., 1 km) around a municipal water intake (IPZ 1), or the length of time water that could be carrying a contaminant would take to reach the municipal intake (IPZ 2). The existing Lennox GS forebay and discharge channel and located within IPZ 1. In consideration of the RAP and Cataraqui Source Protection Plan, quality control measures contained in the SWM Plan are designed to provide at least an "enhanced" level of protection which corresponds to the *long-term average removal of at least 80% total suspended solids* (TSS) from the stormwater runoff.

The Bay of Quinte is also a recreational and commercial fishing area. However, in discussions with Aboriginal groups they indicated that this area was not used for fishing by Aboriginal people.

The Project is not located on or near any Conservation Authority lands.

Figure 10 General Land Use on the Project Site



4.1.2 Geology and Hydrogeology

The regional geology consists of a thin layer of glacial silt and/or clay till over limestone of the Verulam formation (COLESTAR 2011). The Verulam formation consists of very fine grained to coarsely grained limestone with calcareous shale interbeds. The formation is fossiliferous and of Middle Ordovician age.

Four boreholes were drilled as part of the geotechnical investigation for the Project site. Fill soils, comprising silty material with some gravel and weathered bedrock, were occasionally present to depths up to 1.16 m. Native soils encountered in the boreholes were variable, ranging from topsoil to cobbles to silty clay to sandy silt till. All boreholes encountered bedrock at depths ranging from 0.15 to 3.73 m. Bedrock was observed to comprise grey limestone of the Verulam formation. Shaley interbeds were frequently observed in the recovered rock cores, typical of this formation. The upper 1 to 2 m of the bedrock formation was observed to be weathered, with the degree of weathering decreasing with depth.

Groundwater in and near the Project site is largely within the underlying limestone bedrock. Regional groundwater flow is generally south toward Lake Ontario and past studies indicate a shallow groundwater depth ranging from 1.7 to 5.8 m below grade (COLESTAR 2011).

Water levels in five groundwater monitoring wells present on the Project site were measured on 21 November 2012 at depths ranging from 0.77 to 8.35 m. Groundwater samples were analyzed for metals, VOCs, polychlorinated biphenyls (PCBs) and petroleum hydrocarbons (PHCs).

No exceedances of the MOE site condition standards were identified for groundwater samples collected from monitoring wells located on the Project site.

4.1.3 Atmospheric Environment

This section provides an overview of the existing atmospheric environment. A more detailed description is provided in Supporting Document 1.

The area surrounding the Project site has a climate similar to other parts of southern Ontario near the Great Lakes. The region is characterized by pronounced seasonal differences in weather and by a highly variable day-to-day weather pattern. Some periods in the summer are essentially humid tropical (high temperatures, high humidity, afternoon thunderstorms, etc.) and some periods in the winter are effectively polar (very cold, clear, dry) with precipitation occurring throughout the year.

Table 2 summarizes the most recently available temperature and precipitation normals (values of climatic elements averaged over a fixed standard period of years, usually 30 years)) for Kingston Airport for the period of 1981 through 2010. As can be seen in the table, the daily average minimum temperature is –12°C in January and the daily average maximum temperature is 24.9°C in July. The late summer and fall months receive the highest monthly precipitation, with August, October and November receiving the most, on average.

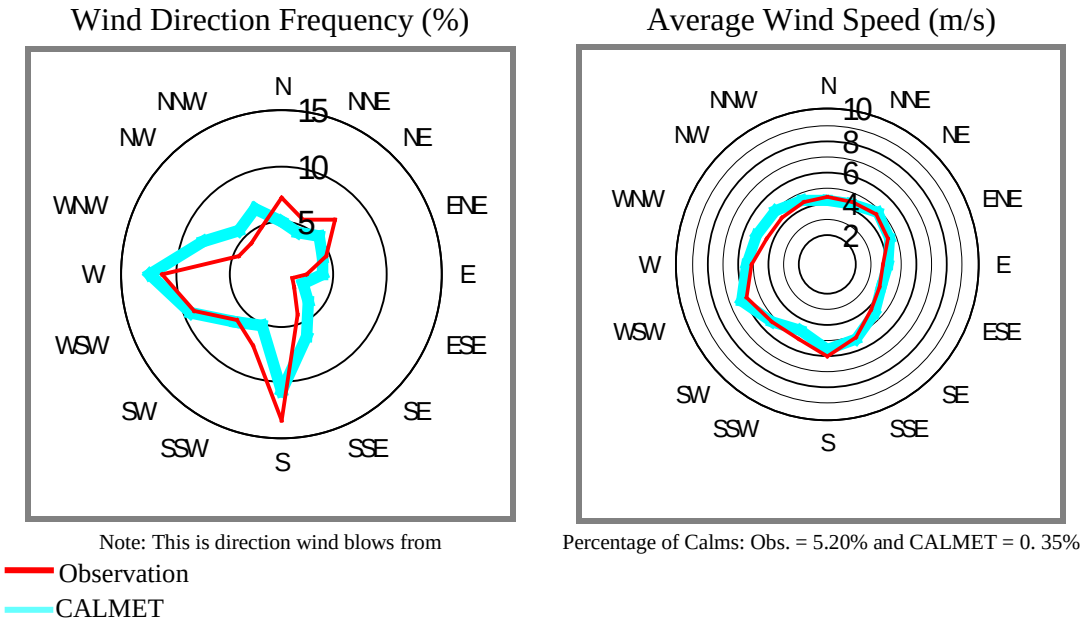
Table 2 Summary of Temperature and Precipitation Normals (Kingston Airport)

Month	Daily Average Temperature (degrees C)	Average Precipitation (mm)
January	-7.6	65.2
February	-6.6	65.1
March	-1.6	69.2
April	5.7	87.1
May	11.8	76.9
June	17.0	720
July	20.4	64.0
August	19.6	93.7
September	15.0	89.7
October	8.9	92.4
November	3.2	100.3
December	-3.3	84.1
Annual	6.9	959.6

Figure 11 presents a wind rose for the years 2008-2012 based on the Project site-specific meteorological dataset that was developed and observations from Kingston for the years 1967-1980.

Contaminant concentrations decrease with increasing wind speed as a result of mixing. Wind speed increases with height as the effect of friction at the Earth's surface is reduced. When wind speeds are high, there is generally good dispersion of contaminants but when wind speeds are near zero, local circulation can lead to higher contaminant concentrations near the ground. The average wind speed based on the prepared data for the 2008-2012 period is 4.86 m/s whereas the observed wind speed at Kingston is 4.72 m/s (Figure 11).

Figure 11 Wind Rose for the Project Site



Air quality at the site is representative of that typically observed in rural areas.

4.1.4 Terrestrial Environment

This section provides an overview of the existing terrestrial environment. A more detailed description is provided in the *Terrestrial Assessment for the Napanee Generating Station Supporting Document 4* (Supporting Document 4) (Beacon 2013).

Surrounding Area

The Project site and surrounding area is situated entirely within Ecodistrict 6E-15 which falls within the Mixedwood Plains Ecozone. The natural vegetation for the general area surrounding the Project site is mostly Great Lakes-St. Lawrence forest characterized by American Beech, Sugar Maple and birch species. The wildlife community and species within the surrounding area are reflective of the existing vegetation communities and landscape. The most important natural heritage feature and the only provincially significant wetland is the Lennox Hydro Provincially Significant Wetland (or Lennox Hydro Wetland) located approximately 400 m north of the Project site. This wetland was created in 1981 through construction of a concrete dam, and is currently managed by Ducks Unlimited Canada.

This 57 ha wetland was first evaluated in 1986 as provincially significant. The majority of the wetland is marsh, much of which is open shallow water, providing ideal habitat for waterfowl and turtles. A heronry in the wetland has persisted here since 1997, during which time there was also a large Black Tern colony. The Black Tern colony has since declined and were not recorded during breeding bird surveys in 2010 (Ecological Services) or in 2013 as part of the terrestrial assessment for the Project.

Incidental observations were made for reptiles and a special search for nesting turtles and Blanding`s turtle was conducted in areas south of the Lennox Hydro Wetland. No Blanding`s turtles were observed in the nearby Lennox Hydro Wetland, and none have been reported there in the past. Nesting areas of common snapping turtle were found but they were associated with the Lennox GS sewage lagoons and none were found close to the Project site.

The CRCA Natural Heritage Study (CRCA 2006) found the area between the Amherst Island and the north shore is a Migratory Waterfowl Site used by migrant waterfowl (i.e., ducks, geese, gulls, terns) for feeding and resting during migration. In addition, several birds of note were recorded within the surrounding area and close to the Lennox GS during Project-related field studies including an adult bald eagle flying low over the Lennox Hydro Wetland; an active osprey (Pandion haliaetus) nest located on the utility pole on north side of Loyalist Parkway (Highway 33) near the Lennox GS, two purple martin houses located to the west within the Lennox GS property, a cliff swallow colony located under the main foot and road bridge in front of the Lennox GS and on structures associated with the high voltage lines, and two pairs of barn swallows located immediately west of the Project site (see Figure 13 in the preceding section for locations).

Project Site

Vegetation communities were mapped following the Ecological Land Classification (ELC) system (Lee *et al*. 1998). The ELC mapping was completed for the Project site over the fall and summer visits in 2012 and 2013 (see Figure 12).

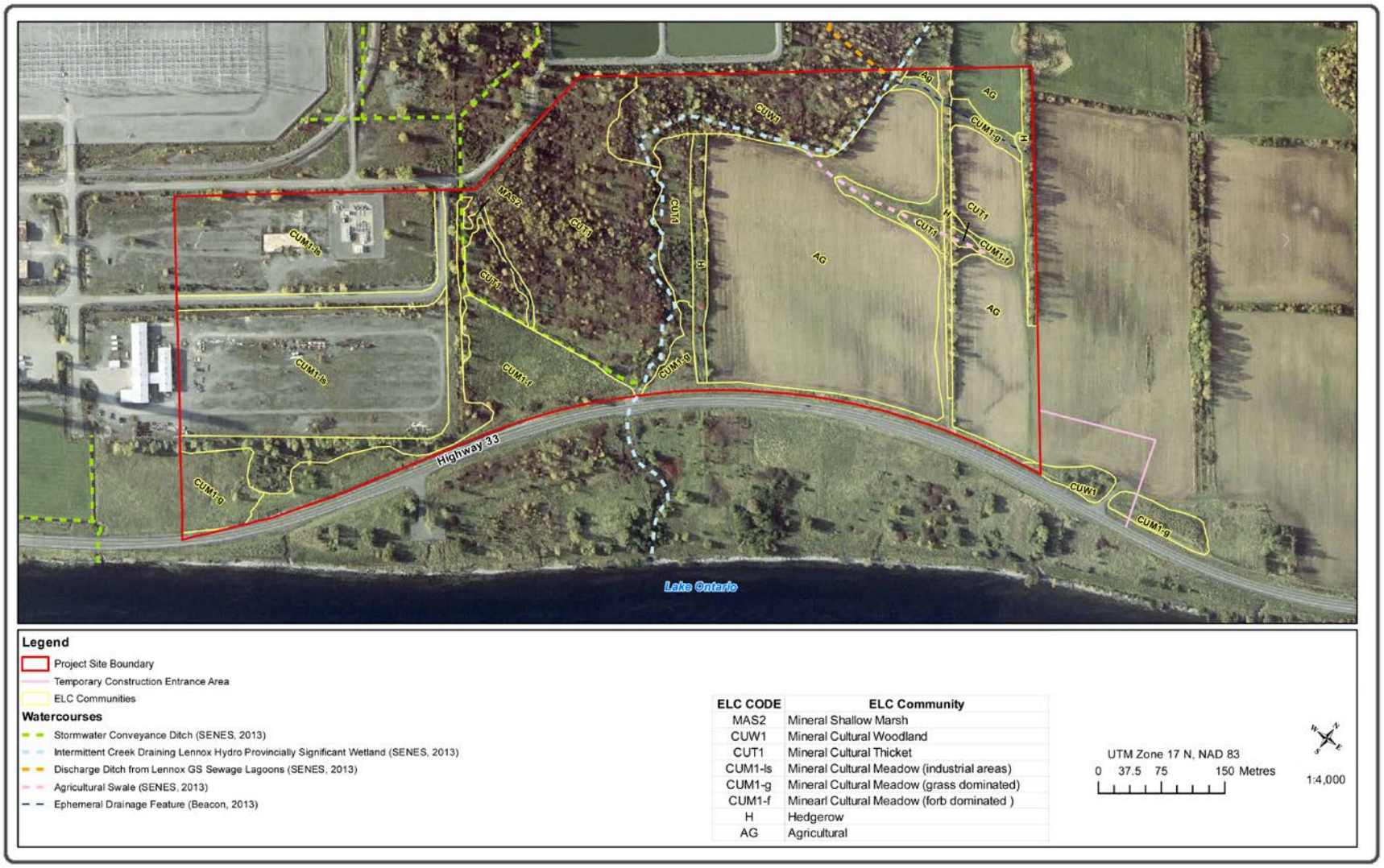
Table 3 below provides approximate area for each of the vegetation communities on the Project site. Only one natural wetland community was identified within the Project site, the rest were upland cultural communities consistent with the disturbed nature of this industrial site. The wetland community within the Project site is comprised of; Mineral Meadow Marsh (0.29 ha, 1%). Cultural communities within the Project site are comprised of; cultural thicket (8.25 ha, 21%), cultural woodland (2.35 ha, 6%), cultural meadow (14.52 ha, 38%), active agricultural lands (11.8 ha, 31%), and hedgerows (0.99 ha, 3%).

Table 3 Vegetation Communities on the Project Site

ELC Community		Existing Area (approx. ha)
Terrestrial	CUM1-f	2.58
	CUM1-g	2.65
	CUM1-ls	8.59
	CUT1	8.28
	CUW1	2.88
	Hedgerow (H)	1.21
Wetland	MAS2	0.29
Other	Agricultural (AG)	12. 09

An amphibian survey consisting of an auditory survey undertaken during the prime breeding period to record calling males was conducted in the spring of 2013. No breeding amphibians were recorded within the Project site and no suitable breeding habitat occurs within the Project site. No Blanding's turtle or nesting areas of common snapping turtle were found on or close to the Project site.

Figure 12 Ecological Land Classification Mapping for the Project Site



The use of the Project site by breeding birds is an indication of the function of the vegetation communities of the site. The list of breeding birds recorded from the site is presented in Table 4 along with the approximate number of breeding pairs. A total of 50 species was recorded from the site that includes a wide range of species from raptors to shorebirds to song birds. The complete list of breeding birds recorded within the Project site including current status at the federal Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and provincial Committee on the Status of Species at Risk in Ontario (COSSARO) levels is provided in Appendix B.

Species and their habitat listed as Endangered or Threatened by COSSARO are subject to the requirements of the provincial *ESA*. The federal *Species at Risk Act* (*ESA*) also protects birds (and fish) wherever they occur, but until "critical habitat" is established under the *ESA* the protection effectively only extends to the habitat whilst it is occupied.

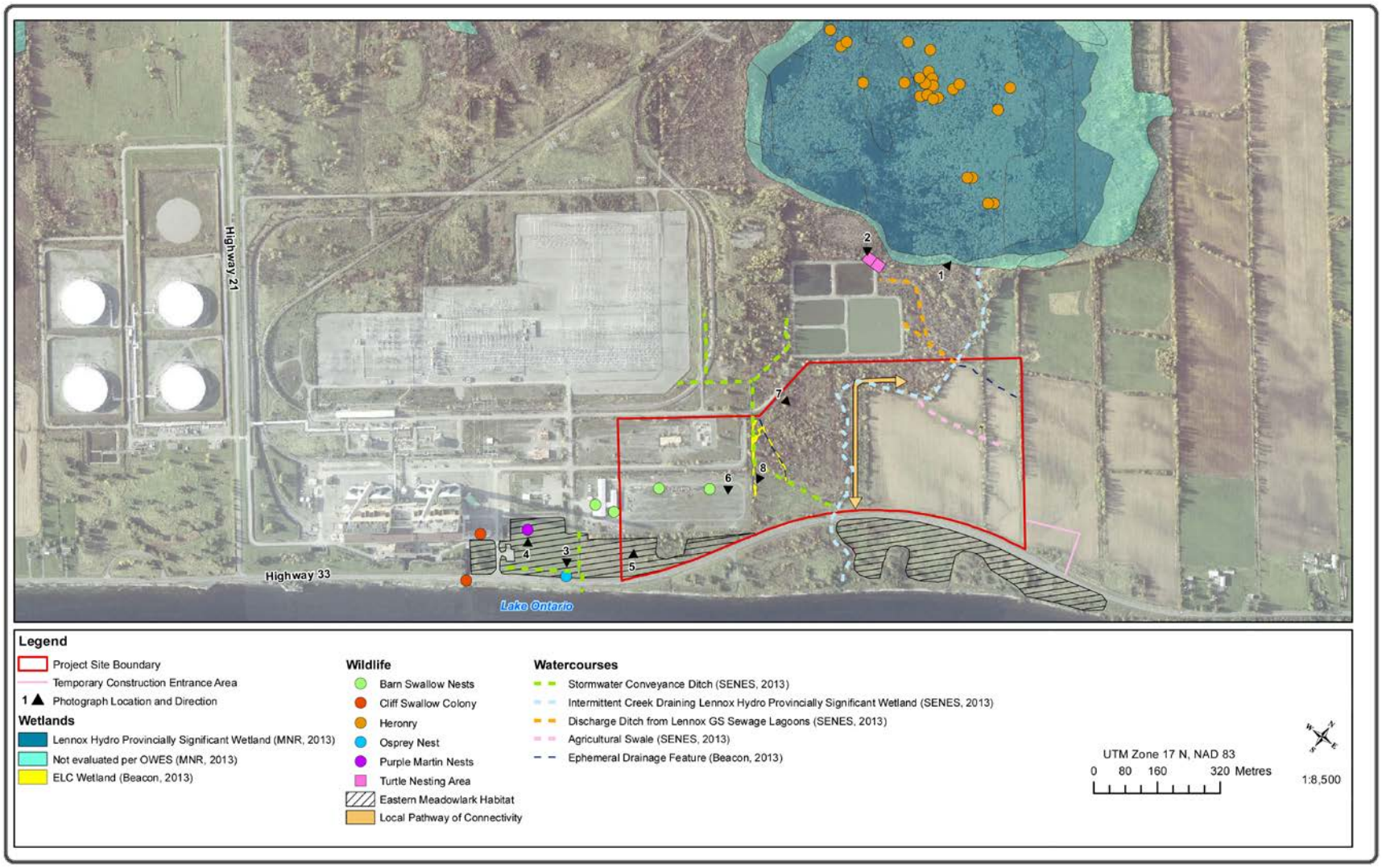
Within the Project site there are two bird species recorded listed as Threatened under the *ESA*. These are barn swallow and eastern meadowlark.

Two barn swallow nests were found on the Project site in equipment being stored within the Lennox GS storage yard. Several were observed foraging over the yard and meadow.

One eastern meadowlark was observed in the southern portion of the property using the meadow that extends from the Lennox GS into the Project site along Highway 33 (Loyalist Parkway). This territory also extended westwards onto Lennox GS property. Therefore, the meadow within the southern portion of the Project site is considered eastern meadowlark habitat and is subject to the requirements of the *ESA*.

A summary of terrestrial features is depicted on Figure 13.

Figure 13 Terrestrial Features Found on the Project Site



4.1.5 Aquatic Environment

This section provides an overview of the existing aquatic environment. A more detailed description is provided in Supporting Document 3.

The field program consisted of seasonal sampling in Lake Ontario (in the vicinity of the existing Lennox GS discharge channel outlet to the lake and the Lennox GS lake intake), within the existing Lennox GS forebay and discharge channel, and the intermittent creek bisecting the Project site. Investigations included water and sediment chemistry analyses, temperature and current monitoring, and assessment of aquatic habitat, fisheries and benthic studies.

Lake Ontario

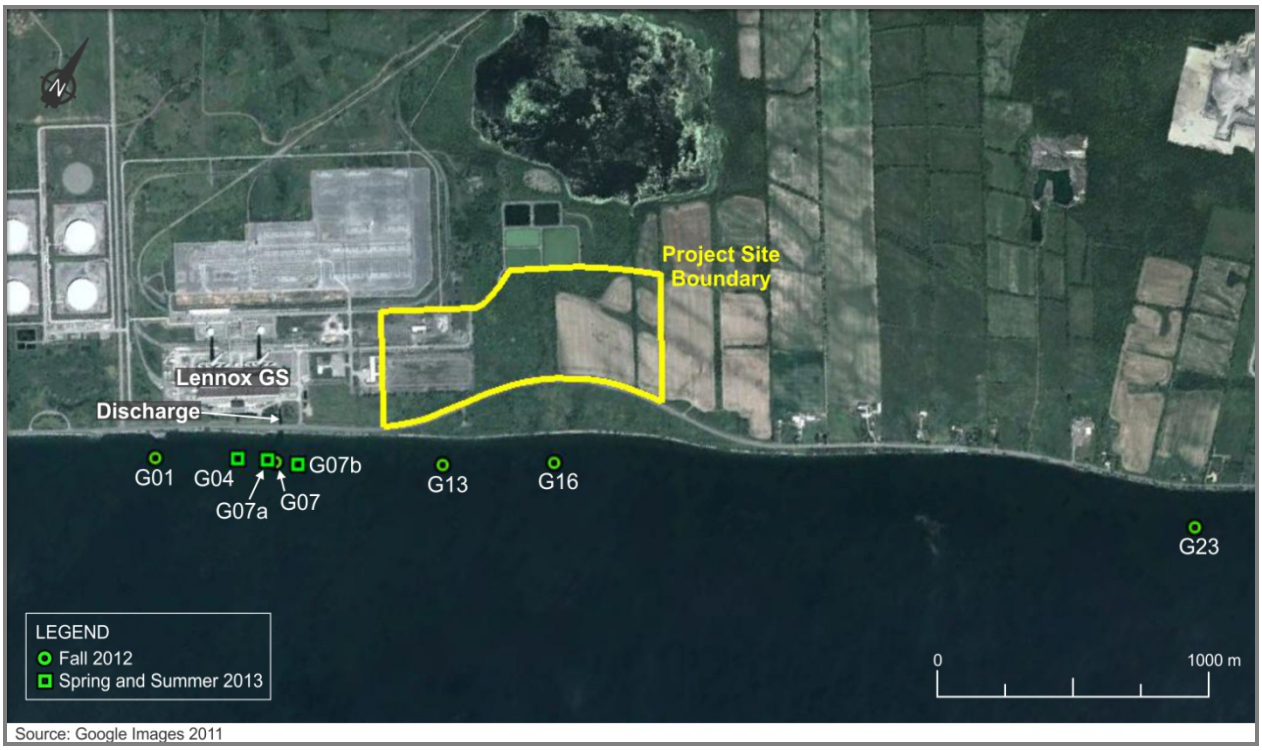
Fish and Fish Habitat

Baseline aquatic field studies were conducted in Lake Ontario (Figure 14) during the Fall of 2012 and Spring and Summer of 2013 near the outlet of the Lennox GS discharge channel and the Lennox GS intake located offshore at a depth of 30 m. The aquatic sampling program has been designed to determine species presence and relative abundance (including number of juvenile and adult fish) in the vicinity of these existing structures.

Figure 14 Aquatic Study Area and Conway Gillnetting Area

Gillnetting was conducted at five sites in the Fall of 2012 as well as three sites in Spring/Summer 2013 (Figure 15).

Figure 15 Lake Ontario Gillnetting Locations



In the Fall of 2012, 72 fish of 10 fish species were collected near the outlet of the Lennox GS discharge channel (Figure 15). Dominant fish species included yellow perch, white perch, rock bass, walleye, gizzard shad, and lake trout, representing 34%, 23%, 15%, 10%, 7%, and 6%, respectively. The catch per unit effort (CPUE) ranged from 1.09 to 1.87 fish/h per gillnet. Additional species found in small numbers in the Fall at G07 include: Alewife, Lake Whitefish, Round Goby, and Common Mudpuppy.

In May 2013, eight fish species were collected near the outlet of the Lennox GS discharge channel. CPUE ranged from 3.61 to 9.76 fish/h per gillnet. Of the 462 fish captured, yellow perch was the dominant species, comprising 91% of the total catch. The majority of yellow perch caught were small, averaging 16.3 cm total length and included adults and juveniles. As yellow perch spawns in the Spring, usually from April 15 to early May (Scott and Crossman 1973), the high numbers of yellow perch may reflect the end of the spawning period. Lake trout, rock bass and walleye were the next most abundant species, representing 3.5%, 2.6% and 1.1% of the total catch, respectively. Four spottail shiner, two white perch and one each of white sucker and round goby were also captured. One common mud puppy was captured at G04.

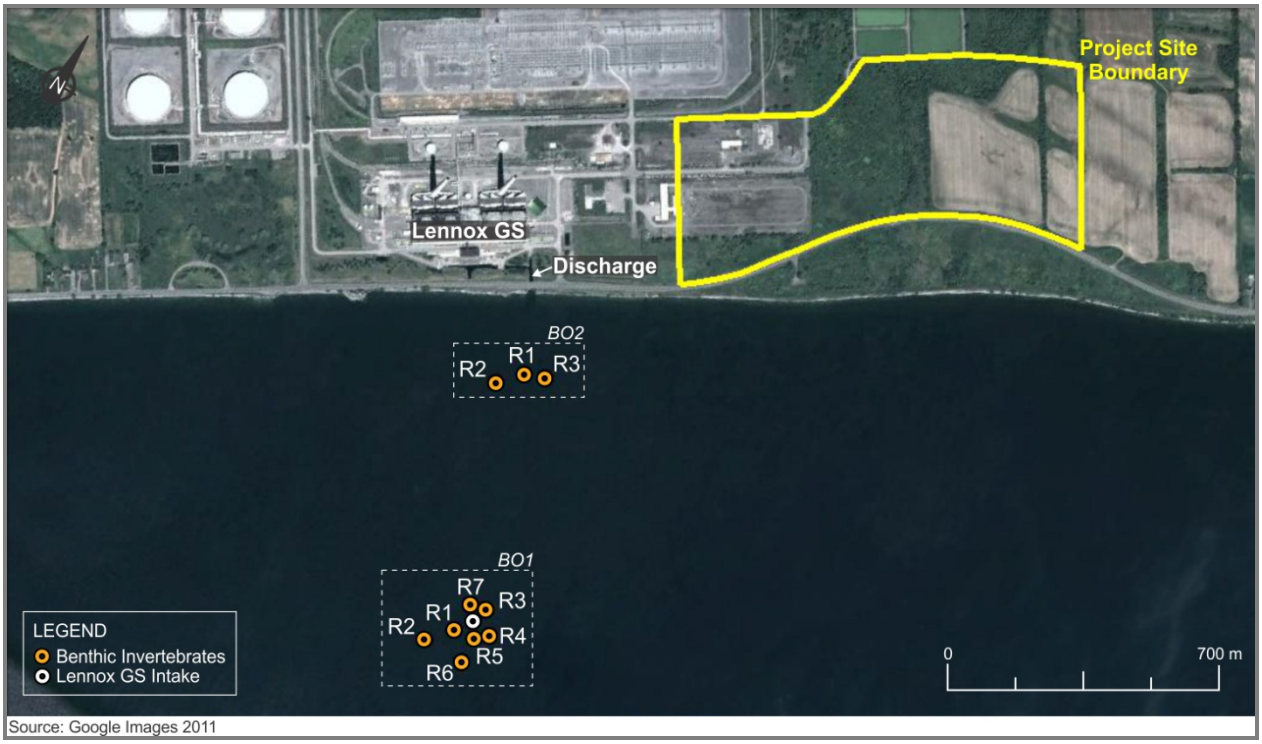
In June 2013, 11 fish species were collected near the outlet of the Lennox GS discharge channel. CPUE ranged from 5.14 to 23.34 fish/h per gillnet. Of the 733 fish captured, alewife was the dominant species, comprising 68% of the total catch. The majority of the alewife captured were adult, with an average total length of 16.9 cm. The high numbers of alewife likely reflect the initiation of spawning activities which have been reported to occur in June to August (Balesic 1978; Dunford 1978). Yellow perch, white perch and white sucker were the next most abundant species, representing 24.7%, 2.9% and 1.2% of the total catch, respectively. Seven lake trout, five rock bass, four round goby and two spottail shiner were captured. One each of brown trout, burbot and walleye were also collected.

The species present were generally similar to those found during the MNR's netting program at Conway (1993-2011) located west of the aquatic study area (MNR 2012), with some exceptions such as Sauger (*Sander canadensis*) (see Figure 14 for location of Conway gillnetting sites).

Aquatic Macrophytes and Benthic Invertebrates

No aquatic macrophytes were observed in the Lake Ontario nearshore proximate to the Lennox GS property or the Project site during the Summer 2013 field surveys. Benthic species in the lake were dominated by several chironomid species, quagga mussels and tubificid worms.

Figure 16 Lake Ontario Benthic Macroinvertebrate Sample Locations



Substrate and Sediment Quality

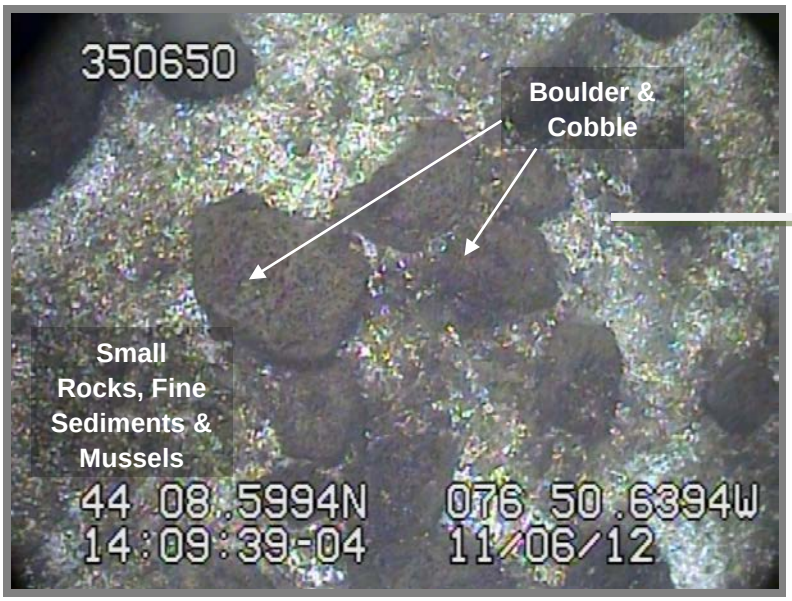
Underwater video analysis showed that the lake substrate in the vicinity of the Project transitions from heavily rocky at 5 m to dense fines at 20 m with the substrate at 10 m being the transition point between the two. Quagga mussels were present on all substrates, both attached to the rocky substrates and mixed in with the finer sediments. The sediments at 5 m are composed primarily of boulders and some cobble, with some locations having occasional small patches of fines. Occasional boulders and cobble were seen at the 10 m depth overtop of a rocky base covered in a dense coat of quagga mussels. The sediments at the 20 m depth were composed exclusively of dense, dark grey fines (primarily sand and silt) mixed with quagga mussels.

The proportion of sand decreases with water depth, e.g., 70 and 77% at water depths of 5 and 10 m, respectively, and 38 to 65% at 20 m, with corresponding increases in the proportion of fine sediment (silt, clay).

Sufficient sediment for analysis of bulk chemical composition (trace metals, BTEX and petroleum hydrocarbons) was collected at four sites: S02, S03, S04 and S09.

The concentration of cadmium, copper and zinc in one of the four samples (S04) exceeded the Provincial Sediment Quality Guideline "lowest effect level" (PSQG LEL) (Persaud, *et al*. 1992) and the federal Interim Sediment Quality Guidelines (CCME 1999, 2002). A discussion on the development and interpretation of provincial and federal sediment quality guidelines is provided in Appendix A, Section A.2.3.4 of Supporting Document 3. The nickel concentrations in two (S04 and S09) of the four samples exceeded the PSQG LEL (there are no federal guidelines for nickel). Overall, the metal concentrations in the surficial sediments collected in 2012 are significantly lower than historic concentrations (based on samples collected in North Channel and Adolphus Reach) due to implementation of pollution abatement measures undertaken by industry, municipalities, agricultural operations and other land uses.

The concentrations of organic parameters in all samples were below the analytical detection limits with exception of F3 petroleum hydrocarbons (C16-C34) which ranged from 20 to 97 µg/g.



Example of substrate found at 5 m

Example of substrate found at 10 m

Water Quality

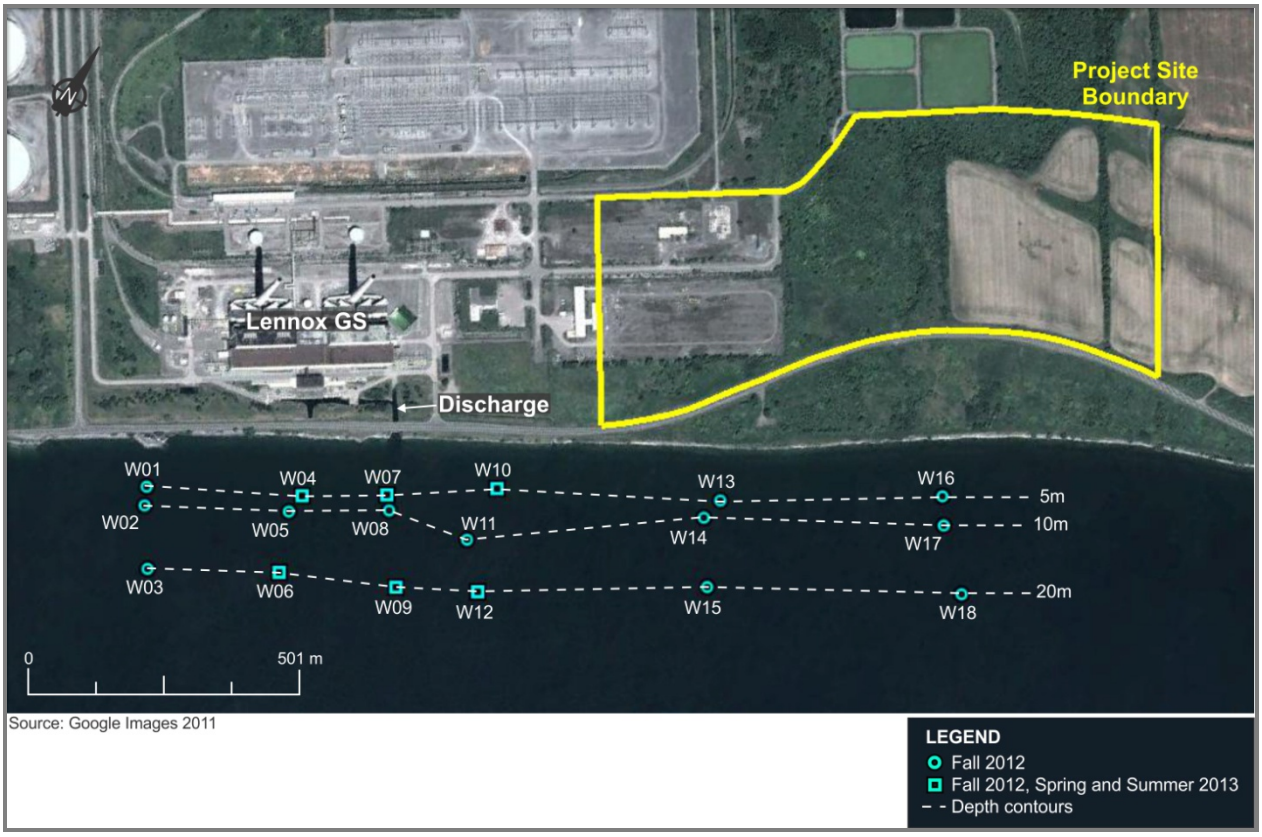
Water samples were collected from Lake Ontario offshore of the Lennox GS and the Project site in the Fall of 2012 (at 18 locations), and Spring and Summer of 2013 (at six locations) (Figure 17). Water samples were collected at 1 m below surface at the 18 locations in the Fall of 2012 (W01 through W18) which were distributed along three transects at water depths of 5 m, 10 m and 20 m (Figure 17). Samples taken in the Fall from each of the 18 locations shown in Figure 17 were analyzed for inorganic parameters, chlorophyll *a*, total oil & grease, carbon dioxide and metals. In addition, samples taken in the Fall at locations W01, W02, W03, W04

and W07 were also analyzed for semi-volatile organic compounds (SVOCs) and volatile organic compounds (VOCs).

In-situ water quality measurements taken at the water quality sampling locations in the Fall 2012, Spring 2013 and Summer 2013 showed that:

- Conductivity and pH were higher in the Fall, whereas dissolved oxygen (D.O.) concentrations and % D.O. saturation were higher in the Spring;
- pH levels were within the Provincial Water Quality Objective (PWQO) range of 6.5 to 8.5 (MOEE 1994);
- The D.O. concentrations and % D.O. saturation were well above their respective PWQOs for maintenance of cold water biota;
- Concentrations of inorganic parameters and metals were comparable to those reported at the Wolfe Island monitoring station, Station #3087 southwest of Amherst Island in Lake Ontario and in Adolphus Reach near Conway;
- Nutrient concentrations were low, with total phosphorus concentrations below the interim PWQO of 0.020 mg/L to avoid nuisance concentrations of algae in lakes (MOEE 1994). These concentrations are reflected by the low chlorophyll a concentrations, ranging from <0.5 to 1.22 µg/L;
- Total oil & grease concentrations were also low ranging from <0.50 to 0.70 mg/L;
- Metal concentrations were below their respective PWQOs with the exception of the iron concentration (530 µg/L) at sampling location W18, which was above the PWQO of 300 µg/L; however, this elevated iron concentration was likely an anomaly, as iron concentrations at all other sampling locations were below the analytical detection limit (100 µg/L);
- Concentrations of inorganic parameters and metals in the Spring of 2013 were similar to those in the samples collected in the Fall 2012 with no exceedances of the PWQOs; and
- All SVOC and VOC concentrations were below their respective analytical detection limits.

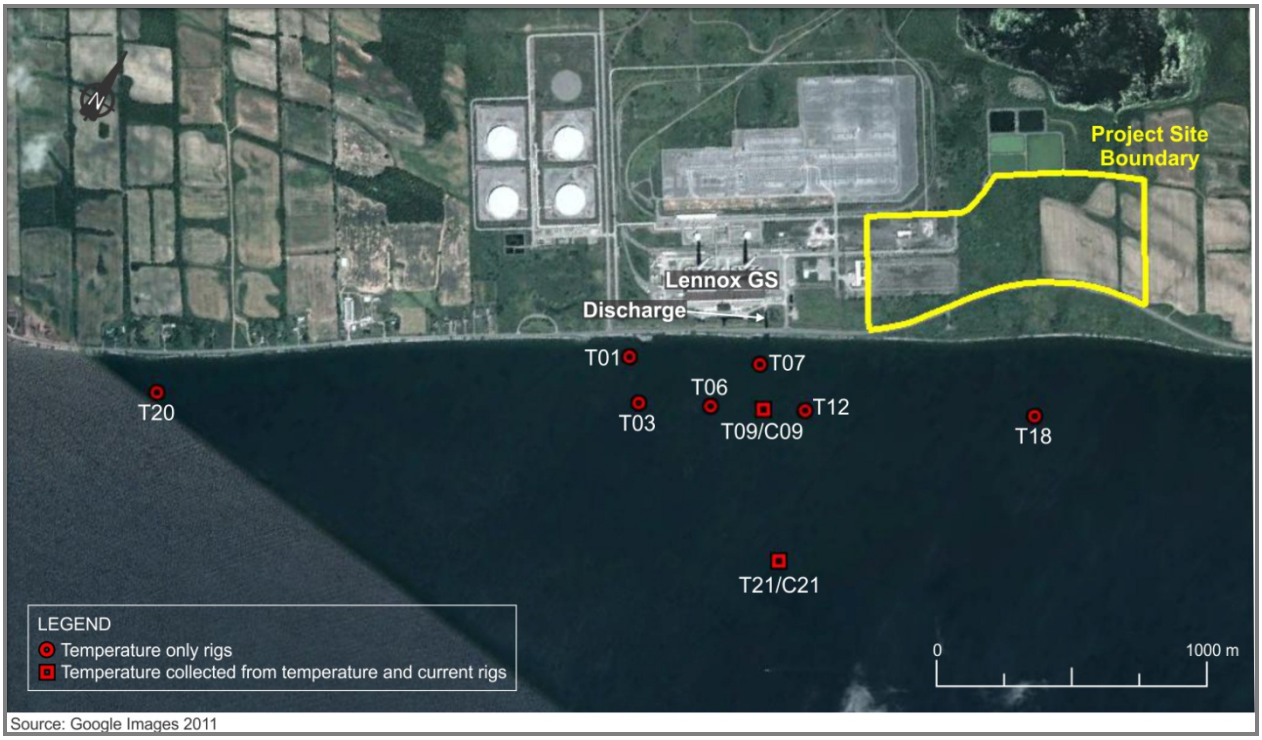
Figure 17 Lake Ontario Water Sample Locations



Thermal Regime

Water temperature data were collected in Lake Ontario from nine sites in the vicinity of the Lennox GS discharge channel outlet: sites T01 and T07 (water depth of 5 m), T20 (10 m), T03, T06, T09, T12 and T18 (20 m), and T21 (30 m) (Figure 18). At each site, temperature loggers were deployed at 1 m from bottom, mid-depth and 1 m from surface. Continuous water temperature measurements were taken at sampling stations T09 and T21.

Figure 18 Lake Ontario Temperature Logger Locations



The mean daily average temperatures in the nearshore region, based on data from nearshore Stations T1 to T12 are 8.30°C, 1.44°C, 8.18°C and 18.19°C in the Fall, Winter, Spring and Summer, respectively. The mean daily average temperatures in the offshore region, based on data from Station T21 are lower, i.e., 6.87°C, 1.38°C, 7.52°C and 16.00 °C in the Fall, Winter, Spring and Summer, respectively. Water temperature was found to vary with depth more during the Spring and Summer than it does in the Fall and Winter.

Existing Lennox GS Forebay and Discharge Channel

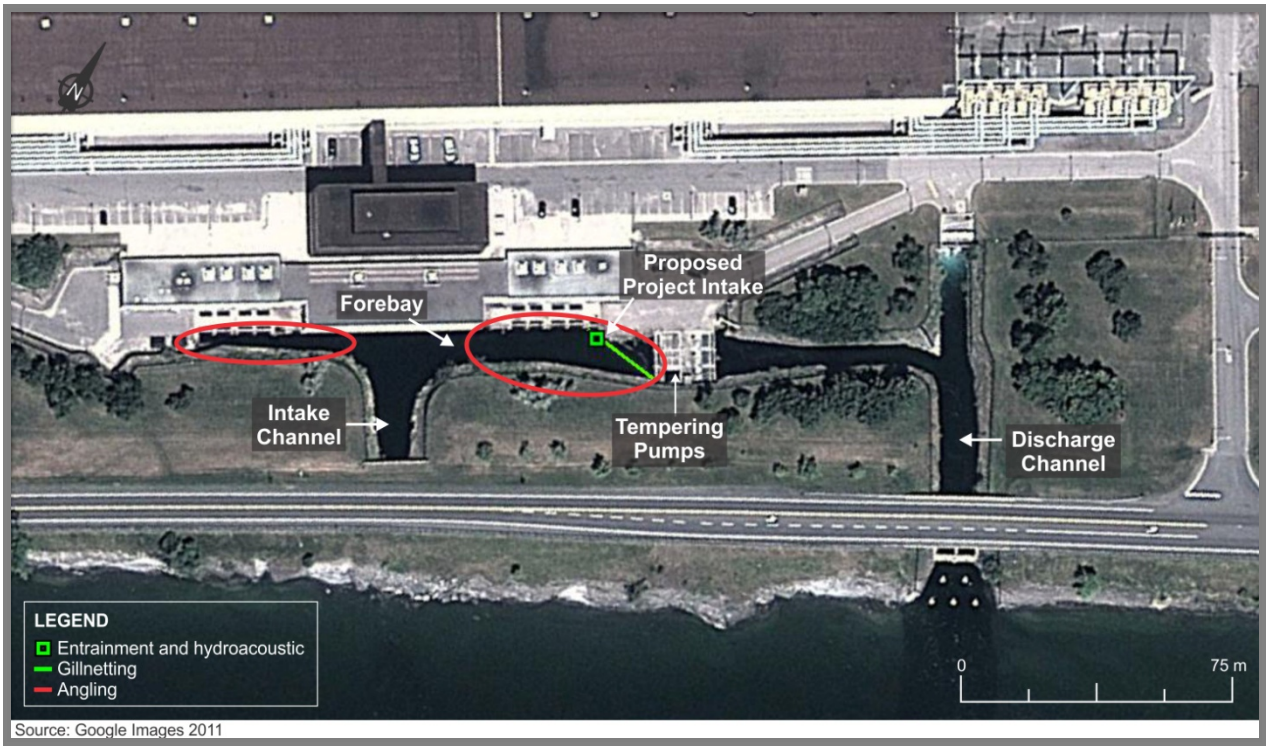
Fish and Fish Habitat

A variety of fisheries techniques were used to assess fish presence and relative abundance and included gillnetting, angling, underwater video and hydroacoustics (sonar) (Figure 19).

Gillnetting was conducted in the Spring and Summer of 2013 in the Lennox GS forebay to help determine fish presence in the forebay, and provide calibration for the hydroacoustic results. The location of the gillnet was intended to sample in the general vicinity of the Project intake pipe.

No fish were collected as a result of this gillnetting in the Lennox GS forebay in either the Spring or Summer.

Figure 19 Lennox GS Forebay Fish Community Sampling Locations



Angling conducted in the forebay resulted in catching 13, Round Goby, an invasive species, approximately 15 to 21 cm in length. All goby were caught from a deep portion of the forebay.

Hydroacoustic and underwater video monitoring were conducted in the Spring and Summer of 2013 for a total of approximately 42 hours of sonar imaging and 47 hours of video recordings. The underwater video recordings and sonar imaging confirmed the presence of few species and relative low abundance of fish. The underwater video coverage across the forebay captured the presence of only solitary or small schools of juvenile yellow perch, and a few individuals of other species over several days monitoring.

No eggs or larvae were collected during the entrainment study in late April/early May. Only round goby eggs were collected in mid to late June 2013 with the highest abundance of eggs collected on June 18, 2013. One adult female round goby was also collected on this day which was gravid with immature eggs.

Aquatic Macrophytes and Benthic Invertebrates

As in the case of Lake Ontario samples, no aquatic macrophytes were observed in the forebay and discharge channel. Benthic macroinvertebrates were also collected in the Spring of 2013 in the Lennox GS forebay and discharge channel at mid-depth (3 m). The submerged rocky areas

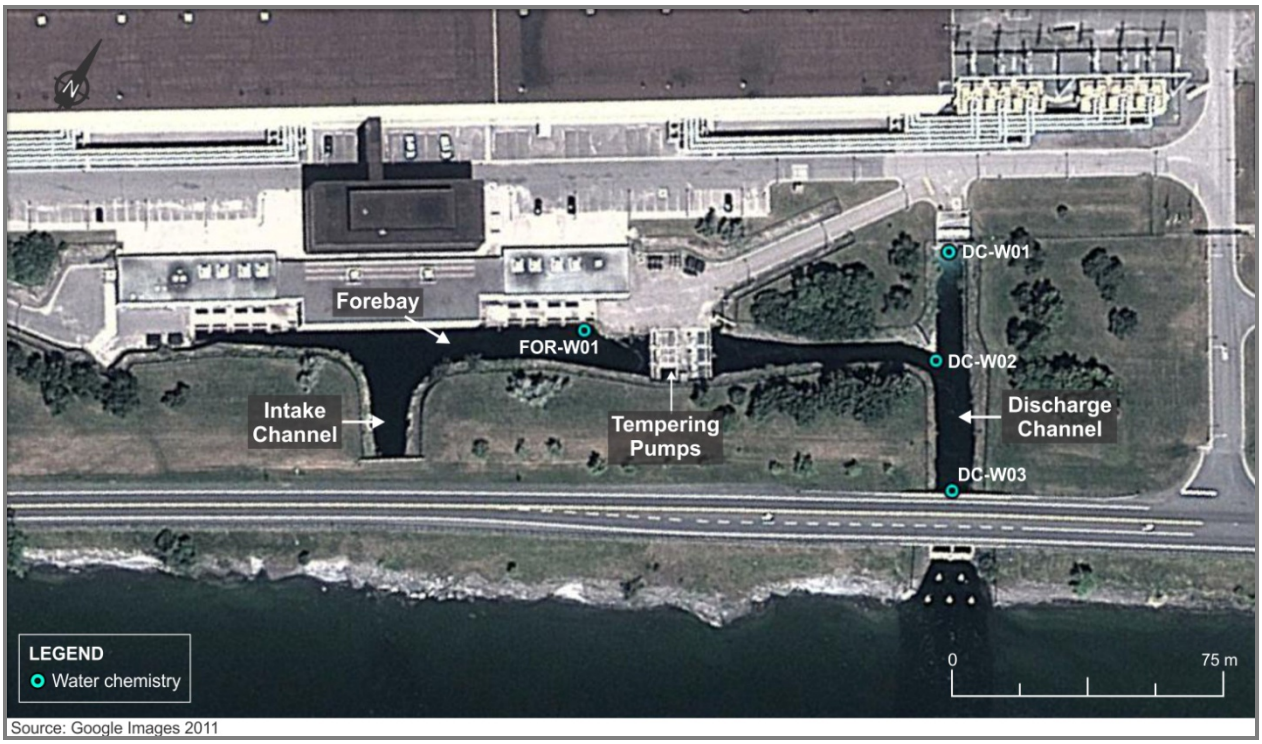
in the forebay and discharge channel are coated with quagga mussels. Chironomid larvae and pupae were predominant in the samples which also included the native amphipod (scud) *Gammarus fasciatus,* New Zealand mud snail, *Potamopyrus antipodarum*.

Three non-native invasive species were also collected; the scud, *Echinogammarus ischnus*, the bloody red shrimp, *Hemimysis anomala*, and the New Zealand mud snail, *Potamopyrgus antipodarum*.

Water Quality

Water samples were collected in the Fall of 2012 and Spring and Summer of 2013 from the northeast end of the Lennox GS forebay (FOR-W01), as well as at three locations in the discharge channel: head of channel (DC-W01), confluence of channel and forebay (DC-W02) and at its outlet (DC-W03) (Figure 20). These water samples were analyzed for inorganic parameters, chlorophyll a and metals. There are no significant differences in the water quality data collected during the Spring and Summer of 2013 and no exceedences of PWQOs or PWQGs for any of the samples.

Figure 20 Lennox GS Forebay Fish Community Sampling Locations



Existing Creeks/Streams

Fish and Fish Habitat

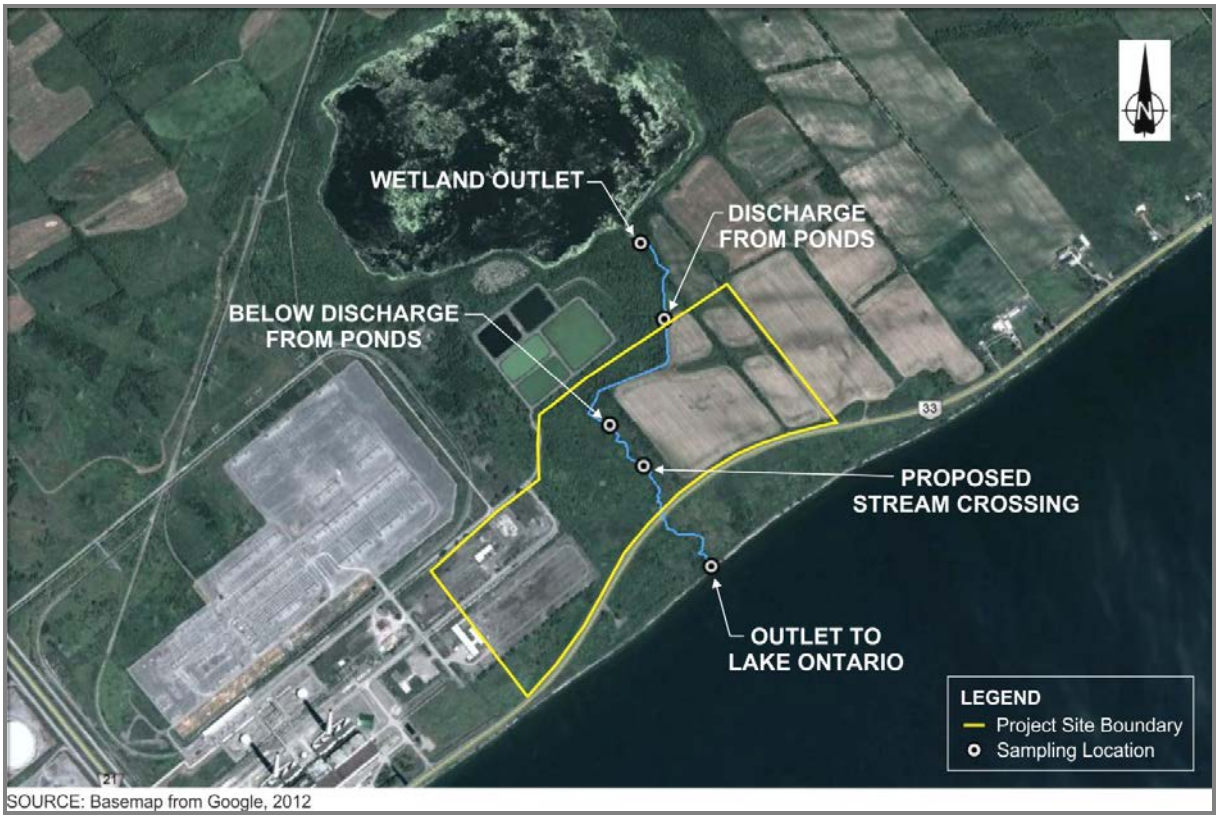
There is a small intermittent creek which runs through the Project site providing drainage for the Lennox Hydro Wetland to the north and the Lennox GS sewage treatment ponds. A baseline study evaluating the creek ecosystem was carried out to assess the potential impacts from future construction activities and increased usage of the sewage treatment ponds on the stream. Information was collected on stream morphology including riparian and aquatic habitat characteristics, water chemistry, sediment chemistry, as well as both benthic invertebrate and fish community assessments. Sampling occurred at five (5) locations (shown on Figure 21) as follow:

- Outlet of the Lennox Hydro Wetland;
- Discharge from the sewage treatment ponds;
- Downstream of the sewage treatment ponds discharge;
- Midpoint along the creek located within the Project site boundary; and,
- Outlet to Lake Ontario.

Creek depths ranged from 2-9 cm with an average depth of approximately 4 cm, too shallow to conduct electrofishing. Fathead minnow were occasionally observed in the intermittent creek during the 2013 aquatic field work during those periods when water was present. In addition, there was no connectivity to lake as a result of barriers to fish movement due to the presence of a collapsed wall located near the mouth of the creek. The creek provides marginal fish habitat due to its intermittent nature and the multiple barriers to movement both upstream and downstream, which would likely preclude the presence of a naturally reproducing resident population.

Collapsed rock wall located near the stream outlet.

Figure 21 Intermittent Creek Sampling Locations



Benthic macroinvertebrate community composition was determined at five locations in the intermittent creek (see Appendix B of Supporting Document 3). Tubificid oligochaetes were the predominant taxon in the three upstream sampling locations. Species diversity was generally higher at the two downstream locations due to the increased occurrence of rocky substrates. The dominance of tolerant benthic macroinvertebrates throughout much of the creek is likely due to its intermittent nature with fluctuating water levels and flows creating a stressful environment, making it difficult for organisms with a low tolerance of disturbance to survive. However, the presence of several low tolerance taxa despite the water regime is indicative of the generally good water quality in the creek.

Water Quality

Water quality in the intermittent creek is considered to be good. The MOEE (1994) PWQO for pH (6.5 – 8.5) was slightly exceeded (8.59) at one of the five sampling locations. Total phosphorus concentrations at all five locations exceeded the interim PWQO suggesting potential contamination from the agricultural fields and/or sewage lagoons. In addition, exceedances of their respective PWQOs (based on total concentrations) occurred for aluminum and iron at all five locations, cobalt at four locations, and cadmium, copper and zinc at one location. However, based on the statistically significant correlations between the metal and total suspended solids

(TSS) concentrations, the elevated metal concentrations likely reflect their association with the relatively high TSS concentrations (10-560 mg/L). None of the dissolved metal concentrations exceeded their respective PWQOs for total metals.

4.2 POTENTIAL EFFECTS RELATED TO FEDERAL LEGISLATION

Any changes that may be caused as a result of carrying out the Project as they relate to federal legislation, specifically the amended *Fisheries Act,* the *Species at Risk Act* and the *Migratory Birds Convention Act*, are described below.

4.2.1 Fish and Fish Habitat (as defined in the *Fisheries Act*)

The Project is not likely to cause any changes to the environment that would affect fish or fish habitat as defined in the amended *Fisheries Act*. A summary of potential effects on fish and fish habitat from construction of the Project intake and discharge system, impingement and entrainment, and discharge (thermal and chemical) are provided below.

Potential Effects During Construction

No aquatic features will be removed during the construction of the Project. Moreover, since the Project will be using the existing Lennox GS forebay and discharge channel, there are no expected fisheries issues associated with habitat loss related to "in-water" work construction activities. However, there is a requirement for a temporary road crossing of the intermittent creek between the Lennox Hydro Wetland and Lake Ontario. The crossing will involve the installation of one or more 1,200 mm diameter culverts and there is the potential to affect the aquatic environment associated with the intermittent creek.

To ensure the aquatic environment is not affected mitigation measures will be implemented. The following general mitigation measures will be followed for construction of the temporary road across the intermittent creek:

- acquisition of all necessary permits and approvals from CRCA prior to crossing construction and adherence to all terms and conditions;
- adherence to the DFO (2010) in-stream timing guideline for Spring spawning fish (March 15 to July 15), or timing restriction indicated in the permits and approvals;
- construction during the Summer under low water flow or dry conditions, as practicable;
- retention of streambank vegetation as long as possible prior to crossing construction;
- prior to vegetation cover removal, implementation of the site-specific Erosion and Sediment Control Plan;
- use of clean 2 to 5 cm granular material backfill (minimum fines) over geotextile with cover of 15 cm around the culverts;

- use of clean 8 to 16 cm rock on each side over geotextile to above the high water mark with minimum 0.3 m cover over the granular material backfill;
- storage and stabilization of any stockpiled material away from the watercourse; and
- restoration of disturbed areas to a pre-disturbed state or better by stabilization and re-vegetation after construction.

In addition to the above, the DFO (2010) Operational Statement for culvert maintenance will be adhered to ensure that it functions as designed. Culvert maintenance includes the removal of accumulated debris that prevents the efficient passage of water through the structure.

Overall, based on the mitigation measures, the effects of the construction of the Project on the aquatic environment are expected to be localized, temporary and negligible.

The aquatic environment, more specifically, aquatic biota and aquatic habitat may be subject to effects from changes to surface water quality. As previously discussed in Section 3.2, during the site preparation phase in advance of construction, soil excavation and site grading activities will occur. During construction, water quality in Lake Ontario, the Lennox GS forebay and discharge channel and the intermittent creek that traverses the Project site as well as associated drainage ditches may be affected by sediment loadings due to accelerated soil erosion, and/or incidental spills of oil, gas, diesel fuel and other liquids to the environment.

In general, construction activities will have a temporary and minimal effect on watercourses and drainage features located on and adjacent to the Project site. As discussed in Section 3.3, during the construction phase, erosion and sediment controls, including the development of an Erosion and Sediment Control Plan will be implemented in parallel with stormwater management controls given the need to minimize off-site deposition of site soils. Both the Erosion and Sediment Control Plan and stormwater management system will ensure there is an enhanced level of treatment (i.e., 80% long-term average total suspended solid removal) of the stormwater prior to discharge from the Project site. A Spills Emergency Preparedness and Response Plan (Sections 3.5.1 and 3.5.2) will also be prepared in order to prevent and/ or mitigate effects due to on-site spills. This Emergency Response Plan will be designed to prevent oil and chemical spills from affecting the aquatic environment.

Overall, based on these applied management plans, the effects of the construction of the Project on the aquatic environment are expected to be localized, temporary and negligible.

Potential Effects from Impingement and Entrainment

For water supply, the Project will use water from the existing Lennox GS forebay. The current USEPA 316b Phase I Final Rule for New Facilities focuses on protecting fish and other aquatic life from being killed or injured by cooling water intake structures (i.e., impingement and

entrainment(I&E)). It was concluded that closed cycle cooling towers are a preferred method of reducing I&E of fish since flow volume is reduced considerably relative to conventional once-through-cooling (OTC) systems (USEPA 2011). USEPA (2011) has estimated that the use of closed cycle cooling can exceed a 90% reduction in I&E relative to OTC systems. During the Project's peak draw (summer conditions) the draw is 40,944,000 L/day (less than 1% of the total cooling water draw at Lennox GS).

Field studies conducted offshore of the Project location in the Fall of 2012 and Spring and Summer of 2013 indicate the presence of important commercial and recreational species including yellow perch, lake trout and walleye, as well as forage fish that support them such as alewife. However, with the exception of juvenile yellow perch, none of these species were observed in the Lennox GS forebay and are unlikely to be drawn into the Lennox GS forebay during the Project operation given the low intake flow velocity and the expected minor increase in water draw of less than 2% of the total cooling water draw for Lennox GS.

The intake pipe for the Project will be designed so that approach velocities in front of the intake pipe will be low enough as to allow fish to avoid I&E. In the Phase I 316b Rule, USEPA (2011) conducted an analysis of fish swim speeds and concluded that a design through-screen velocity of 15 cm/s would be protective of 96% of mobile organisms for large water users (the proposed through-screen velocity at the Project is estimated at approximately 16 cm/s).

With the use of cooling towers, the relatively low abundance of the two fish species observed (round goby and juvenile yellow perch), few fish, eggs and larvae are expected to be entrained or impinged during the Project operation since the increase in water use is less than 1% of the existing Lennox GS volume and because of the low approach velocity. No adverse effect from I&E is anticipated.

Effects from Discharge

Overall, the thermal discharge by the Project is expected to have minimal effect on local fish populations, primarily year-round or short-term attraction of some fish species. With the relatively small temperature differentials, it is highly unlikely that a shutdown of the Project would have a major cold shock effect on sensitive fish species. Model simulations indicate that the discharge temperature at the outlet of the Lennox GS discharge channel, with tempering of the Project thermal discharge, was 5.2°C, which is less than the maximum effluent temperature limit of 32°C stipulated by the existing OPG Certificate of Approval (now ECA) for the Lennox GS. The results of the simulations for all scenarios during Winter, Spring and Summer periods, indicated that the temperature at the discharge channel outlet was well within this temperature limit. It should be noted that the maximum discharge flow from the Project is 16 million L/day which is less than 0.1% of Lennox GS's typical discharge flow 1944 million L/day.

The thermal plume in the Lennox GS discharge channel appears to be influenced by the discharge temperature from the Lennox GS tempering channel rather than from the Project as the discharge volume is an order of magnitude higher than from the Project. Modeling results have indicated that the thermal impact from the Project discharge is minimal during the Spring period which is the period in which many species present in the vicinity of Lennox GS spawn. Temperature increases are expected to be minimal and the area of influence would be very localized. Mixing would occur very quickly with Lake Ontario water.

Although the project is within Bay of Quinte RAP geographic area, the RAP requirements does not apply since all the discharges from the project is to Lake Ontario and not to Bay of Quinte. The RAP requirements apply only to discharges to the bay.

Yellow perch and alewife were included as representative species given their predominance in both spring and summer periods sampling, respectively. For yellow perch and alewife which spawn in the spring, there is no evidence of either the Maximum Weekly Average Temperature (MWAT- a statistic commonly used as representative of long-term or chronic exposure of fish to thermal loadings, one week or longer) or short-term maximum 24-h temperature benchmark exceedance relative to the ambient water temperature data collected during the Spring and Summer). Similar results were found for lake trout comparing water temperature data collected in the fall and early winter. With an increase in discharge thermal loading with the Project operating, exceedances are still not expected since temperature elevations are expected to be minimal during the Spring, Summer and Fall periods.

There was no evidence of thermal exceedances based on both MWAT and short-term 24-h maximum values. The thermal tolerance of the benthic species was well above the maximum temperature and the MWAT found over the year. Therefore, there is no effect on benthic invertebrates.
No adverse effect predicted on aquatic organism.

The quality of the cooling tower blowdown from the Project will adhere to the Municipal Industrial Strategy for Abatement (MISA) requirements. The following proposed effluent limits which are similar to those applied to Lennox GS under the MISA regulation will be met before the discharge to the Lennox GS discharge channel:

- Total Suspended solids: Maximum daily 70 mg/L; Monthly Average: 25 mg/L
- Aluminum: Maximum daily 13mg/L; Monthly average: 4.5 mg/L
- Iron: Maximum daily 2.5 mg/L; Monthly average: 1 mg/L
- Oil and grease: Maximum daily 29 mg/L; Monthly average: 13 mg/L
- pH: 6.0 -9.5
- Effluent must be non-acutely lethal to rainbow trout and Daphnia Magna

4.2.2 Aquatic Species (as defined in the *Species at Risk Act*)

There are no known aquatic species as defined in the *Species at Risk Act* that will be adversely affected by the project. Sampling results from both Fall Spring and Summer fish surveys conducted in the lake and Lennox GS forebay using different gear types have not indicated the presence of any SAR species.

4.2.3 Migratory Birds (as defined in the *Migratory Birds Convention Act*)

The Project site is within an area known for concentrations of migratory birds and there is the potential for death or injury of birds as a result of bird strikes on the two heat recovery steam generator stacks and the cooling tower.

It is also important to recognise that nocturnal migrating birds move on a broad front and that they are seldom flying at altitudes below 150 m above ground level unless preparing for landing. Their take-off and landing angles are steep. They tend to be most vulnerable during inclement weather when they may have to fly at lower altitudes. However, at these times they tend to become quickly grounded.

The cooling tower for the Project is approximately 14.5 m tall and this height is not considered a factor of concern for migrant birds. The heat recovery steam generator stacks are approximately 6.4 m in diameter and approximately 61 m tall. Given the height of these two stacks it is unlikely that they will result in bird strikes.
Of greater importance are the lighting arrangements both for the cooling tower and two heat recovery steam generator stacks. Without mitigation providing for appropriate lighting, bird kills could be anticipated during weather events in Spring or Fall, even with the relatively short height of the cooling tower.

External lighting is key to mitigating bird strikes. Lighting should be provided only as required and efforts should be made to minimize both the number of external lights and their luminosity. All stacks should not be lit with continuous lighting; rather, strobe lights should be used with a maximum admissible off-period (as per Transport Canada requirements). Other external lighting should be down facing and shielded to the maximum extent practicable. No tree or shrub landscaping should be placed within 30 m of reflective glass windows, or non-reflective glass should be used.

There are no concerns associated with birds on Amherst Island and proximity to the Project site Raptors do not fly back and forth across the lake and there is nothing particularly attractive about the Project site for these species.

4.3 POTENTIAL EFFECTS ON FEDERAL LANDS

The Project will have no adverse effect on federal lands, a province other than Ontario, or outside of Canada.

4.4 POTENTIAL EFFECTS ON ABORIGINAL PEOPLES

The Project is not anticipated to have any potential adverse effects on Aboriginal peoples, including adverse effects on health and socio-economic conditions, physical and cultural heritage, the current use of lands and resources for traditional purposes, or any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.

There is a known Aboriginal burial ground located south of the site on the south side to Loyalist Parkway. The Project has no potential to adversely affect on the burial ground or use of those lands.

As discussed in Section 2.3 (under the heading Proximity to Federal Lands, Reserves and Traditional Territories), a single Aboriginal pre-contact projectile point was discovered on the Project site and has been identified as an isolated findspot. This projectile point was identified as an arrowhead lost during hunting activities which occurred during the Middle Woodland time period (300 B.C. to 700 A.D.). The Mohawks of the Bay of Quinte were notified of the discovery of the findspot.
Results of the *Stage 1 and 2 Archaeological Assessment for the Napanee Generation Station Supporting Document 8* (Supporting Document 8) (Advance 2011), determined that the findspot where the Aboriginal pre-contact projectile point was recovered does not require any further assessment and that there are no further archaeological concerns for the Project site.

No negative effects are anticipated on traditional lands and resources and therefore mitigation will not be required.

4.5 MITIGATION AND MANAGEMENT OF ENVIRONMENTAL EFFECTS

TransCanada has corporate environmental policies that reflect the commitment to reducing environmental degradation and properly mitigating environmental releases. The Project will build on these to develop its own environmental policies and plans.

Table 4 summarizes the mitigation and impact management measures that TransCanada commits to implement as part of the construction and operation of the Project. Table 4 also provides the effects of the construction and operation phases, after mitigation (i.e., residual effects).

Table 4 Summary of Potential Effects, Mitigation and Residual Effects

Potential Effects	Mitigation/Impact Management	Residual Effect
Construction Phase		
Disturbance to residents and wildlife due to construction dust	• Best management practices to manage dust	Negligible effect
Effects to air quality from construction vehicle emissions	• Use of well-maintained equipment to minimize emissions	Negligible effect
Soil erosion and stormwater runoff from construction site	• Implementation and adherence to Erosion and Sediment Control Plan and SWM Plan	Negligible effect
Incidental spills of oil, gasoline and other liquids	• Implementation and adherence to Hazardous Materials Management Plan, Waste Management Plan and Spills Emergency Preparedness and Response Plan	Negligible effect
Disturbance of aquatic habitat in intermittent creek from construction of temporary road	• Appropriate placement and removal of culvert in adherence to CRCA permit conditions • Appropriate maintenance of culvert during construction	Negligible effect
Loss of vegetation communities and associated wildlife habitat	• Two restoration areas identified to mitigate loss of habitat and located to maximize benefits to wildlife • Active agricultural land will be restored upon construction completion	Negligible effect in context of surrounding area or region
Wetland Loss (0.29 ha)	• Reconstruct approximately 0.29 ha of wetland in re-routed drainage channel	Negligible effect
Disturbance of nesting birds	• Vegetation clearing must not disturb nesting birds and to be undertaken outside the migratory bird breeding season (April 15 to August 15)	Minor effect in context of surrounding area or region

Table 4 Summary of Potential Effects, Mitigation and Residual Effects (Cont'd)

Potential Effects	Mitigation/Impact Management	Residual Effect
Construction Phase		
Disturbance of habitat for endangered species: loss of Barn Swallow territory and partial loss of habitat for one pair of eastern meadowlark	• Mitigation to be demonstrated and approved through the *Endangered Species Act* permitting process • Mitigation must result in an overall positive effect	Positive effect
Disruption of landscape connectivity for wildlife movement	• Detailed design to incorporate measures to deter road crossings and encourage small mammals and herpetofauna to cross under the road that crosses the riparian corridor • The 15 m riparian buffer along the north side of the lay down area will also assist in maintaining north – south connectivity • After construction removal of access road and culvert and restoration of disturbed areas with planting of appropriate native vegetation	Negligible effect
Disturbance of wildlife due to construction noise and blasting	• Best management practices to diminish blasting and other noise • Where possible, avoid blasting March 30 to July 15 or monitor wildlife response and be prepared to further mitigate blasting • Provide alternate Osprey nesting platform to west • Move and maintain Purple Martin boxes to west side of Lennox GS station	Negligible effect
Disturbance to residents due to construction noise and blasting	• Observe the equipment noise emission standards from MOE publication NPC-115 (Construction) • Observe the requirements of the Town of Greater Napanee By-Law No. 04-60 (time prohibitions) • Ensure construction equipment is equipped with appropriate muffling devices • Vibration levels from blasting not anticipated to be perceptible at residences; sound from blasting will be perceptible and may be source of annoyance however, residents will be advised of blasting schedule in advance to minimize disturbance	The sound of blasting (air blast) will be perceptible and may be a source of annoyance for some residents however, it will be limited and of short duration.

Table 4 Summary of Potential Effects, Mitigation and Residual Effects (Cont'd)

Potential Effects	Mitigation/Impact Management	Residual Effect
Operation Phase		
Changes to air quality as a result of operation	• Use of SCR and other state-of-the-art equipment to minimize emissions • Emergency diesel generator will only be tested between 8:00 a.m. and 7:00 p.m.	Negligible effect
Negligible change to health and ecological risk as a result of changes to air quality	• No mitigation	Negligible effect
Potential for fogging of 5-20 hours per year and icing 2- 10 hours per year over Loyalist Parkway if Project is operated continuously 365 days per year	• Project will only operate 11-67% of the time therefore, these effects are likely to be much less	Negligible effect
Stormwater runoff	• Implementation and adherence to SWM Plan	Negligible effect
Wastewater discharges	• Treatment using "best available technology" • Use of existing Lennox GS sanitary sewer collection and treatment system (i.e., sewage lagoons) • Removal to approved off-site disposal	Negligible effect
Incidental spills of oil, gasoline and other liquids	• Implementation and adherence to Hazardous Materials Management Plan, Waste Management Plan and Spills Emergency Preparedness and Response Plan	Negligible effect
Use of chlorination for biofouling and quagga mussel control	• Dechlorination system will reduce TRC to acceptable levels • Continuous TRC monitoring during chlorination/dechlorination procedures	Negligible effect
Impingement and entrainment of fish and other aquatic biota	• Low approach velocity at intake to be protective • Incremental flow of water is less than 2% of Lennox GS volume	Negligible effect
Thermal loadings	• Use of tempering water, if necessary • In-line monitoring	Negligible effect

Table 4 Summary of Potential Effects, Mitigation and Residual Effects (Cont'd)

Potential Effects	Mitigation/Impact Management	Residual Effect
Operation Phase		
Bird Strikes	• All stacks should not be lit with continuous lighting, rather, strobe lights should be used with a maximum admissible off-period • Other external lighting should be down facing and shielded to the maximum extent practicable. • Lighting should be provided only as required and efforts should be made to minimize both the number of external lights and their luminosity. • No tree or shrub landscaping should be placed within 30 m of reflective glass windows, or non-reflective glass should be used.	Negligible effect
Disturbance of wildlife due to operational noise	• Provide alternate Osprey nesting platform to west • Maintain and move Purple Martin boxes to west side of Lennox GS	Negligible effect
Disturbance of residents due to operational noise	• Noise mitigation has been incorporated into the design of the Project such that noise from operations will be compliant with the MOE criteria	Negligible effect
Effects to existing land uses, community services and tourism and recreation	• Effects associated with operation of the Project will not alter existing land uses, community services or tourism and recreation	Negligible effect

4.6 MONITORING

All monitoring programs dealing with air emissions, water taking, wastewater and stormwater discharges will be done in accordance with the appropriate approval specifications and requirements, particularly the terms and conditions of approval for the respective MOE ECA or permits. All monitoring will be conducted according to the standard accepted methods for sample collection and analyses. Monitoring will be part of an overall Environmental Management Plan for the Project. Table 5 summarizes monitoring efforts.

Table 5 Environmental Monitoring Summary

Monitoring Location	Collected Media	Parameters of Interest
Construction		
Water crossing at Intermittent Creek	Observational monitoring (during construction period)	Objective is to ensure the efficacy of the implemented erosion and sediment control plan.
Locations of heronry breeding	Observational heronry monitoring (during pre-construction and construction)	Objectives are to: • Ensure that construction operations will not result in measurable disturbance to the nesting herons and their young; and • Provide a basis to issue a stop work notice should the need arise.
Locations of other breeding birds	Observational monitoring of other breeding birds such as nesting swallows (during pre-construction and construction), if blasting is to occur during the breeding season	Objectives are to: • Ensure that construction operations will not result in measurable disturbance to the breeding birds and their young; and • Provide a basis to issue a stop work notice should the need arise.
Operation		
Gas turbines	Air concentrations (Continuous Emissions Monitors)	Parameters to be monitored continuously throughout Project operation and reported on as required: NO_x, CO, O_2
Water crossing at Intermittent Creek	Surface water (during operational period, after the removal of the temporary crossing)	Water chemistry parameters similar to those in the existing environment monitoring program would be used to determine if there are any effects on the creek from Project operation
Intake for Project	Fish: eggs, larvae, juveniles and adults (during the first year of the operational period)	Presence and abundance of different fish stages impinged and/or entrained during Project operation to confirm significance of losses.
Waste water discharge	Contaminant and thermal loadings	Water chemistry parameters, including temperature, similar to those in the existing environment monitoring program will be used to confirm discharge concentrations and model predictions.

5.0 ENGAGEMENT WITH ABORIGINAL COMMUNITIES

This section provides an overview of TransCanada's engagement with Aboriginal communities. A more detailed description is provided in the *Public and Agency Consultation for the Napanee Generating Station Supporting Document 7* (Supporting Document 7) (SENES 2013d).

5.1 LIST OF ABORIGINAL GROUPS ENGAGED TO-DATE

Table 6 provides a list of Aboriginal groups engaged by TransCanada that may be interested in, or potentially affected by, the Project. As required by the Guide, contact information for these groups is also provided.

Table 6 List of Aboriginal Groups Engaged To-date

Aboriginal Group	Contact Person, Title	Contact Information
Mohawks of the Bay of Quinte	Dan Brant, Chief Administrative Officer	13 Old York Road, Tyendinaga Mohawk Territory, ON K0K 1X0 Phone: 613-396-3424 Email: danb@mbq-tmt.org
Métis Nation Ontario Region 6		993 Princess Street - Suite 206 Kingston, ON K7L 1H3 Phone: 613-634-9738 Fax: 613-634-4103 elainej@metisnation.org
Curve Lake First Nation	Krista Coppaway, or Melissa Dokis, Liaison	22 Winookeeda Drive Curve Lake ON K0L 1R0 Phone: 705-657-8045 Fax: 705-657-8708 Email: kdutytoconsult@curvelakefn.ca
Hiawatha First Nation	Lori Ritter, or Diane Sheridan, Lands Ressources/ Consultation	123 Paudash Street RR 2 Keene, ON K0L 2G0 Phone: 705-295-4421 Email: lritter@hiawatha.ca, dsheridan@hiawathafn.ca
Alderville First Nation	Dave Simpson, Land Code Coordinator	P.O. Box 46, 11696 2nd Line Rd Alderville, ON K0K 2X0 Phone: 905-352-2662 Email: dsimpson@aldervillefirstnation.ca
Mississaugas of Scugog Island First Nation	Dave Mowat, Community Consultation Specialist	Administration Building 22521 Island Road Port Perry, ON L9L 1B6 Email:consultation@scugogfirstnation.com
Kawartha Nishnawbe First Nation	Kris Nahrgrang, Chief	P.O. Box 1432 Lakefield, ON K0L 2H0

5.2 DESCRIPTION OF ENGAGEMENT ACTIVITIES TO-DATE

Engagement activities to date are provided in Table 7 below.

Table 7 Engagement with Aboriginal Communities

Description of Aboriginal Engagement	Date(s)
Contact with Mohawks of the Bay of Quinte First Nation to introduce the Project and Project team members. An invitation to set up a meeting was extended and contact information was provided in the event there were any questions, comments, or concerns.	October 24, 2012
Introductory phone call to Mohawks of the Bay of Quinte providing an introduction to the Project and an invitation to discuss the Project.	November 2, 2012
Notification letters sent. The package included an invitation to Open House #2, pamphlets addressing Aboriginal Relations and how TransCanada operates with respect for its stakeholders, Notice of Commencement, Open House #1 Q & A, Napanee Generating Station Fact Sheet, and information displayed at Open House #1. Letters were sent to the following First Nations: • Alderville First Nation; • Hiawatha First Nation; • Curve Lake First Nation; • Mississaugas of Scugog Island First Nation; • Mohawks of the Bay of Quinte First Nation; and • Métis Nation of Ontario Region 6	February 28, 2013
Contacted Aboriginal communities to follow up on, and request feedback, expression of interest regarding, and whether they had questions regarding the Notice of Commencement that was mailed on February 28, 2013.	March 11, 2013
Contact with Alderville First Nation to set up meeting with Chief and Council.	March 18, 2013
Notification letter and package sent to Kawartha Nishnawbe First Nation.	April 17, 2013
Meeting with Mohawks of the Bay of Quinte CAO to determine the nature of the community's interest in the Project.	April 21, 2013

Table 7 Engagement with Aboriginal Communities (Cont'd)

Description of Aboriginal Engagement	Date(s)
Meeting with Chief and Council – Mohawks of the Bay of Quinte First Nation. The Chief presented a letter to the TransCanada Project team.	April 24, 2013
Meeting with Alderville First Nation representative	April 24, 2013
Presentation and Meeting with Chief and Council – Alderville First Nation	May 10, 2013
Presentation and Meeting with Chief and Council – Mohawks of the Bay of Quinte First Nation	May 31, 2013
Initial preliminary discussion on direction for the Mohawks of the Bay of Quinte's request for a relationship with TransCanada and content for an MOU / relationship document.	June 14, 2013
TransCanada endeavoured to contact the CAO of Alderville First Nation to discuss and set-up subsequent meetings. He would not be available for a few weeks.	June 19, 2013
Meeting with Mohawks of the Bay of Quinte to discuss programs that TransCanada may want to partner with the community on.	June 24, 2013
Inquiry with Mohawks of the Bay of Quinte about their interest in being present on the first day of field work in the Stage 2 archaeological assessment of the Project site. A member was not available to attend at this time.	June 27, 2013
Voice message was left for Mohawks of the Bay of Quinte informing them of the finding of an artifact during the day's archaeological assessment field work.	June 27, 2013
Inquiry with Mohawks of the Bay of Quinte about their interest in being present on the second day of field work in the archaeological assessment of Project site. A member was not available to attend at this time.	July 2, 2013
TransCanada provided a response letter to that issued by the Chief to TransCanada on April 24.	July 12, 2013
Site visit by a member of the Mohawks of the Bay of Quinte during archaeological field work in Project site.	July 31, 2013
Sent invitation to Mohawks of the Bay of Quinte for a representative to participate in Architectural and Landscaping Advisory Committee and notice of first meeting on August 22, 2013.	August 15, 2013
Community Open House for Alderville First Nation	September 9, 2013
Community Open House for Mohawks of the Bay of Quinte	September 10, 2013

5.3 OVERVIEW OF KEY COMMENTS AND CONCERNS AND TRANSCANADA'S REPONSES

Alderville First Nation has indicated that the Project site is located in their traditional territory. The Mohawks of the Bay of Quinte First Nation have acknowledged Mohawk attachment to the Project site lands. They have participated in the Project Phase 2 archaeological assessment as they had requested. They also seek a beneficial relationship to be developed in further discussions with TransCanada.

On September 9, 2013, TransCanada held an open house for the Alderville First Nation community. On the following day, September 10, 2013, an open house was also held for the Mohawks of the Bay of Quinte First Nation. These open houses were held in each respective community in order to provided details about the Project and the ERR process, including the studies that were conducted in support of the ERR. In addition, the open houses provided an opportunity for input from the community into the ERR process as well as addressing questions, comments, and concerns.

In general, the most common questions and concerns that have resulted from consultation with these Aboriginal communities thus far pertained to:

- Air quality;
- Economic benefits and jobs;
- Effects on air, water, and wildlife;
- Environmental effects; and
- Questions about how the cooling tower functions.

5.4 OVERVIEW OF INFORMATION OF CURRENT USE OF LANDS AND RESOURCES

There has been no indication that the immediate vicinity of the Project site is used for traditional purposes by any Aboriginal group.

5.5 ABORIGINAL ENGAGEMENT PLAN FOR THE PROJECT

The communities that have indicated an interest in further discussion are Mohawks of the Bay of Quinte First Nation and the Alderville First Nation. Scugog, Curve Lake, Hiawatha and the Métis Nation of Ontario have all received a package and two follow up contacts by email and telephone respectively but have not responded. As the package was sent to the Kawartha Nishnawbe First Nation at a later date, this community has yet to comment and respond as well.

TransCanada anticipates meeting with these Aboriginal groups to address any concerns and to establish a beneficial relationship as good neighbours who recognize the historic interests of these communities in the area of the Project.

6.0 CONSULTATION WITH THE PUBLIC

This chapter provides an overview of public and agency consultation for the Project. A more detailed description is provided in Supporting Document 7.

6.1 LIST OF STAKEHOLDERS CONSULTED TO-DATE

The following is a list of stakeholders consulted to-date that may be interested in, and potentially affected by, the carrying out of the Project.

- **Federal Agencies**
  - Aboriginal Affairs and Northern Development Canada
  - Canadian Environmental Assessment Agency
  - Environment Canada
- **Provincial Agencies**
  - Independent Electricity System Operator
  - Ontario Ministry of Aboriginal Affairs
  - Ontario Ministry of Agriculture, Food & Rural Affairs
  - Ontario Ministry of Energy
  - Ontario Ministry of Infrastructure
  - Ontario Ministry of Municipal Affairs and Housing
  - Ontario Ministry of Natural Resources
  - Ontario Ministry of Northern Development and Mines
  - Ontario Ministry of the Environment
  - Ontario Ministry of Tourism, Culture and Sport
  - Ontario Ministry of Transportation
  - Ontario Provincial Police
- **Citizen's/Community/Environmental Groups**
  - Association to Protect Amherst Island
  - Clean Air Bath
  - Ducks Unlimited
  - Empey United Church AOTS Group
  - Greater Napanee's Heritage/Street Smarts Committee
  - Kingston Field Naturalists
  - Lake Ontario Waterkeeper
  - Lennox and Addington Land Care
  - Loyalist Environmental Coalition
  - Protect Amherst Island
  - Sandhurst Shores Ratepayers' Association
  - Loyalist Parkway Association

- United Empire Loyalist Heritage Centre

- **Businesses**
  - Breaking Bread Bistro
  - Union Gas

Economic Development Organizations

- Napanee & District Chamber of Commerce
- Napanee Rotary
- Prince Edward/Lennox & Addington Community Futures Development Corporation
- Lennox and Addington County Economic Development Coalition

- **Unions/Professional Organizations**
  - Institute of Power Engineers (IPE) – Kingston Chapter
  - Millwright Local 1410
  - Boilermakers Local 128
  - Building and Construction Trades Council
  - Career Edge – Lennox and Addington
  - Carpenters – Kingston Local
  - IBEW Local 115
  - Insulators Local 95
  - Ironworkers Local 765
  - Labourers Local 247
  - LiUNA
  - Painters District 46
  - Sheet Metal Local 269
  - UA (Plumbers) Local 401
- **Media**
  - MyFM Radio 88.7, serving Greater Napanee, Belleville, and Kingston
  - Napanee Guide
  - The Napanee Beaver
  - Kingston Whig-Standard
  - Kingston Frontenac This Week
  - Picton County Weekly News
  - Belleville Intelligencer
  - Aboriginal Community Newsletters for the Mohawks of the Bay of Quinte and Alderville First Nation
  - KWE Radio, serving the Mohawks of the Bay of Quinte

- **Town and County Elected Officials and Staff**
  - Amherst Island
  - County of Lennox and Addington
  - Loyalist Township
  - Town of Greater Napanee
  - Prince Edward County
- **Other**
  - Career Edge-Lennox & Addington
  - Cataraqui Region Conservation Authority
  - Hydro One

  - Kingston, Frontenac and Lennox & Addington Public Health
  - Legislative Assembly of Ontario (MP and MPP)
  - Ontario Power Generation
- **Area residents/site neighbours**
- **General public**

6.2 KEY CONSULTATION ACTIVITIES AND MILESTONES

TransCanada has been conducting broad-based and focussed stakeholder consultation activities on an ongoing basis since project commencement. Broad-based activities have included the following, and are discussed in further detail in the following sections:

- Project contact list and stakeholder engagement tracking database;
- Project website;
- Media communication;
- Project mailouts;
- Local community liaison representative and outreach office;
- Notice of Commencement;
- Open House;
- Tour of Halton Hills Generating Station; and
- Jobs Information Session.

Focussed consultation activities entail those activities which have been undertaken with specific stakeholder groups in order to meet their unique needs. The following groups and entities have been consulted on a focussed basis:

- Site Neighbours and Local Residents;
- Municipal and County Elected Officials and Staff;
- Trades, Businesses, Vendors, Unions, and Prospective Employees; and
- Local Environmental and Community Interest Groups.

TransCanada commenced engagement with site neighbours in October 2012, following the announcement by TransCanada related to developing the Project on the existing Lennox GS site. Recognizing that site neighbours would have a heightened level of interest in the Project and could provide valuable input to the project team regarding potential issues, questions, and concerns, TransCanada has met with many of the site neighbours on an individual and group basis. TransCanada has endeavoured to meet regularly with representatives of seven neighbouring households located northeast of the Project site (approximately 15 individuals) in order to better understand concerns, and seek to address issues where possible. Between January and October of 2013, TransCanada met these neighbours as a group three times and have had numerous informal discussions and correspondence with this neighbours' group. These meetings

provided an opportunity to share details about the Project, to identify areas of interest and concern, and to ask questions of the project team. Where possible, project team members answered questions at these meetings, and where follow up was required, formal responses were provided. Please refer to Supporting Document 7 for further details.

Other focussed consultation activities throughout project development included several informal and formal meetings and discussions held by TransCanada with elected officials and staff of the Town of Greater Napanee, the County of Lennox and Addington, and Loyalist Township. Meetings and discussions have also been held with regulatory agencies throughout the EA process, to seek and incorporate feedback and expertise into TransCanada's Project development. In addition, TransCanada has also met with unions, businesses, and local environmental and community interest groups. Details are also outlined in Supporting Document 7.

In addition, TransCanada established an Architectural and Landscaping Advisory Committee (ALAC) in August 2013 with membership from local stakeholders, to gather input on architectural and landscaping elements of the Project. The purpose of the committee is to provide stakeholders with the opportunity to provide input on the architectural and landscaping elements of the Project. The committee is comprised of one member from each of the following groups:

- Site Neighbours;
- Town Council, Town of Greater Napanee;
- Loyalist Parkway Association;
- The Mohawks of the Bay of Quinte;
- Lennox and Addington Tourism; and
- Lennox and Addington Land Care.

Table 8 provides a list of key consultation activities/engagement milestones (non-Aboriginal) and corresponding dates on which they were conducted.

Table 8 Key Stakeholder Consultation Activities To-date

Description of Stakeholder Consultation Activities/Milestones	Date(s)
Commencement of engagement with local stakeholders including site neighbours and municipal elected official	October 1, 2012
Meetings with site neighbours, the Mayor and Councillors, as well as members of the Town's Chamber of Commerce , and meetings with the County of Lennox and Addington	October 2012 to August 2013
Established project voice mail and email box	October 2012
Established a project website	December 2012
Letter to stakeholders announcing the signing of the agreement with the OPA for the Project	December 2012
Presentation to Town Council (Town of Greater Napanee)	January 2013
Notice of Commencement and invitation to first Open House distributed by regular mail and email to stakeholders on contact list	January 2013
Notice of Commencement and invitation to first Open House distributed via hand delivery to area residents and site neighbours	January 2013
Notice of Commencement and invitation to first Open House published in local newspapers	Round 1 – week of January 21, 2013 Round 2 – week of January 28, 2013
Meeting with site neighbours group	January 2013
First Open House	February 11, 2013
Presentation to local groups including Institute of Power Engineers, local community church group, County of Lennox and Addington	February 2013
Conducted a facility tour of the Portlands Energy Centre for Town of Greater Napanee Mayor and members of Council	February 26, 2013
Letter offering to fund a peer review of the ERR sent to Town of Greater Napanee	March 2013
Local TransCanada Project Office opens	May 2013
Second meeting with site neighbours' group	May 2013
Presentation to members of the Building and Construction Trades of Ontario and Building Trades Union Representatives	May 15, 2013
Jobs Information Session	June 13, 2013
Third meeting with site neighbours' group	July 2013

Table 8 Key Stakeholder Consultation Activities To-date (Cont'd)

Description of Stakeholder Consultation Activities/Milestones	Date(s)
Meetings with key agencies to introduce the Project and discuss various aspects of the project pertinent to their area of interest and jurisdiction including:	
▪ Ministry of the Environment	November 20, 2012
▪ Canadian Environmental Assessment Agency	January 28, 2013
▪ Ministry of the Environment (Kingston Branch)	March 13, 2013
▪ Cataraqui Region Conservation Authority	March 13, 2013
▪ Ministry of the Environment	April 3, 2013
▪ Ministry of the Environment (Air Standards Branch, Approvals Branch, Toronto Office)	April 9, 2013
▪ Ministry of Transportation	April 19, 2013
▪ Ministry of the Environment and Ministry of Transportation	July 9, 2013 July 9, 2013
▪ Ministry of the Environment and Ministry of Transportation	August 16, 2013
▪ Ministry of the Environment	October 8, 2013
Architectural and Landscaping Advisory Committee Meetings	August 22, 2013 and September 12, 2013
Invitation to second Open House and notice of release of Draft ERR distributed by regular mail and email to stakeholders on contact list	September 27, 2013 (mail) October 1, 2013 (email)
Notice of Commencement and invitation to second Open House distributed via hand delivery to area residents and site neighbours	September 30, 2013
Notice of Commencement and invitation to second Open House published in local newspapers	Round 1 – week of September 30, 2013 Round 2 – week of October 7, 2013 Round 3 – week of October 14, 2013

6.3 MUNICIPAL PEER REVIEW

In March 2013, TransCanada agreed to fund an independent peer review of the Project ERR in order to facilitate the Town of Greater Napanee's understanding of and input to the Environmental Review process. The peer review process would ensure that the Town was provided with a means of evaluating the Project environmental studies. TransCanada agreed to offer funding to reimburse any costs incurred by the Town in engaging a qualified independent consultant to peer review the ERR. TransCanada formalized its commitment by publishing a letter to the editor in the Napanee Guide offering to fund the peer review of the ERR following its commitment.

To date, the peer reviewer for the Town of Greater Napanee has asked questions and provided comments and input pertaining to the ERR which TransCanada continues to address in a timely manner. Meetings with the peer reviewer are scheduled to take place in the coming weeks.

In addition to the funding of the peer review of the ERR, TransCanada expects to execute a development agreement and a site plan agreement in association with the site plan approval process with the Town of Greater Napanee that will entrench NGS specific commitments and fees.

6.4 STAKEHOLDER COMMENTS AND CONCERNS AND TRANSCANADA'S RESPONSES

An overview of key stakeholder comments and concerns expressed to-date, as well as responses provided by TransCanada is summarized in the Open House Q&A document, available on the project website (www.NapaneeGS.com).

In general, stakeholder comments have focused on:

- Potential benefits to the local area (jobs during construction and operations, taxes, local spend);
- Environmental Review Report and process;
- Need for the Project;
- Project design and technology;
- Potential construction related effects (air and noise emissions, traffic, effects on wildlife, etc.);
- Potential operations related effects (air and noise emissions, aesthetics, effects on wildlife etc.); and
- Aesthetics of the Project.

6.5 OVERVIEW OF ONGOING OF STAKEHOLDER CONSULTATION ACTIVITIES

Ongoing stakeholder consultation is being conducted by means of utilizing several broad-based communication tools and activities. Broad-based tools and activities refer to activities undertaken for all stakeholder groups, and in which all stakeholder groups could choose to participate. These are briefly described below.

6.6 STAKEHOLDER TRACKING DATABASE AND PROJECT CONTACT LIST

A stakeholder tracking database which includes a project contact list developed for the Project is being used to record contact information of all stakeholders and track communication /consultation activities (including emails, phone calls, meetings etc.) related to the Project. The tracking database and contact list serve as a starting point for all project-related communication. At present, the list totals approximately 400 entries.

6.7 PROJECT WEBSITE

The Project website www.NapaneeGS.com hosted on the TransCanada website includes the following information:

- Introduction to the Project;
- Project Timelines;
- TransCanada Contact Information;
- A Project Fact Sheet;
- Jobs and other Project benefits;
- Environmental studies;
- Opportunities for stakeholder engagement;
- A copy of a presentation to Council of the Town of Greater Napanee by TransCanada;
- Open House Q&A document, display boards and presentation;
- Notice of Commencement and Invitation Letter to the Open House;
- Open House Q&A document, display boards and presentation;
- TransCanada Corporate Profile.

This website is periodically updated with new publications and Project milestone information. The website functions as a central point of access for stakeholders to obtain pertinent and up-to-date Project information.

6.8 TOLL-FREE TELEPHONE LINE AND E-MAIL

A toll-free telephone line and email box was set up for the project to provide stakeholders a means of contacting TransCanada with questions, comments and concerns at their convenience. The voicemail box and email box are monitored daily, and TransCanada is committed to responding to stakeholder requests in a timely matter.

6.9 PROJECT MAILOUTS

TransCanada will continue to keep all interested and potentially interested stakeholders informed of project milestones, events and activities by distribution of mailouts via regular mail and emails throughout the consultation process.

6.10 OPEN HOUSES

TransCanada hosted its first Open House for the Project on February 11, 2013 and will be hosting its second Open House on October 23, 2013. Questions and responses from the first Open House are provided in Appendix C.

6.11 MANDATORY NOTICES

As required in the Province's Guide, a Notice of Commencement for the Project ERR was prepared and distributed to all stakeholders on the Project contact list. In a similar manner, a Notice of Completion will be distributed to stakeholders once the Project ERR has been prepared and is ready for stakeholder review and comment.

6.12 MEETINGS AND PRESENTATIONS

TransCanada will continue to conduct meetings and presentations as a means of engaging stakeholders, on an ongoing and as needed basis.

6.13 LOCAL COMMUNITY OUTREACH OFFICE

TransCanada opened a local community outreach office in the Town of Greater Napanee on May 1, 2013. A local community outreach liaison works out of this office and will host stakeholders formally and informally, at the office to share information on an ongoing basis and provide an opportunity for ongoing dialogue with local stakeholders. The liaison, operating out of this office, will serve as a consistent, available resource to community members for information on the Project.

6.14 PUBLIC TOUR OF HALTON HILLS GENERATING STATION

At the first Open House in February, guests were invited to sign up for a tour of TransCanada's Halton Hills Generating Station. This invitation was also extended to the neighbours residing east of the Project site both before and after the Open House. Once established, members of the Architectural and Landscaping Advisory Committee (ALAC) were invited to participate as was the Peer Review Consultant for the Town of Greater Napanee. The tour took place on Wednesday, September 11, 2013.

6.15 JOBS INFORMATION SESSION

A Jobs Information Session was hosted by TransCanada on June 13, 2013. The purpose of the session was to provide information about the Project and the potential jobs associated with construction and operations. The objective was to provide local residents interested in employment during the construction and operation of the Project with information about the jobs offered, the required qualifications, the respective employment, and when hiring will take place. It also reaffirmed TransCanada's commitment to hire locally where possible.

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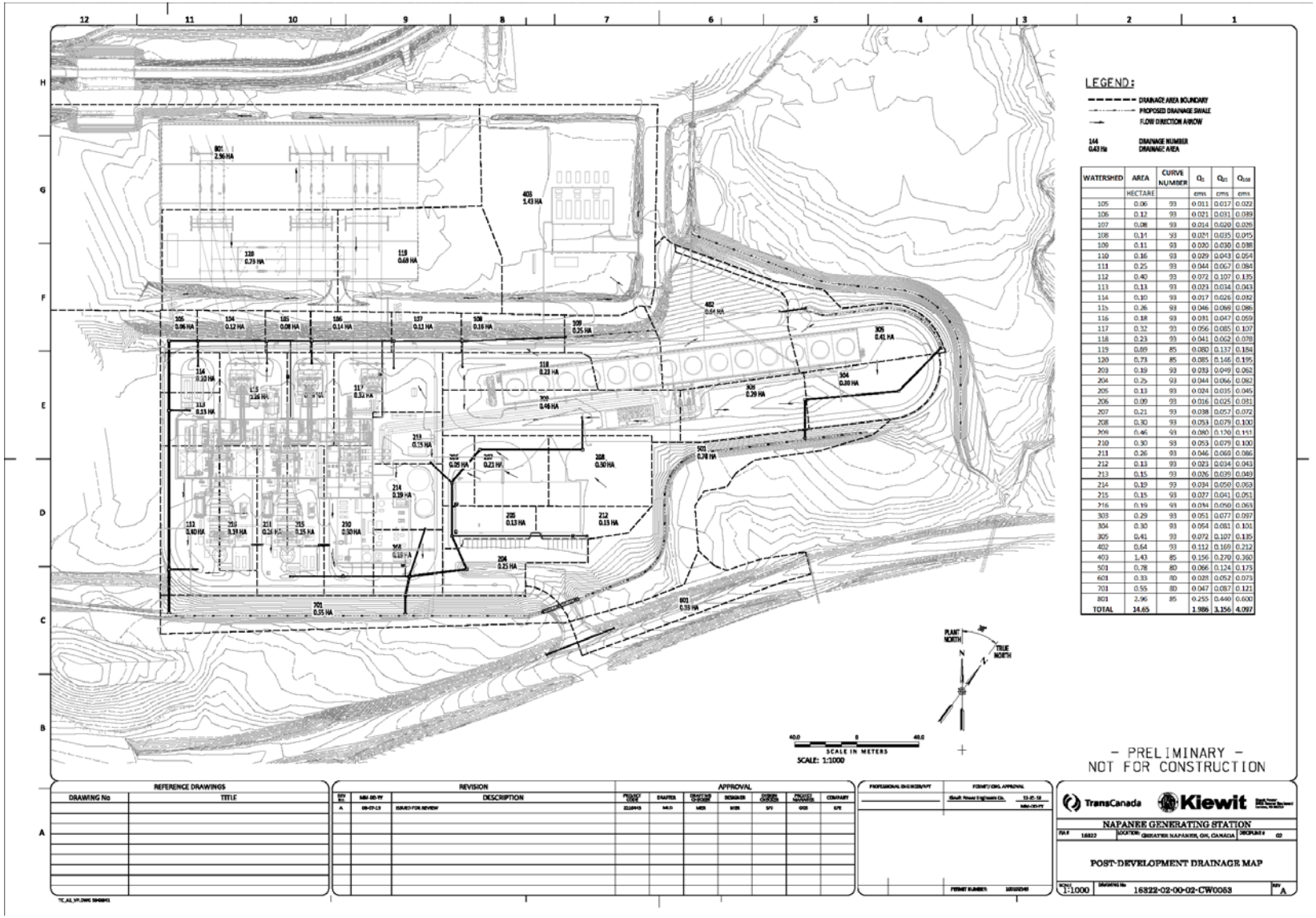
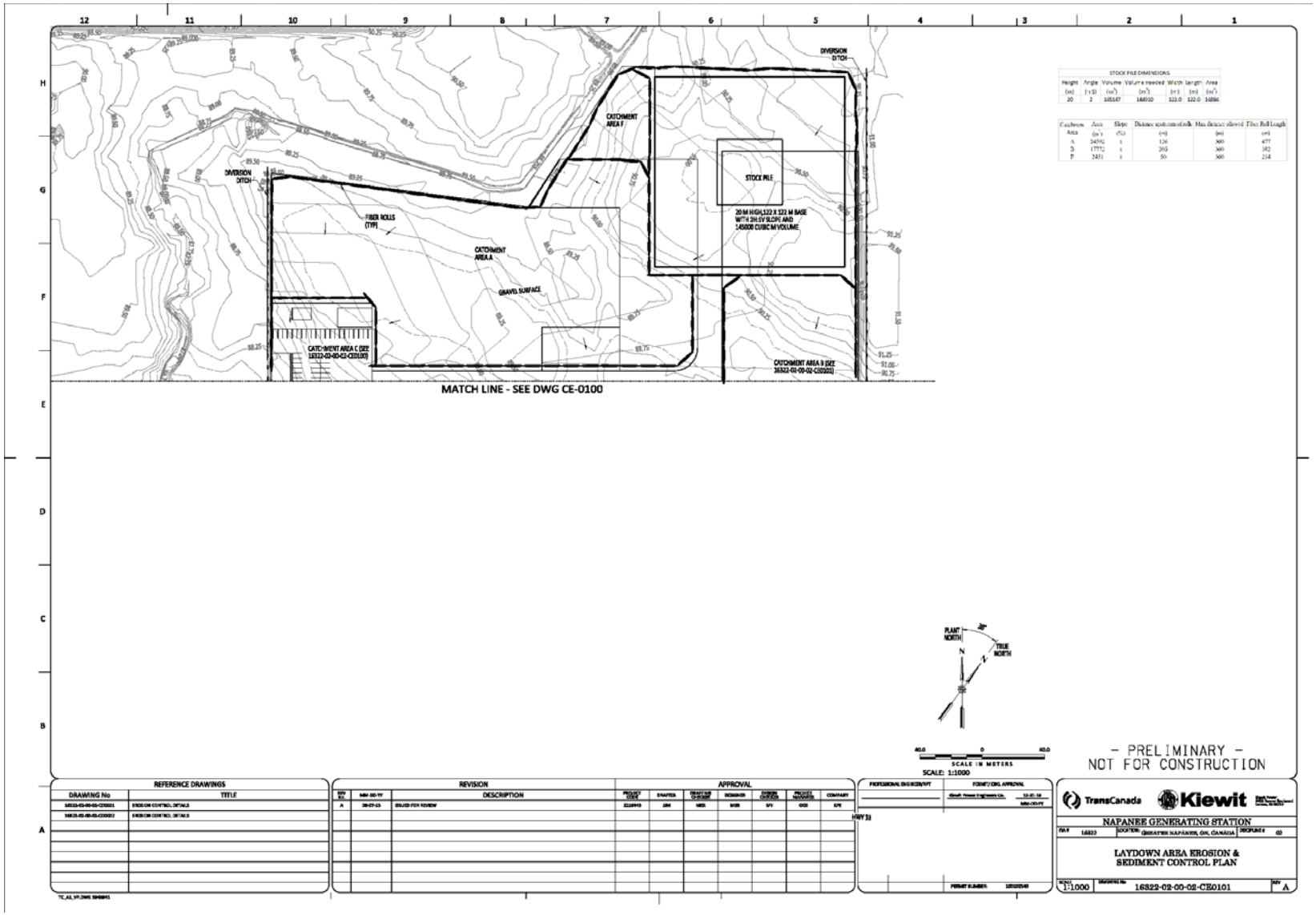
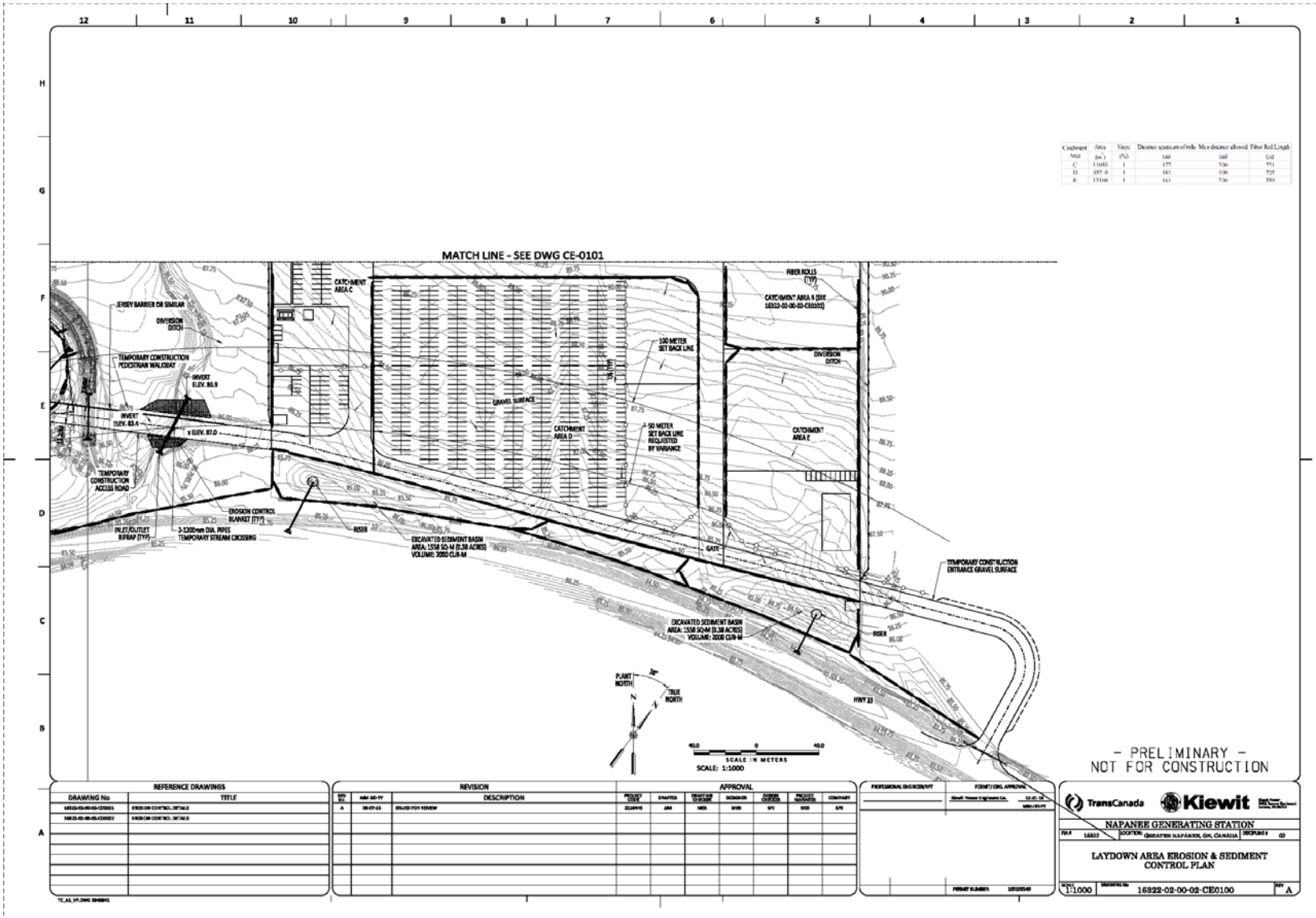
APPENDIX A – PRELIMINARY ENGINEERING DRAWINGS



WATERSHED	AREA	CURVE NUMBER	$Q_{1:2}$	$Q_{1:25}$	$Q_{1:100}$
	HECTARE		cms	cms	cms
105	0.06	93	0.011	0.017	0.022
106	0.12	93	0.021	0.031	0.039
107	0.08	93	0.014	0.020	0.026
108	0.14	93	0.024	0.035	0.045
109	0.11	93	0.020	0.030	0.038
110	0.16	93	0.029	0.043	0.054
111	0.25	93	0.044	0.067	0.084
112	0.40	93	0.072	0.107	0.135
113	0.13	93	0.023	0.034	0.043
114	0.10	93	0.017	0.026	0.032
115	0.26	93	0.046	0.069	0.086
116	0.18	93	0.031	0.047	0.059
117	0.32	93	0.056	0.085	0.107
118	0.23	93	0.041	0.062	0.078
119	0.69	85	0.080	0.137	0.184
120	0.73	85	0.085	0.146	0.195
203	0.19	93	0.033	0.049	0.062
204	0.25	93	0.044	0.066	0.082
205	0.13	93	0.024	0.035	0.045
206	0.09	93	0.016	0.025	0.031
207	0.21	93	0.038	0.057	0.072
208	0.30	93	0.053	0.079	0.100
209	0.46	93	0.080	0.120	0.151
210	0.30	93	0.053	0.079	0.100
211	0.26	93	0.046	0.069	0.086
212	0.13	93	0.023	0.034	0.043
213	0.15	93	0.026	0.039	0.049
214	0.19	93	0.034	0.050	0.063
215	0.15	93	0.027	0.041	0.051
216	0.19	93	0.034	0.050	0.063
303	0.29	93	0.051	0.077	0.097
304	0.30	93	0.054	0.081	0.101
305	0.41	93	0.072	0.107	0.135
402	0.64	93	0.112	0.169	0.212
403	1.43	85	0.156	0.270	0.360
501	0.78	80	0.066	0.124	0.173
601	0.33	80	0.028	0.052	0.073
701	0.55	80	0.047	0.087	0.121
801	2.96	85	0.255	0.440	0.600
TOTAL	14.65		1.986	3.156	4.097


DIVERSION DITCH
CATCHMENT AREA F
STOCK PILE
20 M HIGH,122 X 122 M BASE WITH 2H:1V SLOPE AND 145000 CUBIC M VOLUME
DIVERSION DITCH
FIBER ROLLS (TYP)
CATCHMENT AREA A
GRAVEL SURFACE
CATCHMENT AREA C (SEE 16322-02-00-02-CE0103)
CATCHMENT AREA B (SEE 16322-02-00-02-CE0102)
MATCH LINE - SEE DWG CE-0100
STOCK PILE DIMENSIONS
Height (m) | Angle (:1) | Volume (m³) | Volume needed (m³) | Width (m) | Length (m) | Area (m²)
20 | 2 | 165147 | 144910 | 122.0 | 122.0 | 14884
Catchment Area | Area (m²) | Slope (%) | Distance upstream of silt fence (m) | Max distance allowed (m) | Fiber Roll Length (m)
A | 34791 | 1 | 126 | 300 | 477
B | 17772 | 1 | 265 | 300 | 382
F | 3451 | 1 | 50 | 300 | 214
PLANT NORTH
TRUE NORTH
SCALE IN METERS
SCALE: 1:1000
- PRELIMINARY -
NOT FOR CONSTRUCTION
REFERENCE DRAWINGS
DRAWING No | TITLE
REVISION
REV | DESCRIPTION
APPROVAL
PROFESSIONAL ENGINEER/PVT | PERMIT/ENG. APPROVAL
HWY 33
TransCanada
Kiewit
NAPANEE GENERATING STATION
LAYDOWN AREA EROSION & SEDIMENT CONTROL PLAN
SCALE: 1:1000
16322-02-00-02-CE0101
REV A


MATCH LINE - SEE DWG CE-0101
CATCHMENT AREA C
JERSEY BARRIER OR SIMILAR
DIVERSION DITCH
TEMPORARY CONSTRUCTION PEDESTRIAN WALKWAY
INVERT ELEV. 88.9
INVERT ELEV. 83.4
x ELEV. 87.0
TEMPORARY CONSTRUCTION ACCESS ROAD
EROSION CONTROL BLANKET (TYP)
INLET/OUTLET RIPRAP (TYP)
2-1200mm DIA. PIPES TEMPORARY STREAM CROSSING
RISER
EXCAVATED SEDIMENT BASIN AREA: 1558 SQ-M (0.38 ACRES) VOLUME: 2000 CUB-M
GRAVEL SURFACE
CATCHMENT AREA D
100 METER SET BACK LINE
50 METER SET BACK LINE REQUISTED BY VARIANCE
FIBER ROLLS (TYP)
CATCHMENT AREA E (SEE 16322-02-00-02-CE0101)
DIVERSION DITCH
CATCHMENT AREA E
GATE
TEMPORARY CONSTRUCTION ENTRANCE GRAVEL SURFACE
EXCAVATED SEDIMENT BASIN AREA: 1558 SQ-M (0.38 ACRES) VOLUME: 2000 CUB-M
RISER
HWY 33
PLANT NORTH
TRUE NORTH
SCALE IN METERS
SCALE: 1:1000
- PRELIMINARY -
NOT FOR CONSTRUCTION
REFERENCE DRAWINGS
DRAWING No
TITLE
REVISION
DESCRIPTION
APPROVAL
TransCanada
Kiewit
NAPANEE GENERATING STATION
LAYDOWN AREA EROSION & SEDIMENT CONTROL PLAN
1:1000
16322-02-00-02-CE0100
A

APPENDIX B - LIST OF BREEDING BIRDS

Breeding Birds Recorded within the Project Site

Common Name	Scientific Name	National Species at Risk COSEWIC[a]	Species at Risk in Ontario Listing[b]	Provincial breeding season SRANK [c]	Area-sensitive (MNR)[d]	Approx. Number of Pairs Observed
Green Heron	*Butorides virescens*			S4		1
Mallard	*Anas platyrhynchos*			S5		1
Turkey Vulture	*Cathartes aura*			S5		fly-over
Red-tailed Hawk	*Buteo jamaicensis*			S5		1
Merlin	*Falco columbarius*			S5		1 feeding
Wild Turkey	*Meleagris gallopavo*			S5		1
Killdeer	*Charadrius vociferous*			S5		3
Spotted Sandpiper	*Actitis macularia*			S5		2
Mourning Dove	*Zenaida macroura*			S5		6
Yellow-billed Cuckoo	*Coccyzus americanus*			S4		1
Downy Woodpecker	*Picoides pubescens*			S5		1
Northern Flicker	*Colaptes auratus*			S4		2
Eastern Wood-Pewee	*Contopus virens*	SC		S4		1
Alder Flycatcher	*Empidonax alnorum*			S5		2
Willow Flycatcher	*Empidonax traillii*			S5		4
Great Crested Flycatcher	*Myiarchus crinitus*			S4		1
Eastern Kingbird	*Tyrannus tyrannus*			S4		3
Purple Martin	*Progne subis*			S4		1
Tree Swallow	*Tachycineta bicolor*			S4		7
Barn Swallow	*Hirundo rustica*	THR	THR	S4		2
Blue Jay	*Cyanocitta cristata*			S5		2
American Crow	*Corvus brachyrhynchos*			S5		2
Common Raven	*Corvus corax*			S5		1 fly-over
Black-capped Chickadee	*Poecile atricapillus*			S5		3
House Wren	*Troglodytes aedon*			S5		4
American Robin	*Turdus migratorius*			S5		8
Gray Catbird	*Dumetella carolinensis*			S4		7
Brown Thrasher	*Toxostoma rufum*			S4		2
Cedar Waxwing	*Bombycilla cedrorum*			S5		6
European Starling	*Sturnus vulgaris*			SE		1
Warbling Vireo	*Vireo gilvus*			S5		5
Red-eyed Vireo	*Vireo olivaceus*			S5		1
Yellow Warbler	*Setophaga petechial*			S5		35
Chestnut-sided Warbler	*Setophaga pensylvanica*			S5		1
American Redstart	*Setophaga ruticilla*			S5	X	1
Common Yellowthroat	*Geothlyphis trichas*			S5		7
Northern Cardinal	*Cardinalis cardinalis*			S5		2
Rose-breasted Grosbeak	*Pheucticus ludovicianus*			S4		2
Eastern Towhee	*Pipilio erythrophthalmus*			S4		5
Field Sparrow	*Spizella pusilla*			S4		3
Savannah Sparrow	*Passerculus sandwichensis*			S4	X	2
Song Sparrow	*Melospiza melodia*			S5		35
Swamp Sparrow	*Melospiza Georgiana*			S5		1

List of Breeding Birds Recorded within the Project Site (Cont'd)

Common Name	Scientific Name	National Species at Risk COSEWIC[a]	Species at Risk in Ontario Listing[b]	Provincial breeding season SRANK[c]	Area-sensitive (MNR)[d]	Approx. Number of Pairs Observed
Red-winged Blackbird	*Agelaius phoeniceus*			S4		27
Eastern Meadowlark	*Sturnella magna*	THR	THR	S4		1
Common Grackle	*Quiscalus quiscula*			S5		2
Brown-headed Cowbird	*Molothrus ater*			S4		6
Orchard Oriole	*Icterus spurius*			S4		1
Baltimore Oriole	*Icterus galbula*			S4		2
American Goldfinch	*Spinus tristis*			S5		8

a COSEWIC = Committee on the Status of Endangered Wildlife in Canada.
b Species at Risk in Ontario List (as applies to) as designated by COSSARO (Committee on the Status of Species at Risk in Ontario).
END = Endangered, THR = Threatened, SC = Special Concern.
c SRANK (from Natural Heritage Information Centre) for breeding status if: S1 (Critically Imperiled), S2 (Imperiled),S3 (Vulnerable), S4 (Apparently Secure), S5 (Secure)SNA (Not applicable…'because the species is not a suitable target for conservation activities'; includes non-native species).
d Ontario Ministry of Natural Resources (MNR). 2000. Significant Wildlife Habitat Technical Guide (Appendix G). 151 p plus appendices.

APPENDIX C – QUESTIONS AND RESPONSES FROM OPEN HOUSE #1

Napanee Generating Station
Open House #1

February 11, 2013
5 p.m. to 8:30 p.m.

South Fredericksburgh Hall, 2478
County Road 8
Greater Napanee, Ontario

Questions and Responses
(following TransCanada's presentation):

Q How much waste heat will be emitted from the Napanee Generating Station (NGS) stacks?

R Virtually all heat in the exhaust is recovered for generation of steam and consequently, power at NGS. The stack temperature is approximately 200 degrees F – which is about as low as we can take it without creating condensation-related damage in the heat recovery boilers.

Q How much energy does each turbine generate?

R In cycle 1, each of the two gas turbines generates approximately 250 megawatts (MW). In cycle 2, the steam turbine generates approximately 400 MW, for a total of 900 MW being generated.

Q What is the oblong feature identified in the rendering of the facility? [see slide 8 of the presentation]

R The oblong feature is meant to represent a storm water pond. It is not known exactly where it will be located on the site but we know that one may need to be part of the facility design.

Q Why is a storm water pond required?

R We are required to replicate the existing conditions for storm water flows on site. Given the new facility will affect these conditions, we may need to incorporate a storm water pond into the storm water system design so that the rate of flow and the quality of storm water flow are not different than the pre-existing conditions.

Q What is the distance between the proposed NGS and the nearest residence?

R The NGS will be approximately one kilometre from the nearest resident.

Q Does your baseline noise monitoring include the Lennox Generating Station (LGS) running?

R Yes.

Q Will your modeling indicate how much louder it will be with both plants running than it currently is when the Lennox Generating Station is not running?

R Yes. We will provide information relative to both facilities running at the same time.

Q What is the economic pay back period for a plant of this type?

R While this is dependent on how often the plant runs, it is estimated the pay back period would be approximately 10 years.

Q What are the expected construction costs?

R The full project is anticipated to cost approximately $1.2 billion. It is anticipated that construction costs will be between $500 and $600 million.

Q How much noisier will your plant be compared to a similar facility like Halton Hills?

R Halton Hills Generating Station has been designed for 40 dBA and we would expect NGS to be about the same.

Q How many gas plants has TransCanada completed?

R TransCanada has completed Halton Hills and Portlands Energy Centre in Ontario. Bécancour in Québec and Grandview in New Brunswick, and a number of facilities in Alberta.

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Napanee Generating Station Open House #1

Q Do you have any gas plants up in northern Ontario?

R TransCanada has sold a number of assets in northern Ontario including the Nipigon, Kapuskasing, Calstock, Tunis, and North Bay plants.

Q What is your commitment that TransCanada will own the plant over the 20-year life of the plant?

R While we cannot provide a guarantee, it is our intention to own and operate the NGS. We are long term holders of our major power assets. The plants in northern Ontario were smaller assets, unlike Halton Hills or the proposed NGS.

Q In a worst case scenario, should NGS be sold, would the new purchaser be required to meet TransCanada's environmental commitments?

R Yes, all commitments made as part of our permitting process would need to be abided by.

Q How often does TransCanada's Bécancour facility run?

R Hydro-Québec is not currently asking us to operate the Bécancour facility.

Q When was Bécancour built?

R Bécancour was built in 2004.

Q Do you still own the facility?

R Yes.

Q Is there a chance that could happen here?

R We currently have a 20-year contract to operate the facility. It is unlikely the NGS would sit idle once complete, based on the projected supply and demand pattern for power in Ontario, which includes phasing out coal-fired power plants this year.

Q What is the life-span of the facility?

R Approximately 30 years. We have a 20-year contract with the Ontario Power Authority. After that we would re-contract the facility with the OPA or operate it simply based on the market conditions at that time.

Q What is the stack height of the NGS compared to the Lennox facility?

R It is estimated that the NGS stacks will be approximately 200 feet high, or approximately 1/3 the height of LGS.

Q What happens after 20 years? Will the plant need to be refurbished after 20 years?

R While we don't know for sure what the province's energy needs will be in 20 years, new contracts may be negotiated at that time. It is not known how often the plant will need to run after 20 years. Refurbishments and general maintenance are conducted throughout the life of the asset at regular intervals.

Q You have said that your stacks will not be as high as Lennox's stacks. Does that mean that the emissions will not be dispersed as far (beyond residences)?

R The emissions (which will impact the design of the stacks) from NGS will be far different from those at Lennox's, and thus stack heights will be different. Dispersion patterns will be part of the emissions studies, and these studies will help to determine the height requirements of the NGS stacks.

Q How near are Halton Hills' neighbours relative to that facility? The same distance as NGS?

R Halton Hills' nearest neighbour is located much closer (approximately 300 m away) than any neighbour of the proposed NGS.

Q How will construction noise impact wildlife?

R Potential construction effects including noise will be studied by our wildlife experts as part of our environmental studies.

Q How much water will come out of the cooling tower?

R Approximately 4,000 gallons per minute at maximum consumption. Dispersion modeling will be conducted as part of our environmental assessment.

Q The area enjoys welcome, cool breezes during the summer that aren't enjoyed in town. How do we know that the cooling towers won't result in warm, humid air traveling around our neighbourhood?

R I have not heard of any facility where this has been the result. Environmental studies will indicate whether there are any measures that need to be taken to minimize any loss of enjoyment of property due to the construction and operation of the facility.

Q Residents have asked, in previous meetings, for you to ensure that no development occurs on the strip of land to the east of the facility. Where does this stand?

R We have made inquiries of OPG as to whether we may purchase this land. We have not yet completed these discussions.

Q How do we know, if you do purchase that land, that you won't put up wind turbines?

R We would be purchasing that land in order to address concerns of neighbours, not to develop it. Set-backs required for the development of wind turbines would not allow for development on that site.

Q Will there be any changes required to the electrical system as a result of this plant?

R No, there would be no changes required to the electrical system.

Q What are the traffic impacts likely to be during construction, based on your previous experience?

R We will be conducting traffic studies and modeling as part of our environmental assessment in order to identify traffic effects during construction, and we will work with the Municipality and Ministry of Transportation to determine the best routes for traffic during construction activities.

Q If both Lennox and NGS are running full out, can the local Union Gas line accommodate both facilities?

R We have made inquiries of Union Gas and they are doing studies on their pipeline to determine that, and they will report back to us. We will share that information when it is available.

Q Do you have a negotiated price and how much would you need to run the facility in order to run it economically?

R The details of our contract with the OPA are publicly available. Those figures are dependent on a number of variables. We are to be paid a capacity payment on top of whatever power we sell to the market. These are essentially capacity contracts.

Note: For further clarification, the NGS team would like to add:

TransCanada signed a Clean Energy Contract with the Ontario Power Authority (OPA) in December 2012. Under the terms of this agreement, Napanee Generating Station will earn revenue from two sources. First, it will generate revenue from the sale of electricity into the Ontario market. However, because this revenue is not expected to cover the fixed capital costs of the plant, the OPA will cover this shortfall in the form of direct monthly payments to TransCanada. These payments are adjusted monthly based on a formula described in the contract, which can be viewed at:

www.powerauthority.on.ca/sites/default/files/OPA-TCE-CES-agreement.pdf

This contract is common in Ontario and most large gas-fuelled generators operate with this type of arrangement in place. Under the Clean Energy Supply contract, TransCanada is financially responsible for the capital cost and performance of the facility as well as the operating and maintenance costs over the 20-year term of the contract.

Q Can you confirm that you will need to conduct refurbishments of the equipment at the plant regularly, and will these be major construction-like projects or represent mini "economic booms"?

R Yes, the plant will be regularly taken out of service (in some cases for six weeks at a time, in some cases, for far less time) in order to conduct maintenance. These would not be major construction-like projects. Over the course of six weeks, perhaps 100 different trades-people would be working on the maintenance.

Q How do you conduct wetland studies?

R Terrestrial biologists will study current conditions of the wetland and will do so in four different seasons to ensure we are aware of the characteristics of the wetland year-round and better understand potential effects.

Q So someone will actually go to the wetland and study it?

R Yes, a terrestrial biologist will conduct the studies.

Q Will the draft Environmental Review Report be available when it is complete?

R Yes, the document will be available for public review once the studies have been completed.

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