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**Project Number:** **1104037.00**

**Project Title:** **HAF WIND ENERGY PROJECT**

**Report:** **005-R01-1104037**

**Title:** **DESIGN AND OPERATIONS REPORT (UPDATE)**

**Prepared For:** **Vineland Power Inc.**
**222 Martindale Road, P.O. Box 1116**
**St. Catharines, Ontario**
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**Date:** **March, 2014**

Prepared By Morrison Hershfield Limited

Vineland Power
Stewards of sustainable energy.

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# 1.0 Introduction

The **HAF Wind Energy Project** ("the Project") Design and Operations Report has been prepared in accordance with the requirements of the Ministry of the Environment's Renewable Energy Approvals Regulation ("the Regulation"), O. Reg 359/09, specifically with consideration of *Item 4* of the requirements outlined in *Table 1* of the Regulation.

The proposed HAF Wind Energy Project is to be situated in the Township of West Lincoln, in Niagara Region of Ontario. The Project would consist of five (5) Vestas V-100 1.8 megawatt wind turbines producing a nameplate capacity of 9.0 megawatts. If approved, the wind turbines would be erected for the purpose of capturing energy from the wind, a renewable resource, and converting it into clean, useable electricity. This electricity will be transported to consumers via interconnection facilities, including transformers and distribution lines. The footprint of these facilities is captured and described in reports prepared for this Renewable Energy Approval (REA).

The HAF Wind Energy Project Design and Operations Report:

- Details and describes the elements of the Site Plan for the project location;
- Outlines conceptual plans, specifications and descriptions related to the design of the HAF Wind Energy Project, including a description of the noise emission characteristics of the turbines to be used;
- Illustrates conceptual plans, specifications, and descriptions related to the operation of the HAF Wind Energy Project, including disposal of waste;
- Defines the Communications Plan to be followed during the facility's operation; and
- Specifies an Emergency Management Plan to be followed during facility's operation.

As required under *O.Reg. 359/09* the following sections of this report provides specific details on the previously listed items with regards to the HAF Wind Energy Project facility design and operations.

## *1.1 General Project Schedule*

**Table 1** provides an overview of key project activities and projected dates.

**Table 1: General Project Schedule**

| Activity | Date (Month, Year) |
|---|---|
| Begin Renewable Energy Approval | October, 2009 |
| Submit Renewable Energy Approval Application | June, 2012 |
| Obtain Renewable Energy Approval | January, 2013 |
| Commence Construction | March, 2013 |
| Begin Operations, Commissioning (Commercial Operation) | August, 2013 |

# 2.0 Site Plan

The Site Plan for the HAF Wind Energy Project is attached as **Tabs 2 with Tab 3** showing the adjacent land uses in this report. This site plan includes the following applicable items as required by Table 1 of *O. Reg. 359/09*:

- All wind turbines, structures, roads, utility corridors, rights of way and easements associated with the project;
- Any heritage or archaeological resources within 120 meters of the project location;
- All noise receptors within the study area and project location;
- Land contours; and
- Water bodies and wetlands.

The site plan shows five (5) wind turbines, one interconnection point, a utility corridor that follows the right of way of municipal roads and new roads associated with the project.

All of the proposed turbine sites meet the minimum setback requirement of at least 550 metres from the nearest non-participating noise receptor. None of the proposed turbine sites are located less than the length of the turbine blades plus 10 metres (i.e. 59 metres) from a non-participating property line. However four (4) turbines are located closer to a non-participating property line than the height of the turbine tower (95 metres). As required, a Property Line Setback Assessment Report (See Appendix B of this report) has been prepared to identify potential impacts and proposed mitigation.

No heritage or archaeological resources were found within 120 meters of the project location; however, the Stage 2 **Archaeological Assessment** and **Cultural Heritage Assessment Report**, both part of the REA application package, describe this in further detail. These reports in combination with the **Environmental Impact Study** provide heritage and archaeological mitigation measures that were applied to the design & operations, construction, and decommissioning of the facility. The Stage 1 and Stage 2 **Archaeological Assessment Report** was prepared by A.M. Archaeological Associates Limited while the **Cultural Heritage Assessment Report** was prepared by Unterman McPhail Associates.

A **Noise Assessment Report** was completed by HGC Engineering. This report assessed impacts to noise receptors within the study area and specifically those impacted by the proposed turbines.

The Land-use maps provided in **Tab 3** of the REA Package show noise receptors, all proposed facilities, elevation contours, noise and land-use setbacks, water bodies, wetlands, optioned properties, lots, and other relevant land-use elements.

# 3.0 Facility Design Plan

This section describes the proposed facility's design and the technology selected in greater detail. The purpose of this section is to provide those interested in the project with an understanding of the physical design of the facility.

The HAF Wind Energy Project, if approved, will generate clean and renewable electricity for the benefit of the public. The project will also help in achieving Ontario's goals for less dependence on fossil fuels and reductions to green house gas emissions. This project would produce sufficient electricity to power the equivalent of approximately 2500 homes.

The design of the facility proposes five (5) Vestas V-100 1.8 megawatt wind turbines that would produce a total nameplate capacity of 9.0 megawatts of renewable energy. Each wind turbine would stand approximately 95.0 meters at hub height with 50.0 meter blades. The total height of each turbine is 145.0 meters above ground level including the tower, nacelle, and blades, with an access road connecting the turbine to municipal roads. Electricity would be produced by the wind turning the rotor and converting the kinetic energy in wind in to electrical energy with the help of a generator located in the nacelle. The electricity would then be 'stepped-up' to 27.6 kilovolts in a nacelle mounted transformer. This electricity would then be conveyed to the electrical grid by way of the underground collector system, switching station, and distribution line.

## *3.1 Project Facilities, Equipment and Technology*

The major components of the project are as follows:

- → Meteorological Tower;
- → It is anticipated that five (5) turbines will be installed. The **Vestas V100, 1.8 megawatt (MW)** turbine model has been selected as the preferred model;
- → Nacelle mounted transformers and an underground collector system to connect to the Hydro One distribution system. Nacelle mounted 690v/27.6 kV step up transformers located in the nacelle housing of each turbine. Buried 27.6 kV electrical collector system, switching station, and ancillaries;
- → Turbine access roads;
- → Temporary crane pads and staging areas for the assembly and erection of wind turbines;
- → A small Supervisory Control and Data Acquisition (SCADA)/operations building located at the switching station site; and
- → A small maintenance building.

### 3.1.1 Meteorological Tower

A meteorological tower was installed within the study area to monitor wind speed, wind direction, temperature and humidity. The meteorological tower is approximately 60 m in height and was installed in August, 2009. The tower will remain for the duration of the Project to monitor wind turbine performance and environmental conditions. The tower is supported

by guy wires. **The Meteorological Tower is shown on the Site Plan (Tab 2) and Land Use Map (Tab 3) of this package.**

### 3.1.2 Wind Turbines

The Vestas V100, 1.8 MW turbine has been selected as the preferred model for this project. It is anticipated that up to five (5) turbines will be installed. The **Site Plan (Tab 2)** and **Land Use Maps (Tab 3**) illustrate the layout of the proposed facility. The **Wind Turbine Specifications Report** provides greater detail on the model selected.

All turbines at the HAF Wind Energy Project will meet Transport Canada and NAVCanada requirements for aviation safety/lighting.

Wind Turbines will be located according to the coordinates found in **Table 3** of this report and shown in **Tabs 1 through 3** of the REA Package.

### 3.1.3 Access Roads and Crane Pads

Access roads, made of packed gravel, will be required to access each wind turbine location. These roads were placed to minimize impacts on the environment. All new access roads will be constructed on private participating landowner's lots within the project area, and will provide access to each turbine for construction, operation and maintenance activities. Access roads will be a maximum width of 7 metres, including shoulders. The transportation of machinery, turbine components and other equipment will be done over the existing municipal roads as far as possible. During the construction phase, each wind turbine's access road will end at a crane pad where the turbine will be constructed. The crane will only be required during construction of the turbine. The crane pad will be made of the same material as the access roads. The land used for the crane pad will be restored through standard industry practices and as per applicable rules and regulations at the end of the construction phase. The access roads will be compliant with Ontario and municipal regulations and will be built to support the weight of the equipment and heavy machinery required to build each wind turbine location.

Access roads and temporary crane pads are shown and located according to **Tabs 2 and 3** of the REA Package.

### 3.1.4 Collector System, Switching Station and Distribution Line

The energy from the wind turbines will be collected via underground cabling and directed to a switching station. The switching station will connect directly to the local distribution system. The turbines will connect to the Hydro One distribution system. The power will be generated at approximately the 690V voltage level and stepped up to the 27.6 kV level of the local collector system by nacelle-mounted transformers.

The proposed underground collector system route and switching station location are shown and located according to **Tabs 2 and 3** of the REA Package.

#### *3.1.4.1 Collector System*

The power generated at each of the wind turbine generators is transported through the underground collector system. The collector system consists of buried underground cables. In

required, there may be some shared use with existing Hydro One lines and poles. The collector system will be built to Utility and Ontario standards.

#### *3.1.4.2 Switching Station, Communications and SCADA*

The switching station will be a chain-linked fenced area measuring approximately 1/4 acres. Within the fenced area, a switching station with a small pre-fabricated building for Supervisory Control and Data Acquisition (SCADA) will be equipped with full SCADA capabilities. Besides the operations building, there will be a switching gear. This small control building will be approximately 7 metres by 8 metres. The building will have a gravel shoulder surrounding it. The overhead cables coming out of the switching station will attach onto dead-end poles from the fenced area for the switching station and will then attach to a metering pole. There will be no permanent staff presence; therefore, a sanitation system will not be required. Only trained personnel will be permitted within the fenced in enclosure, including the maintenance building.

#### *3.1.4.3 Distribution System*

Electricity collected at the switching station will be transferred to Hydro One's distribution grid. A distribution line will connect the station to the Hydro One grid. An appropriate protection system, as per the best industry practices as well as utility guidelines will be provided.

### 3.1.5 Maintenance Structure

A separate maintenance building will be located to the southwest of Turbine 4. This building will be a small (approximately 3.0 meters by 3.0 meters) pre-fabricated storage shed similar to what is available at retail sales outlets.

#### *3.1.5.1 Wind Turbine Technologies*

The Vestas V100-1.8 MW wind turbine is a pitch regulated upwind turbine with active yaw and a three-blade rotor. The Vestas V100-1.8 MW turbine has a rotor diameter of 100 m with a generator rated at 1.8 MW. The turbine utilizes a microprocessor pitch control system called OptiTip® and the Variable Speed concepts (VCUS: Vestas Converter Unity System). With these features the wind turbine is able to operate the rotor at variable speed (RPM), helping to maintain the output at or near rated power. (*Vestas, 2010*). A summary of the technical specifications of this model are found in the **Wind Turbine Specification Report**.

Each Vestas V100 turbine has a nameplate capacity of 1.8 MW and will be built to a hub height of 95 meters. The rotor diameter is 100 meters with all of the three 49 meter blades sweeping an area of 7850 m2. The minimum operational wind speed (cut-in speed) is 4.0 m/s with a maximum operational speed (cut-out speed) of 20.0 m/s. The V-100 Turbine is erected on a tubular steel tower which holds the nacelle including hub at 95 meters above the ground. The nacelle houses the gear box, generator, hydraulic motors, transformer and electrical components. Each blade is constructed of light weight airfoil shells bonded to supporting beams and connect to the hub. The generator is asynchronous with wound rotor, slip rings and VCUS. The turbine's operational envelope is -20° to +40° C.

**Table 2** Summarizes the Wind Turbine General Specifications.

| **Table 2: Wind Turbine General Specifications** | |
|---|---|
| | Operational Envelope: **-20° to +40° C** |
| **Rotor** | Rotor Diameter: **100m** |
| | Swept Area: **7850m²** |
| | Speed, Dynamic Operation Range: **9.3 – 16.6 rpm** |
| | Rotational Direction: **Clockwise** (front view) |
| **Tower** | Type: **tubular steel tower** |
| | Hub: **95m** |
| **Electrical** | Frequency: **60 Hz** |
| | Rated Power: **1.8 MW** |
| | Generator: **Asynchronous with wound rotor, slip rings and VCUS** |
| **Blade** | Type: **airfoil shells bonded to supporting beam** |
| | Length: **49m** |
| | Max Chord: **3.9m** |
| **Nacelle** | Height for Transport: **4.0 m** |
| | Height Installed: **5.4 m** |
| | Width: **3.4 m** |
| | Length: **10.4 m** |
| **Hub** | Material: **cast ball shell hub** |
| | Height: **95m** |
| | Diameter: **3.3 m** |

Each of the project's five (5) turbines will have a poured concrete foundation, which will include reinforcing steel bars at the base of each individual turbine. A mounting ring will also be installed as part of the turbine foundation to secure the base of the tower in place. The foundation diameter will be an area of approximately 3 metres deep by 20 metres wide by 20 metres long. Exact specifications of the turbine foundations will be dependent on the results of a geotechnical investigation and detailed design of the proposed facility, however the turbine foundations are anticipated to be spread footing type.

The HAF Wind Energy Project's construction and decommissioning activities will also require a temporary crane pad and laydown area near the base of each turbine. Details regarding these structures have been provided in the **Construction Plan Report**. Where possible, the site layout for the HAF Wind Energy Project including the placement of all such structures was designed to avoid direct interaction with significant natural features or water bodies within

close proximity to the project location. Where the proposed facility interacts with any REA setbacks for natural features and water bodies the **Environmental Impact Study** and the **Water Assessment and Impact Report** provides a description of potential negative environmental effects and mitigation measures.

### 3.1.6 Wind Turbine Locations

The coordinates for each wind turbine in the proposed HAF Wind Energy Project are presented in **Table 3**, below.

**Table 3: Coordinates of Each Turbine (NAD 83, UTM Zone 17)**

| Turbine No. | Northing | Easting |
|---|---|---|
| 1 | 604718 | 4775553 |
| 2 | 604889 | 4775173 |
| 3 | 606291 | 4774905 |
| 4 | 604359 | 4774307 |
| 5 | 606233 | 4773420 |

## *3.2 Interconnection Facilities*

The power generated at each of the wind turbine generators is transported through the collector system. The collector system consists of buried underground cables. In required, there may be some shared use with existing Hydro One lines and poles. The collector system will be built to Utility/Ontario standards.

The energy from the Project will be collected via underground cabling and directed to a switching station. The switching station will connect directly to the local distribution system. The turbines will connect to the Hydro One distribution system. Power at each turbine will be generated at approximately the 690V voltage level and stepped up to the 27.6 kV level of the local collector system by nacelle-mounted transformers.

## *3.3 Noise Setbacks*

Noise receptors within 1,500 meters of the HAF Wind Energy Project's turbine locations have been identified. A complete list of noise receptors have been provided in **Appendix A** of the **Noise Assessment Report** prepared by HGC Engineering. This list of coordinates was compiled by IPC Energy and HGC Engineering through site visits, records review, and geographic information systems (GIS). GIS was used to verify the accuracy of each receptor's coordinates.

HGC Engineering's Noise Assessment analysis of the proposed impact of the HAF Wind Energy Project indicates that the operation of the proposed wind energy facility complies with the requirements of the Ministry of Environment (MOE) publication *NPC-232 Sound Level Limits for Stationary Sources in Class 3 Areas (Rural).* A wind turbine noise impact summary is provided in **Table A5** of the **Noise Assessment Report**.

The maximum Sound Power Level for the Vestas V-100 1.8 megawatt turbine generator model is 105 dBA. The HAF Wind Energy Facility will be comprised of up to five (5) wind turbines.

Section 55 of *O. Reg 359/09* states that the minimum setback requirement between any turbine and noise receptor in this case is 550m, unless a noise impact assessment is completed. Setback distances and coordinates for all noise receptors within 1,500m of a turbine are presented in **Appendix A** of the **Noise Assessment Report**.

## *3.4 Waste Management*

The project will not produce toxic or hazardous materials during construction. Some petroleum, oils, and lubricants (POL) and other fluids, that may be considered toxic, may be brought on site for turbine construction, operations, and maintenance. Excess POL waste removed from the project site will be disposed or recycled according to provincial and municipal environmental waste management standards. Non-hazardous waste material will be handled by the municipal waste management system.

Excess materials required during construction will be reused where possible and recycled as an alternative to reuse. Some materials may be sent to the municipal landfill where necessary. Vineland Power Inc. and its constructor will conform to municipal and provincial disposal requirements for landfill waste and transport of excess construction materials.

### 3.4.1 Solid Waste

Solid waste generated as a result of construction of the HAF Wind Energy Project will be produced from the assembly of the turbine and tower structures, foundations, subsurface cables, and vegetation cleared as required for equipment access to the site. The preferred method of disposing of solid waste for the constructed facility is reuse and recycling. In the event that materials cannot be reused or recycled, waste materials will be transported to the nearest waste disposal site as required. The operations and maintenance phase should not generate solid waste; however, if they do, this will be treated as during construction.

Cranes will be necessary to assemble the turbines and towers. All associated components will be brought onsite using a flatbed truck. Any concrete sections and associated structural steel remaining from the turbine foundation will be transported off-site. All holes created from the construction of the turbine foundations will be filled, and top-soil will be re-applied.

Waste materials generated from the assembly of the turbine foundation will be reused, recycled or transported to the nearest waste disposal facility. Consultation with a waste management company will occur during construction.

Clearing of the surrounding environment during the construction phase will be kept to a minimum. All turbine location will be placed in active agricultural fields, which are seasonally tilled, and will therefore minimize the amount of vegetation removal required. The clearing of land to undertake construction activities will not utilize any slash and burn methods.

### 3.4.2 Sewage

Temporary bathroom and washing facilities will be required during the construction and decommissioning phases of the HAF Wind Energy Project. These temporary facilities will be portable self-contained units constructed in compliance with *Ontario's Environmental Protection Act* to ensure that no sewage effluent is released untreated into the environment. All temporary wash and bathroom facilities will have holding tanks, and pumped and emptied

as required. The HAF Wind Energy Project Facility will not generate any sewage as a result of its operation as no permanent washroom facilities are part of this project.

### 3.4.3 Liquid Waste

Liquid waste generated as a result of construction activities of the HAF Wind Energy Project may include fuel, oil and lubricants found inside the wind turbines, as well as the machinery equipment brought onsite during the construction process.

The storage and use of any fuels, oils and lubricants during the operation of the project's facility will comply with all applicable provincial and federal regulations, codes, and guidelines. The disposal and cleanup of any liquid waste will be disposed or recycled according to provincial and municipal environmental waste management standards. Non-hazardous waste material will be handled by the municipal waste management system.

## *3.5 Consultation and the Design*

The proponent has consulted and will continue to consult with municipal, agency, and public stakeholders to ensure that the design and operations of the project will provide a net benefit to the public interest and offer no negative impacts to adjacent land uses and significant natural features.

Vineland Power Inc. will continue to consult with adjacent land users, local roads board, local municipality, federal agencies, provincial agencies, police and emergency services, and otherwise make suitable notice of the operation of the facility to those impacted by such activities.

The **Consultation Plan Report**, prepared before the REA Package is submitted to the Ministry of the Environment describes the consultation undertaken to arrive at the final proposed site design. **The Consultation Plan Report is not included as part of the draft REA Package.**

# 4.0 Operation and Maintenance Details

The activities required for the Operations and Maintenance phase will be discussed in this section on a per turbine basis. All activities found listed under "Operations & Maintenance" in **Table 4**, below, will be described in this report.

The project is expected begin construction during **March, 2013** pursuant to REA approval and subject to the requirements of government agencies. Construction activities will be initiated and completed at each turbine location between then and **September, 2013**.

This phase of the project includes the following activities:

- Environmental effects monitoring;
- Turbine operation and electricity production;
- Annual and semi-annual maintenance;
- Repairs, as required; and
- Community relations.

The scope of this project is summarized in **Table 4**, which provides each phase (Construction, Operation and Maintenance, and Decommissioning) with the corresponding activities that will be undertaken. The Operations & Maintenance phase is most relevant to this report; however, the Construction, and Decommissioning phases are presented to demonstrate the relationships among all phases of the project.

**Table 4: Description of Each Phase**

| Phase | Activities |
|---|---|
| **Construction** | • Surveying and geotechnical work<br>• Access road construction and modification<br>• Delivery of equipment<br>• Foundation construction<br>• Tower and turbine assembly and installation<br>• Interconnection from turbines to switching station<br>• Switching station construction<br>• Site clean-up and restoration<br>• Turbine commissioning |
| **Operation & Maintenance** | • Environmental effects monitoring<br>• Turbine operation and electricity production<br>• Annual and semi-annual maintenance<br>• Repairs, as required<br>• Community relations |

| Table 4: Description of Each Phase | |
|---|---|
| **Phase** | **Activities** |
| **Decommissioning** | • Land clearing<br>• Road construction/modification<br>• Removal of turbines and ancillary equipment<br>• Removal of electrical taplines<br>• Site restoration and rehabilitation |

The operations phase of the HAF Wind Energy Project will include the following steps described below. The anticipated life expectancy of this project is approximately 20 years. It is expected that continuous operations will occur at the facility without any major interruptions to operational activities.

1. **Operation:** The Vestas V-100 turbine model blades will turn at a rate of 9.3 to 16.6 revolutions per minute. Turbine operations will cease in the events of mechanical malfunction, extreme weather conditions and during periods of maintenance. Supervisory Control and Data Acquisition systems and an operations building located at the switching station site will be used to capture real-time turbine feedback and monitor performance outputs.
2. **Maintenance:** Each wind turbine will have regular scheduled inspections and maintenance performed, which includes routine oil changes, motor maintenance, and lubricant and fluid replacement. To maintain proper operational output and safety standards of the facility, all turbine generators will be supervised by certified technicians in a manner that is consistent with the schedules recommended by selected equipment manufacturers. It is expected that each turbine will be serviced twice a year. Occasionally, central components of the wind turbines may require replacement such as the turbine blades. Any required replacement of turbine components will be consistent with the methods used during the construction phase. Once the turbines have reached their operating life expectancy, usually on average of 25 years, the old turbines will either be refurbished to extend the lifetime of the facility or the project will be decommissioned at the end of the contract period. All aspects of the project's facility, including roads and maintenance buildings will be maintained during the operations phase of the project. Provisions for regular grounds-keeping will also be carried out to ensure that there is year round access to the site.
3. **Environmental Effects Monitoring:** After construction of the project has been completed bird and bat surveys will be undertaken for environmental monitoring purposes during the facility's operation. The **Environmental Effects Monitoring Plan (EEMP) for Birds and Bats** describes these activities.

The HAF Wind Energy Project's **EEMP** found in **Appendix A** of this report provides detailed information regarding the potential environmental impacts and mitigation methods associated with operational activities of this project.

## *4.1 Erosion Control and Operations and Maintenance*

In the event that erosion prone areas become evident during the operations and maintenance of the facility HAF Wind Energy will take necessary actions to re-vegetate or replant the affected areas. Vineland Power Inc. is responsible to undertake environmental effects monitoring as part of the EEMP following construction and through the life of the project to one year following decommissioning. Where erosion prone areas have become evident revegetation and replanting may be required.

## *4.2 Sewage*

The HAF Wind Energy Project Facility will not generate any sewage as a result of its operation.

# 5.0 Communication Plan

## *5.1 Status Updates*

As the project progresses through the construction, operation, and decommissioning phases Vineland Power Inc. will share project status updates with the Township of West Lincoln as well as the Region of Niagara. Updates will either be sent via mail or email. Similar updates will also be posted on the HAF Wind Energy Project's website for interested parties and members of the public.

## *5.2 Emergency Notification*

In the event of emergencies, the appropriate emergency response authorities will be notified. The **Environmental Effects Monitoring Plan** in **Section 6** of this report provides details regarding emergency notification for the HAF Wind Energy Project.

## *5.3 Protocol For Responding To Public Inquiries*

The protocol that Vineland Power Inc. will abide by in response to any public inquiries with regards to this project will be as follows:

- A log will be kept of all public inquiries by Vineland Power Inc. for a minimum of 2 years.
- All public inquiries will be responded to within a reasonable timeframe by the project operator.
- All responses and actions taken as a result of public inquiries will be recorded in a log by the project operator.
- The appropriate agencies or authorities (i.e. the Ministry of Environment for noise issues) will be contacted by the project operator as required.

### 5.3.1 Dispute Resolution Protocol

A dispute resolution protocol will be created and implemented by Vineland Power Inc. to address any arising issues between surrounding neighbours and the project operator to deal with matters such as noise complaints. The dispute resolution protocol will be reviewed annually, or as required to determine any opportunities for improvement.

## *5.4 Contact Information*

Vineland Power Inc. will provide all applicable project contact information, including mailing address, phone number, and email address to the local and regional municipalities and aboriginal communities within the area. Project contact information will also be provided on the projects website for public reference and communication.

The following organizations and/or individuals identified below may be contacted in the event of emergency situations at the HAF Wind Energy Project's facility or to address regulatory issues. Contact information for the Project's Operators has also been provided. This list will be posted in the base of each turbine, and it will be carried by maintenance personnel employed by Vineland Power Inc. during the operation phase of the project.

**Table 5: Key Contact List for HAF Wind Energy Project Facility**

| Agency | Area | Phone Number |
|---|---|---|
| **Emergency Contacts** | | |
| Ambulance/Police/Fire/Rescue | | 9-1-1 |
| Vineland Fire Department & Emergency Services | | 9-1-1 |
| Niagara Regional Police | Port Colborne Detachment | (905) 735-7811 |
| Ontario Provincial Police (O.P.P.) | Niagara Detachment | (905) 356-1311 |
| **Environmental Emergencies & Spills** | | |
| Ministry of Environment, Spills Action Centre | Ontario | (800) 268-6060 |
| **Local Hospitals with Emergency Services** | | |
| Niagara Health System- Port Colborne General Site | | (905) 378-4647 |
| Niagara Health System- Welland Hospital Site | | (905) 378-4647 |
| **Regulatory and Municipal Contacts** | | |
| Ministry of Natural Resources | Guelph District | (519) 826-4955 |
| Ontario Ministry of Culture | St. Catharines Office | (800) 263-2441 |
| Ministry of Environment | Niagara District Office | (800) 263-1035 |
| Niagara Peninsula Conservation Authority | | (905) 788-1121 |
| **Vineland Power Inc.** | | |
| Operational Manager | | TBD |

## *5.5 Community Relations Committee*

Once the project becomes operational Vineland Power Inc. will establish a Community Relations Committee comprising of representatives from the local Township, residents, and Vineland Power Inc. Staff. The objective of the committee will be to provide an effective channel of information regarding project related activities (i.e. maintenance activities) to local residents and to resolve any arising matters or concerns regarding the project's operation in a constructive and transparent manner.

# 6.0 Environmental Effects Monitoring Plan

The **Environmental Effects Monitoring Plan** is found in **Appendix A** of this report

The HAF Wind Energy Project's **EEMP** has been developed by Morrison Hershfield (MH) to describe the environmental protection measures required for all activities associated with the HAF Wind Energy Project. The **EEMP** outlines the necessary monitoring protocols required to ensure that mitigations measures are effective and adequate. This plan should be considered a supporting document to the rest of the **Design and Operations Report** and fulfills the requirements outlined by *Ontario Regulation 359/09 - Renewable Energy Approvals* under the *Green Energy Act*.

This **EEMP** is applicable to all employees of Vineland Power Inc. working on the operation and maintenance phases of the HAF Wind Energy Project and provides guidance to Vineland Power Inc.'s contractors and subcontractors on environmentally safe standards for project activities during operation and environmental monitoring of the project.

## *6.1 Project Commissioning and Scheduling*

Vineland Power Inc. is expecting project operations to commence by August 2013. During the construction, operation and decommissioning phases of the HAF Wind Energy Project environmental monitoring procedures will be carried out.

## *6.2 Purpose and Objectives of the EEMP*

This **Environmental Effects Monitoring Plan** has been prepared to provide the required protection measures for all project activities associated with HAF Wind Energy Project.

The purpose of the **EEMP** is:

- To ensure that Vineland Power Inc.'s commitments to minimizing environmental effects are met;
- To provide a description of the environmental concerns related to the operation, maintenance, and decommissioning of the HAF Wind Energy Project and instructions for mitigation of the potential impacts of these activities;
- To provide concise and clear instructions for implementing mitigation measures for the protection of environmental resources, and minimizing potential adverse environmental effects. To provide a means of tracking and recording actual effects of the project on valued ecosystem components;
- To ensure that the HAF Wind Energy Project operations meet all provincial, federal and municipal requirements; and
- To provide a reference document for planning and/or conducting operation, maintenance or decommissioning activities that may have an impact on the environment.

The **Environmental Effects Monitoring Plan** is intended to be a supporting document of the REA application that provides guidelines for the protection of valued ecosystem components during operation, maintenance and decommissioning activities. Background information contained within the **EEMP** is covered in more detail in the other technical reports of the REA Package.

# 7.0 Consultant Legal Statement

Morrison Hershfield Limited ("MH") produced this report in accordance with our Proposal and information provided by IPC Energy and Vineland Power Inc. ("the Client") and is based upon statements by the Client on the proposed design, construction, operations, maintenance, and decommissioning of the proposed wind energy project. The information and statements contained herein are for the sole benefit of the Client for the purposes of the Renewable Energy Approval.

The contents of this report are based upon our understanding of guidelines, regulations, and statutes which we believe to be current at this time. Changes in guidelines, regulations, statutes, and enforcement policies can occur at any time, and such changes could affect the conclusions and recommendations of this report.

While we have referred to and made use of reports and specifications prepared by others, we assume no liability for the accuracy of the information contained within those reports and specifications.

# Appendix A: Environmental Effects Monitoring Plan

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**Project Title:** **HAF WIND ENERGY PROJECT**

**Report:** **003b-R02-1104037**

**Title:** **ENVIRONMENTAL EFFECTS MONITORING PLAN (EEMP) REPORT**

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**Date:** **April, 2012**

Prepared By Morrison Hershfield Limited

IPC ENERGY

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Stewards of sustainable energy.

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# 1.0 BACKGROUND

## 1.1 PURPOSE OF ENVIRONMENTAL EFFECTS MONITORING PLAN

This Environmental Effects Monitoring Plan has been prepared to provide the specific methods and procedures that will be implemented to monitor the effectiveness of the mitigation measures for all project activities associated with the HAF Wind Energy Project, in accordance with *paragraph 4* of *item 4* of the requirements outlined in *Table 1* of the Regulation. This document will ensure that **Vineland Power Inc.'s** commitments to minimizing environmental effects are met and that this project meets all provincial, federal and municipal requirements.

This Environmental Effects Monitoring Plan is applicable to all employees of **Vineland Power Inc.** working on the operation and maintenance phases of the **HAF Wind Energy Project**. The plan will provide guidance to Vineland Power Inc.'s contractors and subcontractors on environmentally safe standards for project activities during construction, operation, and decommissioning phases and environmental monitoring of the project.

## 1.2 PROJECT SITE DESCRIIPTION

The study area consists of approximately 4808 hectares of primarily agricultural fields. The land inside the study area is mostly flat, with an elevation of 190m to 197m above mean sea level.

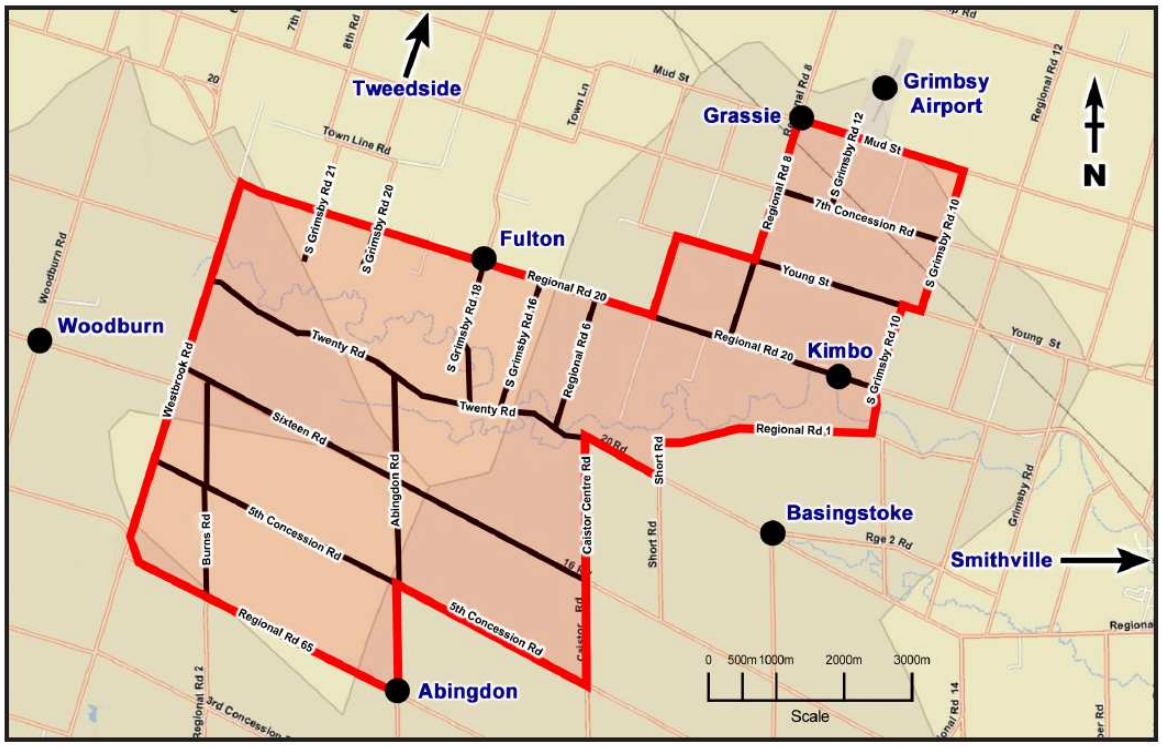


**Figure 1. HAF Wind Energy Project Study Area**

# 2.0 ROLES AND RESPONSIBILITIES

## 2.1 ROLES AND RESPONSIBILITIES FOR IMPLEMENTATION OF EEMP

The EEMP document for the HAF Wind Energy Project will be upheld by the proponent, Vineland Power Inc., the Project Manager and individual Plan Holders. Responsibilities for the implementation and environmental monitoring of the EEMP are described below.

### 2.1.1 THE PROPONENT

Vineland Power Inc. as the proponent of the HAF Wind Energy Project is responsible for ensuring that they and their agents or representatives diligently adhere to the procedures and practices outlined in the EEMP, as well as legal and regulatory conditions of approvals. The proponent is responsible for:

- Appointing a Project Manager to oversee the environmental monitoring of the project;
- Retain qualified professionals to confirm that environmental monitoring is correctly conducted during all phases and stages of the project; and
- Ensure that the regular reporting and documentation of the execution of the EEMP by qualified professional(s) is undertaken.

### 2.1.2 PROJECT MANAGER

The Project Manager as an employee of the proponent, Vineland Power Inc., is the primary party responsible for all aspects of the Project, including environmental, health and safety performance. Specific environmental responsibilities of the Project Manager are as follows:

- Ensure adequate plans and resources are in place to achieve minimal environmental effects;
- Ensure compliance with relevant regulations, authorizations, permits and protocols;
- Review incident reports as they are submitted and advise on the proper course of action to be taken to deal with unexpected environmental conditions or events;
- Ensure ongoing communication with appropriate regulatory agencies and other interested parties on behalf of the proponent; and
- Facilitate compliance with the Environmental Effects Monitoring Plan as outlined in this document.

### 2.1.3 SITE SUPERVISOR

Vineland Power Inc. will designate a Site Supervisor to oversee all operations at the site. The responsibilities of the Site Supervisor are as follows:

- Review and approve EEMP revision requests;
- Conduct a review of the EEMP on an as needed basis and update as required;
- Have regulatory authorities review changes of a significant nature;
- Ensure EEMP document control and revisions;

- Consult with Project Manager and appropriate regulatory authorities with regards to the implementation of EEMP and any compliance issues; and
- Ensure that all construction sub-contractors are aware of and comply with all the requirements contained in this document.

### 2.1.4 CONSTRUCTION MANAGER

The Construction Manager will be responsible for the day to day coordination of construction activities on behalf of the contractor retained by Vineland Power Inc. The responsibilities of the Construction Manager are as follows:

- Familiarize themselves and their personnel with the EEMP;
- Provide training for all personnel working on site including subcontractors, trades people, and suppliers, and ensure that they have knowledge of the requirements contained in the EEMP;
- Issue copies of the EEMP to appropriate personnel and work site locations;
- Familiarize themselves and their personnel of any revisions made to the EEMP;
- Initiate changes to improve the quality of the EEMP; and
- Enforce the compliance of the EEMP with all personnel and subcontractors

## 2.2 TRAINING REQUIREMENTS

The Construction Manager will be responsible for advising all construction personnel (including subcontractors) of the necessary measures outlined in the EEMP and ensure that proper training or instruction of individuals is provided in the following areas:

- Correct and sanitary methods of garbage disposal in designated disposal locations;
- Hazardous materials and POLs (Petroleum, Oils and Lubricants) will be used only by personnel who are trained and qualified in the handling of these materials, and will only be used in accordance with manufacturer's instructions and government regulations. The Workplace Hazardous Materials Information System (WHMIS) program will be implemented and all employees involved with hazardous materials will be appropriately trained. WHMIS training is the responsibility of the Contractor.
- All workers will receive a brief environmental orientation from the Construction Manager or his/her designate prior to initiating work at the site.
- Project personnel will be trained in the use of on-site firefighting equipment (*i.e.*, fire extinguishers) and locations of such equipment will be known to all personnel.

## 2.3 ENFORCEMENT AND COMPLIENCE OF EEMP

The Project Manager will be responsible for day-to-day field monitoring and for ensuring that the EEMP is implemented and complied with. The Site Supervisor and Construction Manager will liaise with the Project Manager and assist in ensuring that compliance with the EEMP and other permits is achieved. The Site Supervisor and Construction Manager have the authority to make recommendations to improve inadequate environmental

measures, or, if need be, to make recommendations to management to have the work, or a portion of work, suspended.

In situations where insufficient environmental protection results in an immediate threat to the environment, the MNR will be notified and consulted immediately. While awaiting response from MNR, interim measures may be implemented under the supervision of the Site Supervisor. Where danger to the environment is not an immediate threat, the necessary remedies will be implemented within 48 hours from receipt of notification of the circumstances. Failure to meet this requirement can result in suspension of the work, or a portion of the work, through the issuance of an Environmental Suspension Order. After an Environmental Suspension Order has been issued, work may recommence when the measures are completed to correct the noncompliance.

Specific issues or requests raised by Provincial and Federal regulatory bodies will be discussed with the Project Manager for consideration of changes to the work, and beneficial environmental effects resulting from the changes. Additionally, issues raised by such other bodies will be considered for future incorporation into the EEMP.

# 3.0 FACILITY OPERATION

The ***Environmental Impact Study (EIS) Report****,* for the HAF Wind Energy Project provides a detailed discussion of the project's potential impacts to the area's surrounding significant natural features. Some of these concerns relate directly to the operation of the turbines and require the implementation of mitigation measures during the operational phase of the project.

## 3.1 FACILITY MAINTENANCE ACTIVITIES

### 3.1.1 TRUBINE MAINTENACE

Regular turbine maintenance for the HAF Wind Energy Project is scheduled to occur at least twice per year. Maintenance activities will involve structural and mechanical inspections of the tower and turbine, as well as the necessary changing of hydraulic and lubricating fluids.

During scheduled routine maintenance visits inspections for leaks of hydraulic or lubricating fluids will also be conducted. Maintenance visits and associated activities for each turbine is expected to be conducted over a period of approximately 2 business days per turbine, with weather permitting. Within the first year of commenced operations, it is expected that additional maintenance time will be necessary to fine-tune each turbine.

<u>Potential Impacts</u>

The layout of the project's facility and location of turbines was designed to avoid direct impacts to natural areas, wildlife, and watercourses. However, potential impacts of turbine maintenance activities include:

- Turbine maintenance activities that include the use of oils, lubricants and other fluids may be considered toxic or hazardous, depending on quantities required and handling procedures.

- The toxic or hazardous fluids and their associated containers have the potential to contaminate soil, groundwater, and/or surface waters if not properly handled and disposed of appropriately.

Mitigation

Recommended mitigation measures to prevent spills and leaks include:

- The inspection and maintenance of wind turbines will be conducted by a minimum two-person team.
- Maintenance equipment will cross watercourses only at designated crossing sites.

The following procedures are designed to minimize the potential for spills or leakage of hazardous fluids associated with turbine maintenance activities onto vegetation, and into the surrounding soil and ground or surface waters:

Storage and disposal of petroleum, oils and lubricants (POLs)

- The transportation of petroleum, oils and lubricants (POLs) will be conducted in compliance with the *Transportation of Dangerous Goods Act*.
- POL storage will be done in compliance with applicable provincial and federal regulations, codes and guidelines.
- POLs will be stored within the base of the tower for the duration of each service visit.
- Upon completion of turbine maintenance activities, all POLs including waste will be removed from the site.
- Fire extinguishers will be located near any POL storage areas.
- There will be no smoking permitted within 50m of any POL storage area.
- "No Smoking" signs will be displayed at all POL storage sites and refueling areas.
- All generated waste POLs as a result of turbine maintenance will be held in a tank or other closed container and will be disposed of in accordance with proper waste management procedures.
- Greasy or oily rags or materials subject to spontaneous combustion will be deposited and kept in an appropriate receptacle until they can be disposed of at an approved waste disposal facility.
- A spill kit, including absorbent material, will either be stored in the base of the turbine tower or will be brought to the site during maintenance visits.

Servicing and Inspections

- During the twice annual maintenance visits inspections of oil and hydraulic systems will be undertaken.
- If any leak is found during maintenance activities they will be immediately reported to the Ontario Ministry of Environment, Spills Action Centre at 1-800-268-6060.

- The project's turbine systems will be monitored remotely using a Supervision Control and Data Acquisition (SCADA) system. Technicians will determine when additional inspections are required on an as needed basis.
- No turbine maintenance activities will take place within 15 m of a wetland or watercourse without appropriate mitigation measures. Areas where this could take place are described in the Water Report and Environmental Impact Statement (EIS) of this REA Package.

Emergency Response

Although mitigation measures have been made to prevent any spills or accidents associated with turbine maintenance activities, there is still a possibility of accidents resulting in the release of hazardous materials into the environment. In the event that a spill occurs, action will be taken as outlined in **Section 5.2** of this EEMP.

### 3.1.2 ACCESS ROAD MAINTENANCE

Grading activities will be undertaken during the project's operations to maintain proper function of unpaved access roads by removing ruts, potholes and washboard conditions. Grading will also help maintain proper drainage of the project's facility and keep road surface conditions stable.

Potential Impacts

The layout of the turbines, access roads and transmission facilities was designed to avoid direct impacts to natural vegetation communities and to minimize potential impacts to Natural Features and watercourses. However, potential impacts to vegetation, natural features, and watercourses may include:

- Grading activities will loosen the top of the exposed road, which has the potential to cause erosion of the surface.
- If grading activities is not undertaken properly it can reduce the ability to control drainage runoff, which can cause sedimentation.
- Grading activities often generate dust.

Mitigation Measures

Recommended mitigation measures to protect natural vegetation communities, natural areas and watercourses include:

- During grading activities every effort to avoid surrounding vegetation areas should be made.
- Grading of areas where little to no vegetation is present after periods of heavy rain should be avoided to reduce runoff conditions.
- In the event that a berm is created at the edge of the road as a result of grading activates it will be collected and properly disposed of off-site
- Graded areas will be maintained to have a higher elevation then the drainage ditch path.

A contingency plan to manage any failure of erosion control measures is included in **Section 5.1**.

### 3.1.3 DITCH MAINTENANCE AND SHOULDERING

Ditch maintenance and shouldering activities are carried out in order for effective drainage of the roadbed to occur and to correct deficiencies that are a result of erosion, nonconformity in grade, water ponding on roadway, and restrictive vegetative growth that impedes drainage of the roadbed.

Potential Impacts

The layout of the turbines, access roads, and transmission facilities was designed to avoid direct impacts to natural vegetation communities and to minimize potential impacts to natural features and watercourses. However, potential impacts to vegetation, natural features, and watercourses may include:

- Erosion caused by exposed soil areas and the associated sediment-laden runoff effects on water quality, aquatic ecosystems and environmentally sensitive areas.

Mitigation Measures

Recommended mitigation measures to protect natural vegetation, watercourses and associated wildlife habitat include:

- A Buffer Zone of 15 m will be maintained between the end of ditching and any surrounding wetlands or water bodies.
- A check dam will be maintained at the end of the ditch (where the ditch meets the Buffer Zone).
- Additional erosion control structures such as rockfill, straw bales or rip rap may be installed further up the ditch as required.
- Natural drainage will be maintained whenever practical.
- Sediment deposited in the ditch will be removed when it reduces the capacity of the channel. Removed material and sediment will be disposed at a location more than 120 from a wetland, water body, to prevent any material from washing into these water bodies.
- If any petroleum-contaminated material if found in the ditch will be immediately reported to the Project Manager and the Ontario Ministry of Environment, Spills Action Centre.
- Any further sensitive features (e.g. watercourses, environmentally sensitive habitats) identified during pre-construction and construction activities will be protected during maintenance activities.

A contingency plan to manage the failure of erosion control measures has been included in **5.1**

### 3.1.4 SURFACING

With regards to this EEMP, surfacing activities during the operation of the HAF Wind Energy Project concern the placement of aggregate on an unsealed road surface to restore grade levels and to shape shoulders.

Potential Impacts

The layout of turbines, access roads, and transmission facilities was designed to avoid direct impacts on natural vegetation and watercourses. However, potential impacts to vegetation and watercourses include:

- The potential of sedimentation and accidental contamination of watercourses and aquatic habitats due to the handling and placement of aggregate.
- Impacts on air quality due to dust.

Mitigation Measures

Recommended mitigation measures to protect environmental effects associated with road surfacing include:

- Any aggregate placement will be conducted in such a manner to ensure road surface drainage flows from the centre of the surface to the drainage control structures (i.e., ditching).
- Any aggregate materials placed must be compacted to reduce moisture penetration.
- As required, water will be applied as a dust suppressant.
- Sensitive features (e.g. watercourses, environmentally sensitive habitats) identified during pre-construction and construction phases will be protected during maintenance activities.

A plan to manage failure of sedimentation control measures has been included in **Section 5.1**.

### 3.1.5 SNOW REMOVAL

As part of the HAF Wind Energy Project's operational activities snow removal and the application of sand and/or salt will be necessary during the winter months to maintain safe conditions for maintenance activities.

Potential Impacts

The turbine layout, access roads, and transmission facilities was designed to avoid direct impacts to the natural environment and surrounding watercourses. However, potential impacts include:

- Saline runoff into watercourses as a result of excessive salt application.
- Excess sand application can cause blockages in drainage structures and can contribute to sediment-laden runoff into watercourses.

Mitigation Measures

Recommended mitigation measures to protect the surrounding natural environment and watercourses include:

- A professional service provider should be used for the removal of snow and ice on the facility's access roads.
- Vineland Power Inc. will ensure that the employed contractor adheres to the Best Management Practices as described in Environment Canada's *Best Management Practices for Salt Use on Private Roads, Parking Lots and Sidewalks.*
- The amount of sand and/or salt used at the project's facility should be kept minimal to that which is needed to ensure the safety of maintenance staff.
- Sand should be used primarily as the means of maintaining safe driving and working conditions during winter months. Salt should only be used as required.
- As much snow as possible should be plowed from the road before salt is applied.
- Salt application will be limited to targeted areas requiring extended treatment to ensure that minimal amounts of salt are used.
- Snow cleared from the project's access roads and site surfaces will not be relocated within 30 m of any wetland, waterbody, or environmentally sensitive area.

### 3.1.6 SWITHCHING STATION MAINTENANCE

During the project's operation switching station maintenance will also be required. Associated maintenance activities include the testing of circuit breakers, switchgear, ground grid systems, batteries, chargers, oil, insulating liquids and safety systems.

Potential Impacts

The layout of the projects turbines, access roads, and transmission facilities was designed to minimize direct impacts to the surrounding natural areas and watercourses. However, impacts may include:

- During switching station maintenance activities the use of toxic or hazardous oils and/or insulating fluids may be required and can pose an environmental hazard and safety risk if not handled properly.
- Toxic or hazardous fluids and their associated containers could potentially contaminate soil and/or ground water or surrounding water courses if not disposed of appropriately.

Mitigation Measures

The recommended mitigation measures to be followed to minimize the potential for spills or leakage of hazardous fluids are identical to the mitigation and emergency response measures that have been developed for the maintenance of the project's turbines described in **Section 5.0.**

### 3.1.7 TURBINE AND SWITCHING STATION CLEANING

In the event that dust or debris accumulates on the facility's equipment hindering operations or the ability to perform maintenance activities manual cleaning will be carried out. Generally, the accumulation of dust and debris will be prevented by natural wind and rain events; however, turbine blades have to be cleaned of the dirt occasionally in order for the blades to perform at optimum efficiency. This maintenance will be undertaken at scheduled times and the turbine will temporarily suspend operations.

Potential Impacts

The layout of the turbines, access roads, and transmission facilities was designed to avoid direct impacts to the surrounding natural areas. However, potential impacts may include:

- Cleaning procedures associated with the facility's turbines or switching station has the potential to cause cleaning materials and siltation to enter the aquatic environment.

Mitigation Measures

Recommended mitigation measures include:

- In the event that accumulations of dirt and debris are excessive, deck surfaces will be scraped or swept prior to blowing with compressed air or flushing.
- All material scraped loose will be collected and disposed of appropriately.
- All necessary precautions will be taken to prevent the discharge of any harmful substance into a watercourse, and all empty cleaner containers will be disposed of in an appropriate manner.
- The risk of negative environmental effects due to the introduction of foreign materials into the environment will be minimized by removal and proper disposal of waste material.
- Maintenance equipment will cross watercourses only at designated crossing sites.

## 3.2 ENVIRONMENTAL PROTECTION MEASURES FOR MATERIALS, EQUIPMENT, AND FACILITIES

### PETROLEUM, OILS, LUBRICANTS, AND OTHER HAZARDOUS MATERIALS

A variety of potentially hazardous materials will be in use or stored during construction, maintenance and decommissioning phases for the proposed wind energy project. Potentially hazardous materials routinely used include: petroleum fuel, oils, lubricants, hydraulic fluids, acetylene, paints and solvents. The procedures and requirements of the Workplace Hazardous Materials Information System (WHMIS) program will be in place to protect employees and are generally applicable to the protection of the environment. These WHMIS procedures and requirements reinforce the proper handling, storage, and control of hazardous or toxic materials thereby reducing the potential for accidental release and consequent potential environmental effects.

Potential Impacts

The layout to turbines, access roads, and transmission facilities was designed to avoid direct impacts to natural vegetation and aquatic and marine habitat. However, potential impacts may include:

- In the event that there is uncontrolled release of hazardous materials in to the environment through accidental spillage it could have adverse effects on terrestrial, aquatic and marine habitat and species, soil, groundwater quality and human health and safety.

Mitigation Measures

Recommended mitigation measures to minimize the potential of any petroleum, oil and lubricants (POLs) spills on soil, vegetation, surface water, and groundwater include:

Storage of POL*s:*

- Fuel transport will be conducted in compliance with the *Transportation of Dangerous Goods Act*.
- Mobile fuelling trucks will be used to minimize the requirements for on-site storage of POLs.
- Diesel fuel and gasoline may be stored on site in limited quantities as required for one day's use. Fuel drums will be stored upright on a deck with drip trays for the collection of spilled substances.
- Where possible, vehicle maintenance will be performed off site, at a nearby commercial fuelling station, in order to minimize the amount of lubricants and oils stored on site.
- On-site POL storage will be in a ventilated, lockable steel container. The container will be equipped with galvanized steel drip trays for the collection of spilled substances.
- The on-site POL storage container shall be located on level terrain, at least 120 m from any water body, watercourse or wetland.
- Spill decks will be used for transferring products to smaller containers.
- Fire extinguishers will be located near POL storage areas. A spill kit, including absorbent material, will either be stored in the base of the tower or will be brought to the site during maintenance visits.
- POL storage areas will be identified by signs.
- Smoking will not be permitted within 50 m of any POL storage area. "No Smoking" signs will be displayed at all POL storage sites and refueling areas. On-site signage will indicate the location of smoking areas.

Equipment Fuelling:

Only equipment that is not easily transported will be refueled on site. All other vehicles and equipment will be refueled at a commercial fuelling station.

- When refueling equipment, operators will:
    - Use designated fuelling locations;
    - Use drips trays;
    - Use leak free containers and reinforced rip and puncture proof hoses and nozzles;
    - Be in attendance for the duration of the procedure; and
    - Seal all storage container outlets except the outlet currently in use.
- Fuelling must be done at least 120 m from a wetland or water body.
- The Contractor will make daily inspections of hydraulic and fuel systems on machinery.
- All leaks will be immediately reported to the MOE, Spills Action Centre at 1-800-268-6060.
- Servicing of equipment will not be allowed within 120 m of a wetland or water body.
- Fuelling attendants will be trained in the requirements under the Fuel and Hazardous Material Spills Contingency Plan in **Section 5.0** of this EEMP.

POL Waste Disposal:

- Waste POLs will be stored in a ventilated, lockable steel container. The container will be equipped with galvanized steel drip trays for the collection of spilled substances.
- Waste solvents and oils will be stored separately.
- All used oil and petroleum products will be removed as required and disposed in an acceptable manner in accordance with government regulations, and requirements, including but not limited to *O Reg 347/09* S. 17.2.
- Waste oil will be collected separately and offered for recycling or stored for collection by an appropriate special waste collection and disposal company.
- Greasy or oily rags or materials subject to spontaneous combustion will be deposited and kept in an appropriate receptacle until disposed of at an approved waste disposal facility.
- POL waste disposal will be the responsibility of the Contractor.

### 3.2.1 SOLID WASTE DISPOSAL

As part of the HAF Wind Energy Project there is anticipation that some waste will be generated as a result of construction, maintenance and decommissioning phases of the project. Waste streams have been provisionally classified as domestic waste, paper, cardboard, wood and scrap steel and metals. This section concerns general measures to be undertaken for waste minimization, recycling and disposal. Detailed information regarding

anticipated volumes of waste generated throughout different stages in the project are provided by Vestas in the *Design and Operations Report.*

Potential Impacts

The potential impacts regarding waste disposal for the HAF Wind Energy Project include:

- If solid waste is not properly controlled and disposed of it can pose human health and safety concerns.
- Uncontrolled hazardous waste can contaminate soils, surface and groundwater, and can be toxic to local vegetation, fish and wildlife, if ingested in sufficient quantities.

Mitigation Measures

Recommended mitigation measures to minimize the potential environmental effects of solid waste disposal include:

- The Contractor, with approval from the Site Supervisor will designate and use areas for the transfer and limited temporary storage of hazardous materials and special wastes during construction. These sites are to be properly labeled and appropriately controlled.
- Temporary waste storage areas are to be located a minimum of 120 m from a wetland, water body, or other environmentally sensitive area.
- All waste will be handled in accordance with relevant provincial and federal requirements, including but not limited to *O Reg 347/09* S. 17.2.
- Waste material will not be dumped on-site.
- Waste and debris will be prevented from entering any water bodies, wetlands, watercourses or other environmentally sensitive area.
- Waste disposal and storage facilities and areas will be properly protected from the elements in accordance with all applicable legislation and regulation to ensure that run-off will not form nor enter any watercourses, water bodies or wetlands.

# 4.0 ENVIRONMENTAL FEASTURES MONITORING

## 4.1 BIRDS and Bats

A separate detailed **Environmental Effects Monitoring Plan for Birds and Bats** has been prepared by Morrison Hershfield and was sent to the Ministry of Natural Resources for review. This report was prepared in accordance with the following Ontario Ministry of Natural Resources publications:

- "Birds and Bird Habitats: Guidelines for Wind Power Projects" dated October 2010;
- "Birds and Bat Habitats: Guidelines for Wind Power Projects" dated March 2010;

The post-construction monitoring protocol discussed in this separate Environmental Effects Monitoring Plan will be implemented at the HAF Wind Energy Project.

## 4.2 VEGETATION AND WILDLIFE DURING CONSTRUCTION

The project's facility has been designed so that disturbance to native vegetation and wildlife during construction will be minimized.

Potential Impacts

Potential impacts associated with construction include:

- Temporary disturbance to wildlife due to noise and dust
- Impacts to wildlife from wildlife entering the construction area.
- Erosion/ siltation
- Accidental spills
- Establishment of invasive and disturbance tolerant non-native species near the natural feature

Mitigation Measures

- Movement of wildlife through the area, may experience temporary avoidance or displacement effects during construction due to noise, however once the Project is operating, human activity around the facilities will decrease, thus allowing local wildlife movement patterns to quickly re-establish.
- Where construction is proposed within 30 m of a significant wetland, sediment fencing will be erected along the feature edge acting as a barrier to prevent small animals, amphibians and reptiles from moving into the construction area or onto access roads. Fencing will also be erected around the perimeter of the construction area preventing wildlife from entering the area.
- Install and maintain sediment and erosion control measures
- Utilize Horizontal Pressure Directional Drilling where possible
- No equipment storage or refueling areas are located within 30m of the wetland
- Excavated soils which must be stored for a period longer than 45 days will be covered or seeded with a cover crop; once they are replaced, they will be re-seeded with a native seed mix

Contingency Plan

The effectiveness of all mitigation measures will be noted and corrected or altered as required.

## 4.3 WATER BODIES

There are nine proposed water crossings associated with the underground collector system and access road route for the HAF Wind Energy Project. These crossings will be installed by Horizontal Pressure Directional Drilling (HPDD) in accordance with the department of Fisheries and Oceans Canada Operational Statement. Details for the procedures can be found in the Water Assessment and Impacts Report.

The underground collector system route for HAF Wind Energy Project will be installed by Horizontal Pressure Directional Drilling (HPDD) in accordance with the Department of Fisheries and Oceans Canada Operational Statement. Details of the procedures can be found within the **Water Assessment and Impacts Report**.

Potential Impacts

The layout of turbines, access roads, and transmission facilities was designed to avoid direct impacts to the watercourses. However, potential impacts to the watercourses and fisheries habitat include:

- Sedimentation and accidental contamination of watercourses, groundwater and wetlands;
- Loss of riparian vegetation;
- Increase in siltation;
- Removal of channel morphology (pools, riffles, and runs);
- Removal of in-stream vegetation for fish shelter and food supply and;
- Loss of fish habitat following a significant flow reduction downstream.

Mitigation Measures

Recommended mitigation measures to protect the watercourses and fisheries habitat include:

- All in-water works will need to strictly follow the MNR timing windows for Twenty Mile Creek (March 1st-July 1st and September 1st – November 30th);
- Conscientious design, installation and maintenance of sediment control measures wherever there is a risk to siltation of surface waters.
- Where access roads cross drainage channels, appropriate culvert design and construction will be undertaken in consultation with Niagara Peninsula Conservation Authority.
- Timely revegetation of exposed soils, both for temporary work areas and final grades (existing vegetation on embankments shall be maintained as long as possible and new slopes shall be stabilized as soon as possible by seeding and mulching).
- Vegetation removal will be minimized.
- The contractor will be required to specify construction access routes and fuelling areas to avoid watercourse and groundwater contamination and siltation.
- The contractor will be reminded of the requirement to report contamination spills (including the discharge of sediment into waterways) as per the Environmental Protection Act and the Fisheries Act. All toxic chemicals and contaminants must be disposed of off-site in approved disposal sites under appropriate MOE regulation.
- Storage of hazardous materials will not occur within 120m of any environmentally sensitive areas, including waterbodies or wetlands.

- Sediment will not be disposed of within 120m of any environmentally sensitive areas, including waterbodies or wetlands.

Monitoring

Environmental supervision is required during construction to ensure adherence to the prescribed mitigation measures and for early identification of runoff and erosion issues.

Post-construction monitoring will be carried out at the HAF Wind Energy Project one year after construction has been completed. The post-construction monitoring will consist of an inspection of all watercourses, drainage facilities and seeded or replanted areas.

Contingency Plan

The effectiveness of all mitigation measures will be noted and corrected or altered as required. Should there be an accidental spill (including the discharge of sediment into waterways), the contractor will report it immediately as per the *Environmental Protection Act* and the *Fisheries Act*.

## 4.4 Lighting Control

There will be lighting requirements associated with the project's equipment operation. As required by Transport Canada standards and regulations, some of projects wind turbines will be equipped with lights throughout the project's operational life for aeronautical safety.

Potential Impacts

The layout of turbines, access roads, and transmission facilities was designed to avoid direct impacts to the surrounding wildlife. However, potential impacts to wildlife include:

- Turbine lighting may increase the mortality rate of nocturnal birds, as they maybe attracted to lights.

Mitigation Measures

Recommended mitigation measures to protect birds and bird habitat include:

- Lighting at the project site will only be used for air navigation and safety purposes, as required by Transport Canada. It is anticipated that negative impacts to birds will be minimized by this method of turbine lighting.
- Lighting of the turbines during operation will be kept to the minimum required by Transport Canada for aeronautical safety.

## 4.5 Noise

As part the operations phase of the project, and the commissioning of turbine operations it is anticipated that the facility will generate detectable levels of noise. Mechanical noise generated as a result of the movement of gears and mechanical parts will be contained within the nacelle by sound insulating and isolating materials. Aerodynamic noise caused by the movement of air around the turbine blades will account for the noise level emitted by each turbine.

It is anticipated that during the construction and decommissioning phases of the project noise will be generated as a result of associated activities. Further details regarding Noise have been discussed in the Noise Assessment Report of the REA Package.

Potential Impacts

The layout of turbines, access roads, and transmission facilities was designed to avoid direct impacts to the natural environment and surrounding residential communities. However, potential impacts to surrounding residential communities include:

- Projected noise levels generated as a result of project's turbine operations has been acknowledged as an issue of public concern by the local residents of the Township of West Lincoln. A Noise Assessment Study was undertaken using worst-case scenario conditions. Results of the HAF Wind Energy Project's Noise Assessment Study indicate that noise levels at non-participating receptors surrounding the project's proposed turbine locations will be within the sound level limits of 40 dBA established by the Ministry of the Environment.
- The Noise Assessment Study submitted to the Ministry of Environment as part of the HAF Wind Energy Project's REA Application concluded that noise level criteria was met at every non-participating noise receptor.

Mitigation Measures

Recommended mitigation measures to protect the surrounding residential communities include:

- Conscientious design of project facilities and turbine layout to adhere to minimum setback requirements and sound power levels established by regulatory agencies; and,
- If the turbine is producing more noise at anon participating receptor, the turbines could be operated in the reduced noise mode.

Monitoring

After operations commence a noise monitoring program will be established and administered by Vineland Power Inc. to ensure that generated sound emissions as a result of project operations do not exceed the established acceptable noise level limits. It is not expected that noise level limits generated from the project's operation will change unless there is damage to turbine equipment, such as a damaged turbine blade or malfunction in the gear box or generator or yaw system or the main bearings. Due to continual real-time monitoring of turbine performance any change in performance outputs would be immediately recognized the by Supervision Control and Data Acquisition (SCADA) monitoring system and would immediately be addressed by the project management team.

The monitoring program will also provide local residents with the opportunity to file a noise complaint with the project's operator. The project operator will be responsible for recording all noise complaints received by the public and responding to them within a reasonable time period. In the event that multiple noise complaints are received additional acoustic monitoring will be undertaken to determine the necessary action required to address complaints.

# 5.0 Unplanned Events and Contingency Plans

## 5.1 Erosion Control Failure

Minimizing erosion and the related potential sedimentation of receiving water bodies is a critical environmental management concern for this project. Erosion control methods will be applied where there is the potential for erosion due to rain, flowing water, steep slopes, and/or highly erodible soils. This program contains measures to prevent failure of erosion control structures.

Potential Effects

They layout of turbines, access roads, and transmission facilities was designed to avoid direct impacts to the surrounding natural environment and watercourses. However, potential impacts may include:

- Associated sediment-laden runoff and the resulting effects on water quality, aquatic ecosystems, and environmentally sensitive areas such as wetlands.

Mitigation Measures

The following recommended mitigation measures will be implemented to minimize the potential environmental effects in the event of erosion control failure:

Emergency Response Action Plan

- Supplies for any emergency response will be on hand at all times. This may include, but is not necessarily limited to, straw bales, filter fabric, and silt curtains.
- If siltation of the nearby watercourses is observed, the Construction Manager will be notified and the source of the siltation identified. Siltation generally results from ineffective preventative measures.
- Construction operations that are determined to further aggravate the problem will be suspended.
- Sources of erosion will be isolated, contained and controlled by the implementation of such measures as straw bales or brush mats. Erosion control structures will be repaired immediately.
- If the release has affected, or has the potential to affect, a sensitive area (e.g. a wetland or watercourse), it will be the responsibility of the Site Supervisor to contact and consult with the appropriate regulatory authorities (e.g. MNR, Fisheries and Oceans Canada) as required for notification and planning.
- To ensure that erosion and sediment control measures are in effective working order, their condition will be monitored periodically.
- Accumulated sediment will be removed upon reaching a depth of one-half the effective height of the control measure or a depth of 300 mm immediately upstream of the control measure.
- For all erosion control measures, accumulated sediment will be removed as necessary to perform maintenance repairs.

- Accumulated sediment will be removed immediately prior to the removal of erosion control structures.
- The sediment removed will be deposited at a distance greater than 120 m from any watercourse or water body in an area that will not result in erosion and runoff into the watercourse or water body, as approved by the Construction Manager.

## 5.2 Fuel and Hazardous Materials Spills

A Fuel and Hazardous Material Spill Contingency Plan has been prepared to describe the appropriate response system that Vineland Power Inc. will follow in the event that there is an accidental release of petroleum, oils, or lubricants (POLs) or other hazardous materials into the natural environment.

Potential fuel or hazardous materials can be spilt as a result of fuel transfers from storage containers to machinery and vehicles. Possible hazardous material spills can be associated with hydraulic fluids, lubricating oil, solvents, anti-freeze, and paint.

The purpose of Fuel and Hazardous Material Spill Contingency Plan is to minimize:

- The pollution of any land or water feature;
- The affected area;
- Degree of disturbance associated with spill clean-up; and
- Danger to persons.

### *Potential Effects*

The layout of turbines, access roads, and transmission facilities was designed to avoid direct impact to the natural environment and minimize the potential impacts to wildlife, vegetation, and watercourses. However, potential effects may include:

- Damage and contamination to nearby vegetation, soil, surface water, groundwater, wildlife, aquatic organisms, and human health.

### *Mitigation Measures*

Recommended mitigation measures to prevent the occurrence of Fuel and Hazardous Materials Spills and the associated potential effects include:

- A full-time employee of Vineland Power Inc. will become the facility's Health and Safety Officer and will attain WHMIS certification and Occupational First Aid training.
- The handling of hazardous materials will be carried out by only trained and qualified personnel.
- All hazardous material will be handled in accordance to the manufacturer's instruction and government regulations.
- The WHMIS program will be implemented in accordance with the Ontario *Occupational Health and Safety Act* and Regulations.

- All employees dealing with hazardous materials will be trained in the use of safety equipment, spill prevention equipment, and emergency response procedures.
- All hazardous materials will be stored and handled in accordance with applicable provincial and federal regulations, codes, and guidelines.
- All hazardous material containers will be properly labeled in compliance with the requirements of WHMIS.
- Material Safety Data Sheets (MSDS) will be available for all hazardous materials in use or stored on-site.
- Storage of hazardous materials will not occur near environmentally sensitive areas, such as within 120m of wetlands or water bodies.
- All necessary precautions will be implemented to prevent the spillage and release of hazardous materials to the environment.
- The removal and disposal of hazardous materials from the project site will be in accordance with government regulations and requirements
- Appropriate waste collection and disposal companies will be used to relocate the hazardous materials to an approved waste disposal facility.
- Regular inspection of work equipment will be conducted to ensure that items such as hoses and safety equipment are in proper working order.

Contingency and Response Plan

- If and when it is safe to do so, the individual who discovers the leak or spill will make an immediate effort to stop and contain the leak or spill.
- During construction, any leak and spill must be reported immediately to the Construction Manager.
- The Construction Manager will be responsible for the immediate contact of the Ministry of Environment, Spills Action Centre to report a spill. The number to be used is 1-800-268-6060.
- A Spill Report Form, which has been prepared for this project must be filled out and include:
    - A description of the source, including the name of the owner or operator;
    - The nature, extent, duration and environmental impact of the release;
    - The cause or suspected cause of the release; and
    - Any remedial action taken or to be taken to prevent a recurrence of the leak or spill.
    - The site Contractor will have the full authority to take appropriate action without unnecessary delay. The Spill Report will be prepared by the Contractor immediately following the discovery of the spill or leak and forwarded to the Project Manager.

- The responsibility for managing the clean-up effort in accordance with this contingency plan will be that of the construction Contractor.
- The construction Contractor will, in consultation with the appropriate regulatory authorities (See **Appendix A**):
    - Deploy on-site personnel to contain the spilled material using a dyke, pit, or absorbent material;
    - Assess site conditions and environmental impact of various cleanup procedures;
    - Choose and implement an appropriate cleanup procedure;
    - Deploy on-site personnel to mobilize pumps and empty drums (or other appropriate storage) to the spill site;
    - Dispose of all contaminated debris, cleaning materials, and absorbents by placing in an approved disposal site.

Spill Cleanup Resource List:

As part of the Operational Phase of the project, the following items will be kept available at an appropriate location within the project's facilities in preparation of the need to respond to an accidental release of a fuel and/or hazardous materials:

- Absorbent materials (e.g. sorbent pads, Sorb-All, peat moss).
- Small equipment such as shovels, rakes, tool kit, sledgehammer, buckets, stakes, tarpaulins, one empty drum, and protective equipment.
- **Section 5.6** of this EEMP contains the contact list for spill response.

### 5.3 Wildlife Encounters

During the construction phase of the project there may be potential for interactions between wildlife and construction site personnel. This plan outlines the appropriate measures to be taken if encounters occur.

Potential Effects

The layout of turbines, access roads, and transmission facilities and associated construction activities was designed to minimize the potential impacts to wildlife and encounters with humans. However, potential impacts to wildlife may include:

- Distress for both the animal and employee
- Serious injury could result to site workers in some instances
- Threats to personnel include encounters with wildlife, especially rabid animals and those with young.
- Any bites from animals are potentially dangerous
- Distressed animals can potentially alter feeding and breeding behaviour
- Physical injury or death to wildlife could also occur.

Mitigation

Recommended mitigation measures to protect both wildlife and humans from encounters include:

- All construction site personnel will remain within designated work areas and will be briefed in the following measures.

Contingency and Response Plan

- No person on the work site will attempt to harass wildlife
- All construction equipment and vehicles will yield the right-of-way to wildlife, if it is safe to do so
- If a disruption or injury to wildlife occurs as a result of an encounter the Site Supervisor will contact the MOE Spills Action Centre and have the on-call Conservation Officer paged
- If dead animals are encountered (including birds or bats), they will be removed and disposed, as soon as possible, in consultation with a local Provincial Wildlife Officer.
- If an injured or dead bird or bat is encountered, the following information will be recorded:
    - date and time it was found,
    - location (GPS coordinates, if available, or description of location in the absence of precise coordinates),
    - photograph taken if possible,
    - state of decomposition,
    - estimated number of days since death,
    - injury sustained (if identifiable),
    - cause of injury (if known), and
    - species.

This information will be kept on file with Vineland Power Inc. for incorporation into the post-construction bird and bat monitoring programs.

## 5.4 Fires

During the operations phase of the HAF Wind Energy Project there is a low potential that an unexpected fire to occur. This contingency plan details the fire prevention measures to be used as well as response action plans.

Potential Impacts

The layout of turbines, access roads, and transmission facilities was designed to avoid direct impacts to the natural environment and wildlife in the event of a fire. However, potential impacts may include:

- Alteration or destruction of terrestrial habitat

- Direct mortality of wildlife
- Fire fighting chemicals and spilled materials could enter surrounding watercourses and adversely affect aquatic habitats
- Fires could also adversely affect air quality
- Fires pose risks to human health and safety

Mitigation Measures

Recommended mitigation measures to protect the natural environment, wildlife, and human health and safety as a result of fire include:

Personnel Training:

- All staff working on the project site will be trained in the use of on-site fire-fighting equipment, fire prevention and response, including emergency services phone numbers (see Section 5.0 of this document) and locations of on-site fire-fighting equipment.

Prevention:

- All flammable waste will be disposed of on a regular basis.
- There will be no smoking within 50 m of flammable product storage or usage. Areas for disposal of smoking material will be clearly posted.
- Fire-fighting equipment, sufficient to suit on-site fire hazards, will be maintained in proper condition and to the manufacturer's standards.

Contingency and Response Plan

- Notification of nearby personnel will happen immediately.
- Immediate steps will be taken by on-site personnel to extinguish the fire using appropriate equipment.
- Notification of the Project Manager and Site Supervisor.
- In the event that the fire cannot be contained, the local Fire Department will be contacted at 9-1-1.
- In case of related medical emergencies, emergency medical assistance will be requested from 9-1-1.

## 5.5 Accidents and Malfunctions

### 5.5.1 Aeronautical Obstruction

The HAF Wind Energy Project's (5) five turbines will reach a maximum height of 145 m from the base of the tower to the tip of the highest blade. This may cause a potential hazard to low-flying aircraft.

Potential Impacts

The layout of the project's turbines was designed to avoid direct impacts to low flying aircrafts and permit the safe use of flight paths within the vicinity of the project site by

meeting Transport Canada safety standards and regulations. However, potential impacts to aeronautical operations include:

- Aircraft collision with the wind turbine or its tower or abrupt avoidance maneuvers could result in the injury or death of the passengers aboard the aircraft, tower maintenance personnel if they are present, and any other people in the vicinity of the tower.

Mitigation

Recommended mitigation measures to prevent the occurrence of aeronautical obstruction include:

- Compliance with current Transport Canada regulations requiring lighting for structures between 90 and 150 m tall within two nautical miles of a VFR route (Visual Flight Rules) or any structure taller than 150m.
- The HAF Wind Energy Project wind turbines will be built and maintained in compliance with Transport Canada lighting regulations.
- All aircraft warning lights will be inspected during turbine maintenance visits.
- The operation of aircraft warning lights will be monitored between maintenance visits by the automated SCADA system (Supervisory Control and Data Acquisition).

### 5.5.2 Ice Fall and Ice Throw

There is potential for ice to accumulate on wind turbine blades during events of freezing rain or when super-cooled cloud droplets are intercepted by the turbine blades. As a result there is potential for the ice to either fall or be thrown from the turbine blades. The risk of ice fall or ice throw is generally only present during days of the year when weather conditions provide the opportunity for ice buildup at the height of the turbine blades. The potential hazard of ice falling from a stationary turbine blade is comparable to the hazard of ice falling from a communication tower or transmission line.

Potential Impacts

The layout of the project's turbines, access roads, and transmission facilities was designed to avoid direct impacts caused by ice fall or ice throw. However, potential impacts may include:

- Human health and safety
- Safety of property located within the vicinity of the project location. Staff may have to work during the icing conditions in case of turbine repair or maintenance. However they will use appropriate safety gear in order to avoid injuries from ice throw.

Mitigation Measures

Recommended mitigation measures in protection of any human health or safety risks associated with ice fall or ice throw include:

- All wind turbines will be equipped with sensors that will detect imbalances within the rotor system such as that which would result form ice build-up. The sensor will cause the turbine to stop rotating and remain offline until the imbalance has been corrected, which will significantly reduce the chance of ice throw.
- Signs will be posted along access roads and at the base of the tower warning of the potential for ice fall.
- Any work on the turbines during icing condition will stop and staff will leave the site cautiously.

### 5.5.3 Injury of Site Personnel

While undertaking turbine maintenance activities associated with the HAF Wind Energy Project staff will be required to enter the turbine.

Potential Impacts

Potential impacts to the safety of project maintenance staff include:

- The potential risk of injury to maintenance workers includes activities associated with the climbing of the turbine tower and working inside the turbine nacelle itself.
- Maintenance staff will be elevated up to 100m above ground level in a confined space, which will be difficult for local emergency rescue and response teams to access.

Mitigation

Recommended mitigation measures to protect turbine maintenance staff from injury include:

- Required turbine maintenance and other associated activities will be performed by two or more trained staff members at all times who are familiar with the turbine manufacturer's turbine rescue procedures.
- The Vestas V-100 Safety Instruction document will be followed at all times by project staff.
- Workers are to carry two-way radios or cell phones to maintain communications between the nacelle and the base of the tower.
- If a maintenance worker becomes injured and cannot climb down the tower on their own, other staff members present will conduct rescue operations until the injured party has reached ground-level. Local emergency response teams will be contacted to transport the injured staff members to the nearest hospital for medical treatment.
- Local emergency response services will be contacted before staff commences any rescue procedures.
- Proper rescue response procedures will be developed by Vineland Power Inc. in consultation with the turbine manufacturer.

## 5.6 Key Contact List

The following organizations and/or individuals identified below may be contacted in the event of emergency situations at the HAF Wind Energy Project's facility or to address regulatory issues. Contact information for the Project's Operators has also been provided.

This list will be posted in the base of each turbine, and it will be carried by maintenance personnel employed by Vineland Power Inc. during the operation phase of the project.

**Table 1: Key Contact List for HAF Wind Energy Project Facility**

| Agency | Area | Phone Number |
|---|---|---|
| **Emergency Contacts** | | |
| Ambulance/Police/Fire/Rescue | | 9-1-1 |
| Vineland Fire Department & Emergency Services | | 9-1-1 |
| Niagara Regional Police | Port Colborne Detachment | (905) 735-7811 |
| Ontario Provincial Police (O.P.P.) | Niagara Detachment | (905) 356-1311 |
| **Environmental Emergencies & Spills** | | |
| Ministry of Environment, Spills Action Centre | Ontario | (800) 268-6060 |
| **Local Hospitals with Emergency Services** | | |
| Niagara Health System- Port Colborne General Site | | (905) 378-4647 |
| Niagara Health System- Welland Hospital Site | | (905) 378-4647 |
| **Regulatory and Municipal Contacts** | | |
| Ministry of Natural Resources | Guelph District | (519) 826-4955 |
| Ontario Ministry of Culture | St. Catharines Office | (800) 263-2441 |
| Ministry of Environment | Niagara District Office | (800) 263-1035 |
| Niagara Peninsula Conservation Authority | | (905) 788-1121 |
| **Vineland Power Inc.** | | |
| Operational Manager | | TBD |

# 6.0 Conclusion

The mitigation measures outlined in this report have been designed to minimize the impacts to the natural features of the project area. Specific post-construction monitoring programs have been designed to monitor the effectiveness of these mitigation measures. Each monitoring program is designed with a contingency plan to correct or alter mitigation measures that are not successful. Post-construction monitoring reports will be submitted to Ministry of the Environment for each monitoring year.

# Appendix A
Spill Reporting Guidelines

# Ministry of the Environment
# Responding to Spills and Emergencies

## Introduction

Spills of hazardous materials and other pollutants can threaten people, property and the environment. The Ministry of the Environment (MOE) serves primarily as a regulatory agency. MOE can also be called upon to help deal with environmental concerns resulting from spills and to provide information and advice to fire departments and other first response agencies.

Municipalities often provide containment and cleanup measures for spills to their roadways and drainage systems. The primary responsibility for public health and safety in an emergency resulting from a spill or a fire rests with the municipality. A fire chief or local medical officer of health can initiate public safety measures including evacuation or shelter-in-place orders.

## Ministry Mandate

MOE's regulatory mandate for spills arises largely out of Part X of the ***Environmental Protection Act***, which requires spills to be reported forthwith. Part X also requires the owner of the spilled material, and the person who had control of a material when it was spilled to promptly clean up and restore the environment. The ministry ensures that the cleanup and disposal of spilled materials is done in an environmentally acceptable manner.

When those under statutory duties cannot or will not respond adequately, the Minister has the authority under the *Environmental Protection Act* to order those responsible for the spill to clean up the site. Should they fail to comply with such orders; the ministry can undertake the cleanup and recover costs.

By *Order in Council* under the ***Emergency Management and Civil Protection Act***, the Minister has responsibility for spill and drinking water emergencies. To this end, the Ministry has developed an Emergency Management Program that includes an Emergency Response Plan, a Continuity of Operations Plan and an Emergency Operations Centre.

The Ministry is committed to providing timely services for receiving, assessing and coordinating responses to spills. These service commitments are facilitated by the Spills Action Centre (SAC), and a province-wide Ministry field response capacity in MOE's Operations Division. Further support is provided by a network of additional resources available from other parts of the Ministry.

## Spills Action Centre (1-800-268-6060)

The role of Spills Action Centre (SAC) is to receive reports of spills and other environmental matters and initiate or co-ordinate a response as required. SAC is staffed on a 24-hour basis and can be reached with a province-wide, toll-free telephone number (1-800-268-6060).

SAC has access to extensive chemical database systems and often provides clean up advice over the phone. Depending on the nature and impact of an incident, SAC can activate various levels of ministry response as follows.

## District-level Response

The ministry's first level of field response is provided by environmental officers working out of the ministry's district or area offices. For example, an accident involving a tanker truck that has spilled a load of chemicals onto a highway, the District response staff assess the situation and determine what actions need to be taken and what additional resources may be needed.

Outside of regular working hours, each district office has an on-call environmental response person who is sent out by SAC if certain criteria are met. Depending on the location of an event, an after-hours District-level field response person is generally within about two hours.

## Regional-level Response

A Regional-level ministry response is triggered to supplement the District-level response with technical support and other resources through the ministry's five regional offices. For example, Region-level ministry support may be required for a significant chemical fire. Regional assistance or expertise may include:

- Staff, equipment and technical expertise for complex incidents;
- Air or water monitoring or modeling and interpretation (a picture of existing and projected conditions);
- Support, guidance and approval to initiate directions, approvals or orders under the *Environmental Protection Act.*

An after-hours, regional-level ministry field response can be expected within three to four hours, subject to the availability of equipment and staff.

## Additional Ministry Resources

When an emergency requires additional MOE support beyond those available at the regional and district levels, the ministry may call upon the following resources:

- The **Drinking Water Management Division** staff can be called upon to assist when spills or spill emergencies threaten drinking water supplies.
- The **Environmental Monitoring and Reporting Branch** (EMRB) may provide on-site specialized air monitoring at prolonged industrial or chemical fire using one of its two mobile trace atmospheric gas analyzers (TAGA). TAGA measurements may be used to determine when it is safe for residents to return home. EMRB may also be called upon to provide meteorology, as well as air and water modeling support.
- The **Standards Development Branch** can provide information on chemical and physical properties of contaminants and pesticides, and can provide expertise on toxicology and air and water standards.
- The **Laboratory Services Branch** can conduct rapid analysis of samples, which may be important for making decisions regarding response actions and cleanup procedures.
- The **Waste Management Policy Branch** advises on the safe transportation and disposal of wastes from spills and emergencies.
- **Communications Branch** provides communications support beyond that which is available at the Regional offices.

## For More Information, Contact:

**MOE Emergency Management Coordinator:**
(416) 325-1995, or

**Spills Action Centre** at: 1-800-268-6060

# Spills Reporting -
# A Guide to Reporting Spills and Discharges

As required by the

(Ontario) Environmental Protection Act
(s.92 and s.15)

and

Ontario Regulation 675/98
Classification and Exemption of Spills and Reporting of Discharges

May, 2007

Protecting our environment.

Ontario

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## May, 2007

Spills Action Centre

Ontario Ministry of the Environment



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Consult the official Statutes of Ontario for specific and most current references.

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Prepared by:

Ministry of the Environment

SPILLS ACTION CENTRE

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# SPILLS AND DISCHARGES REPORTING

As required by the

**(Ontario) Environmental Protection Act**
(s.92 and s.15)

and

**Ontario Regulation 675/98**

## INDEX



OTHER RELEVANT MINISTRY OF THE ENVIRONMENT DOCUMENTS:

- PLANNING FOR SPILL CONTINGENCIES - suggestions for industry and municipalities
- MOE'S EMERGENCY RESPONSE PLAN
- ONTARIO REGULATION 224/07 – SPILL PREVENTION AND CONTINGENCY PLANS
- GUIDELINE FOR IMPLEMENTING SPILL PREVENTION AND CONTINGENCY PLANS

IN ONTARIO

REPORT

SPILLS (S.92 EPA) AND DISCHARGES (S.15 EPA)

TO THE

MINISTRY OF THE ENVIRONMENT'S

SPILLS ACTION CENTRE

**1 - 800 - 268 - 6060**
(TOLL-FREE, PROVINCE-WIDE, 24/7)

**416 - 325 - 3000**
(TORONTO AREA)

SPILLS MUST ALSO BE REPORTED TO THE

MUNICIPALITY IN WHICH A SPILL OCCURS

# Spills and Discharges Reporting

## 1. INTRODUCTION

The Ministry of the Environment ("Ministry") is responsible for achieving and maintaining environmental quality that will protect human health and the ecosystem, and will contribute to the well-being of the people of Ontario.

When a spill or a discharge of contaminants into the natural environment occurs, Canadian federal and provincial agencies that administer safety, transportation and environmental legislation and related programs generally hold the discharger responsible for dealing with problems created by the discharge. In Ontario, specific notification, cleanup and liability provisions for spills of pollutants are addressed in Part X of the (Ontario) *Environmental Protection Act*, R.S.O. 1990, Chapter E.19 ("EPA").

Ontario Regulation 675/98 Classification and Exemption of Spills and Reporting of Discharges was amended to prescribe specific reporting details for both Part X spills and discharges that must be reported under s.15(1) of the EPA. Examples of such discharges would be pollutants seeping from a river bank caused by historical contamination or discharges such as sewage treatment plant bypasses occurring during storm events which may cause adverse effects.

The primary purpose of this Guide is to offer practical guidance of the reporting provisions for spills that must be reported under s. 92 of the EPA, discharges that must be reported under s.15(1) of the EPA and O. Reg. 675/98. Chapters 4 through 10 of this Guide discuss the various discharge reporting requirements and spill classification and exemptions for Part X spills.

## 2. THE ENVIRONMENTAL PROTECTION ACT, PART X, SPILLS

Part X was added to the EPA during the 1970s after the costs for the cleanup of a series of significant spills were left to the taxpayer. Subsequent litigation was based, in large part, on common law principles, because then-available environmental legislation did not definitively address duties and responsibilities for spills. The current Act devotes an entire segment to spills, Part X, and assigns clear reporting and cleanup duties. Part X also addresses other related topics including the rights of municipalities to respond, and rights of other parties affected by spills. The cornerstone of Part X is the definition of a spill and the reporting and cleanup duties of involved parties.

Part X of the EPA establishes three basic elements: the duty to report a spill, the duty to clean up, and accountability.

More specifically, s. 92 of the EPA requires the discharger to **report** a spill to the Ministry, to the municipality, where the discharger is not the owner, to the owner of the spilled pollutant, and under some circumstances to others. O. Reg. 675/98 further requires that the discharge telephone the Spills Action Centre ("SAC") and provide information to the person who answers the call. In general terms, s. 92 of the EPA sets out that those who spill, those who cause or

permit a spill, and those who had control of the pollutant that spills, are made responsible for reporting the event to SAC as quickly as possible. Similarly, s. 92 of the EPA states that spills must also be reported as quickly as possible to the municipality in which the spill occurred.

Furthermore, under s. 93 of the EPA, there is a duty to contain and **clean up** the pollutant, and to restore the spill site to essentially pre-spill conditions where this can reasonably be expected. Those who had control of the spilled pollutant, and the owner of the pollutant, are both given responsibility for containment and cleanup where the spill causes or is likely to cause the adverse effects (as defined in s.1 of the EPA), regardless of contributing circumstances.

Section 99 addresses **accountability** by extending rights to third parties for the recovery of costs and expenses, as well as loss and damages, from the person who had control of the spilled pollutant and the owner of the pollutant spilled without having to prove fault or negligence. Another aspect of accountability, is that municipalities, under ss.100 and 100.1 of the EPA, are given the authority to respond to spills, the right to enter property for the purpose of response, and the right and a mechanism, the Municipality's Order, to recover costs from those the Act holds accountable for the spill. Finally, there is a mechanism (see ss. 94 and 97 of the EPA) that allows the Crown to intervene or pre-empt inadequate response efforts at the expense of those held accountable.

Other sections of Part X enhance, or rely on, the three basic elements: reporting, cleanup, and accountability.

## 3. DEFINITIONS

Several terms are defined specifically for the purpose of Part X. This Chapter will set out some of the most commonly used defined terms. Other Part X terms, as well as terms defined elsewhere in the EPA on which Part X relies, are reproduced in Annex I of this Guide. Terms that apply to other discharges reportable under s. 15(1) of the EPA are also included in Annex I.

A "spill" is defined in Part X to be a specific subset of discharges. A "spill" is a discharge into the natural environment, from or out of a structure, vehicle or other container, that is abnormal in quality or quantity in light of all the circumstances of the discharge. In more general terms, a spill is essentially any accidental, abnormal or inadvertent release of a pollutant discharged into the natural environment from or out of a man-made container. It is important to note that the definition of a spill itself does not include small quantity exemptions. Rather, these exemptions are found in O. Reg. 675/98.

Part X defines a "pollutant" to be a subset of the term "contaminant". A "pollutant" is a contaminant other than heat, sound, vibration or radiation. A contaminant is defined in s. 1 of the EPA as any solid, liquid, gas, odour, heat, sound, vibration, radiation or combination of any of them resulting directly or indirectly from human activities that causes or may cause an adverse effect. Note that "adverse effect" is also defined in s.1 of the EPA (see Annex I for this and other relevant definitions).

## 4. SPILLS AND EPA SUBSECTION 15(1) DISCHARGES THAT MUST BE REPORTED

Part 2 of O. Reg. 675/98 is entitled Reporting of Discharges and prescribes the notification requirements for both ss. 15 and 92 of the EPA.

Section 92 of the EPA was amended by the *Environmental Enforcement Statute Law Amendment Act, 2005* (commonly referred to as Bill 133). Prior to the amendment, the obligation to report spills under s. 92 only applied to a spill of a pollutant that causes or is likely to cause an adverse effect. The amendment broadened the application of s. 92 by removing the reference to causes or is likely to cause an adverse effect. The section now applies to every spill of a pollutant. However, O. Reg. 675/98, discussed in Chapters 9 and 10 of this Guide, provides a number of exemptions to section 92. An important exemption provided in Ontario Regulation 675/98 permits a person, through the development of a spill prevention and contingency plan, to identify those spills that are not subject to 92 because they satisfy the regulation's requirements for "non-reportable" spills. The purpose of the exemption in combination with the amendment to section 92 is to encourage persons to develop spill prevention and contingency plans.

In the case of s.15 (1) of the EPA, a discharge must be reported if it is out of the normal course of events and it causes or is likely to cause an adverse effect (and the person is not otherwise required to notify the Ministry under s. 92 of the EPA). The discharger must determine whether the potential risks that arise from events such as storm related sewage bypasses (e.g. potential health impacts to downstream water users) meet the criteria in s.15(1) and need to be reported.

Cleanup requirements established under Part X arise for spills of pollutants that cause or are likely to cause adverse effects as defined by the EPA. Therefore, awareness of the potential adverse effects for substances that spill is important with respect to response. For instance, spills of oils into a creek may impact wildlife, vegetation and limit potential uses by the public.

## 5. WHO MUST REPORT SPILLS (s.92) AND DISCHARGES (s.15(1))

The reporting provisions of Part X of the EPA are found in Section 92 of the EPA. Section 92 imposes reporting duties on:

a) the person that spills or who causes or permits the spill,

b) the person who had control of the pollutant immediately prior to the spill, and

c) police officers and employees of a municipality or other public authorities who may have been informed of or who are investigating a spill unless they have reasonable grounds for believing that such notice to the Ministry has been made (s. 92(4)).

The reporting provisions for s. 15(1) of the EPA place the reporting duties on the person who discharges or causes or permits the discharge of a contaminant. This person and persons described in a) and b) above are collectively referred to as the discharger in this Guide. The reporting details required of the discharger are found in Chapter 8 of this Guide.

Persons addressed in c) above are collectively referred to as persons in the public service in this Guide. Section 13 of O. Reg. 675/98 requires that these persons provide their name and telephone number and should attempt to provide the name and telephone number of the discharger. The only other details required of persons in the public service are the date and time of the spill or discovery of the spill and its location although it would be helpful if these persons also provided their best assessment of the consequences of the spill.

Chapter 6 of this Guide outlines in more detail who must report to whom, and uses examples to illustrate the circumstances under which these notification requirements apply.

## 6. WHO MUST BE NOTIFIED

### Notification to the Ministry (ss. 15(1) and 92(1)(a) of the EPA),

Subsection 13(2) of O. Reg. 675/98 requires that reports must be made to the Ministry by speaking with a person at the Ministry's SAC. SAC operates 24 hours per day, every day of the year and is responsible for:

- receiving reports of spills and other events that require immediate reporting to the Ministry,
- determining the adequacy of reported spills response activities,
- facilitating or triggering a response where it appears the response is inadequate, and
- activating an Ministry field response (on-site assessment), as required.

A Province-wide, toll-free telephone number is available to industry and the public for the reporting of spills and other events that require the Ministry to be notified immediately, and for reporting other urgent environmental matters. The Centre's province-wide telephone number **800-268-6060** is widely advertised, as is its Toronto number **416-325-3000.**

### Notification to the municipality (s. 92(1)(b) of the EPA)

In addition to notifying the Ministry, Part X of the EPA also requires every spill to be reported to the municipality in which the spill occurs. Larger municipalities advertise a telephone number for such reporting duties in local telephone directories. Smaller municipalities may direct such calls to their respective works or engineering department, while some municipalities may not have formalized a mechanism for receiving such reports. The responsibility for locating an appropriate municipal contact point in the event of a spill rests with the parties given notification responsibilities under Part X, namely, the person who spills or causes or permits the spill, and the person who had control of the pollutant immediately prior to the spill.

### Notification to the owner (s. 92(1)(c) of the EPA)

Part X of the EPA requires that the person report the spill to the owner of the spilled pollutant if the person required to report is not the owner of the pollutant spilled. This reporting requirement would apply to the person who spills or who causes or permits the spill, and the person who had control of the pollutant immediately prior to the spill. Similar to other reporting provisions of Part X, the owner must be notified "forthwith". The reason for this notification requirement (notifying the owner) is that s. 93 of the EPA (the section that establishes response

and cleanup duties) holds both the owner and the person who had control of the pollutant immediately prior to the spill jointly responsible for cleanup.

An example of where the person in control of the pollutant that was spilled may be a different party to the owner is readily found in the transportation industry. By way of illustration, Part X holds both the transport operator involved in an accident in which something is spilled and the owner of the pollutant spilled as a result of that accident responsible for an appropriate and timely response and cleanup. In transportation accidents, the owner of any spilled cargo is most probably located far away from the spill site, while the transport operator involved is on-site. In this example, the requirement imposed on the transporter to notify the owner of the spilled pollutant ensures that the owner is given fair opportunity to become involved in response decisions as the owner of the spilled pollutant may be required to share the costs associated with any spill response.

### Notification to the person in control (s. 92(1)(d) of the EPA)

For spills where the person who is required to report is not the person who had control of the pollutant immediately prior to the spill, Part X requires the person who spills, or causes or permits the spill, to notify the person who has control of the pollutant if he knows or is able to ascertain readily the identity of the person having control of the pollutant. This requirement is intended to ensure that the response required to be undertaken under Part X can be triggered by the parties given that responsibility, namely the person in control and the owner of the pollutant spilled.

For instance, if a subcontractor's equipment ruptures a tank or cracks a pipe at a facility, such as a bulk terminal, which then discharges a pollutant, Part X requires the equipment operator to notify forthwith the person in charge of the facility.

The above example also highlights that Part X addresses "persons". The reader should note that Part X addresses individuals, as well as municipalities, corporations and other organizations, and holds every person involved in a spill accountable for their actions.

## 7. WHEN TO REPORT SPILLS AND DISCHARGES

Both ss.15 (1) and 92 of the EPA, requires that notification be made "forthwith". Courts have interpreted this term to mean as quickly as possible under the circumstances.

In the case of Part X spills, the duties for the persons required to notify SAC and others come into force "immediately when the person knows or ought to know that the pollutant is spilled" (s. 92(2) of the EPA) but this does not mean that the spill needs to be reported immediately. Forthwith should be taken to mean without undue delay, that is, as soon as possible. Reasonable delay may include setting in motion mitigative measures such as initial efforts to stop or contain the spill, the notification of first responders and potentially affected parties, and the gathering, without pause, of information critical to the Ministry's understanding and assessment of the event.

It should be noted that there have been successful convictions for the failure to report spills "forthwith" where notifications were made a couple of hours after the spill. As such, it is generally recommended that notification be made as soon as possible, and in most cases, no later than a couple of hours after the duty to notify becomes effective.

It is strongly suggested that a first call to the Ministry, made as quickly as possible under the circumstances, is appropriate and satisfies the intent of Part X reporting requirements, even if only preliminary or sketchy details are initially available. Section 13(4) of O. Reg. 675/98 requires that the information listed in that section be provided "to the best of the person's knowledge". Additional information about the spill then must be reported as more details of the event become available (see ss. 13(5) and 13(6) of O. Reg. 675/98).

## 8. REPORTING

Part 2 of O. Reg. 675/98 sets out the information that must be provided when notifying the Ministry under ss 15(1) and 92 of the EPA. All information listed in s. 13(3) of the regulation must be provided to the Ministry. The information in s. 13(4) also must be provided, unless it qualifies under s. 13(6) as not being relevant under the circumstances of the discharge. Note that the onus is on the person reporting to demonstrate that information is not relevant.

The person notifying SAC should exercise judgement in determining the amount of information sufficient to make the first call to SAC. Note that not all of the information listed in ss. 13(3) and (4) of O. Reg. 675/98 need be provided at the time of the initial call. Subsection 13(5) allows for further information to be provided at a later time in order to satisfy the requirements of the regulation. The initial notification is intended to provide the Ministry and others with information to assess the Ministry's role and the necessity of a response to the discharge; the information requirements are not intended to delay notification by the person reporting or to take away from the response to a discharge.

In the case of a spill, circumstances may dictate that additional information is required by the Ministry beyond what is provided for in the regulation. Section 92(3) of the EPA allows the Ministry to require this information to be provided at any time. The request for additional information may deal with more specific information regarding the pollutants or the circumstances of the spill beyond what is required by the regulation.

Persons who report spills under s.92 of the EPA and discharges under s. 15(1) of the EPA must fulfill the prescribed reporting requirements stipulated in Part 2 of O. Reg. 675/98, described in detail below. If the reporting party becomes aware of missing information that is required under O. Reg. 675/98 then the information must be provided forthwith (s.13(5) of O. Reg. 675/98). If initial information provided to SAC changes significantly then updated information must be reported forthwith upon this new information becoming known to the discharger (s.13(7) of O. Reg. 675/98). For example if a spill is initially reported as contained on-site but later information becomes available that some pollutants have escaped containment and entered a water course then this new information must be reported to SAC or as directed forthwith.

## Mandatory Reporting Details

- The caller's name and telephone number and position within corporation or municipality if applicable.
- The location of the discharge.
- The date and time the discharge was discovered and, if known, occurred.
- The name, telephone number and role of each person contacted and/or responsible for coordinating a response to the discharge. (Not intended to include every crew member).
- The duration of the discharge and whether the discharge is continuing.
- The identity and quantity of the pollutants discharged and any known hazards of the pollutant or its constituents. Hazards may typically be found on the Material Safety Data Sheet (MSDS) for the pollutant.
- If the person required to notify is a "regulated person" under the EPA (i.e. is subject to O. Reg. 222/07 - Environmental Penalties), the person must identify whether the pollutant spilled is a "toxic substance" under that regulation.
- The location of the source of the pollutant and the best available information regarding the cause of the discharge. It is understood that information regarding cause may change and any significant revision should be reported as per s.13 (7) of O. Reg. 675/98. If the cause is not known when the spill is reported, then a description of the steps that are being taken or will be taken to determine the cause.
- A description of any adverse effects that occurred or may occur. These effects may include but not be limited to any personal or public safety or health threats, potential impacts to well or water intakes, impacts to private property offsite from the spill location, impacts to fish and wildlife habitat or flood plain areas, other environmental impacts, or any other of the adverse effects described in the EPA.

## Reportable Details if Relevant

- A description of any conditions that aggravated or mitigated the adverse effects, or that may do so, including weather, surface water and groundwater conditions. Windspeed and direction may be particularly relevant to spills to air and precipitation may aggravate spills to land.
- If the discharge of the pollutant is to other properties, whether the owners or occupants of the properties affected by the discharge will provide access to a person who is required under the EPA or by an order to take steps to prevent, eliminate or ameliorate any adverse effects that are caused or may be caused by the discharge. For example If a spill of a liquid pollutant flows offsite from Company A to Company B property then Company A, the discharger, should be allowed access to Company B property to carry out their s. 93 EPA cleanup responsibility.
- Any other pollutants that were or may be discharged into the natural environment as a result of the circumstances that gave rise to the notification and any adverse effects that resulted or may result from the discharge of such pollutants. Examples would be a chemical reaction between a spilled pollutant and other stored materials or creating an unsafe environment for workers who are in care and control of hazardous materials or processes.
- Any actions that were taken or will be taken to prevent, eliminate or ameliorate any adverse effects, and if the discharge is a spill, any actions taken to satisfy the person's

duty under section 93 of the EPA and the name and telephone number of every person responsible for carrying out these actions. Where one person is coordinating the action of others only the name of the coordinator is required. As well, any circumstances, including weather or traffic conditions that may interfere with these actions.

## 9. CLASSIFICATION OF SPILLS O. Reg. 675/98

O. Reg. 675/98 classifies eleven types of spills, circumstances, industry type or activities, and exempts these, under specified conditions, from all or part of Part X duties and responsibilities.

Of the eleven classes of spills, three are exempted from Part X entirely, including reporting and cleanup requirements. Two additional classes of spills are exempted from all reporting requirements of Part X while other Part X duties and responsibilities remain for these two classes. The remaining six classes of spills are exempted from most Part X reporting requirements, and retain other Part X duties and responsibilities.

All eleven classes of spills created by O. Reg. 675/98 remove the requirement for police officers and all other public service or public sector employees to notify the Ministry.

All but two classes of spills created by the O. Reg. 675/98 carry a variety of conditions that must be met for the applicable exemption to apply.

O. Reg. 675/98 also encourages those who manage substances that may spill to evaluate potential risks within their operations and to develop appropriate spill contingency plans. A "Class X Spill" under O. Reg. 675/98 is one addressed in a spill contingency plan that meets certain standards for relatively small and manageable spills. The requirement for immediate reporting is waived for such spills. This encourages the development of acceptable spill contingency plans that establish reportable threshold quantities for some substances that might spill under certain conditions and where the impact of such a spill is minimized, for instance, by backup containment or secondary containment and other restraint mechanisms. Such contingency plans should facilitate decision-making processes for employees and others when spills occur. The development of these plans also offers those who may experience spills the opportunity to review the risks of their activities, to organize an effective response structure, and to train staff. All of this has the overall beneficial effect of facilitating spill prevention.

As of September 1, 2008, all Class X exemptions must comply with the requirement prescribed in the Spill Prevention and Contingency Plan regulation ("O. Reg. 224/07"). Prior to September 1, 2008, as part of the transition to O. Reg. 224/07, facilities have the option of seeking a Class X exemption using either the Canadian Standards Association standard CAN/CSA-Z731-03 (Emergency Planning for Industry), an equivalent standard approved by a Director as appropriate for the industry or by adhering to all the elements of O. Reg. 224/07, including s. 6(2).

A Part X reporting requirement summary, and a summary of the classification and exemption of spills introduced by O. Reg. 675/98, is offered in Annex II of this Guide.

## 10. REGULATION 675/98 CLASSIFICATION AND EXEMPTIONS

### Class I: Approved Discharges

A Class I spill is a discharge of a pollutant that is approved by any Ministry approvals instrument, such as a certificate of approval, license or permit. Approved discharges are exempt from all of Part X of the EPA if all requirements in conjunction with the applicable approvals instrument are met, and the discharge does not contravene any other part of the EPA, other provincial or federal legislation, or municipal by-laws.

Assuming that no other regulatory mechanisms are contravened, Class I spills include such discharges as treated wastewaters in accordance with applicable approvals instruments, and the normal application of approved pesticides in an approved manner.

### Class II: Discharge of Water

A Class II spill is a discharge of water caused by natural events from a man-made reservoir, or potable water released from municipal water mains. Discharges of water are exempt from all of Part X. This exemption removes all duties and liabilities associated with Part X for events such as the accidental release of water from reservoirs that might fail, and for accidental failures of municipal water mains.

The exemption from Part X of the EPA for a discharge of water from a reservoir applies to events where the resultant is an increase in the quantity of water downstream of the release, but the exemption does not apply to things or pollutants, such as silt, that may be carried by the released water. The release of water from municipal water mains is limited to potable water. Super-chlorinated water from water mains that may be released in disinfection efforts, and other maintenance, repair or testing practices that result in the release of water other than drinkable water, would not qualify for this exemption.

### Class III: Household Fires

A Class III spill is a discharge of combustion products from fires of household materials. Class III spills apply to pollutants from fires where materials involved in the fire are of a quantity and quality that would normally be found in 10 or fewer households. Class III spills are exempt from all of Part X. This exemption is intended to remove the duties and responsibilities of Part X from events such as house fires and other relatively small fires, while maintaining these duties for fires (and really large fires) at industrial or chemical facilities, including fires that may occur in accidents within the transportation sector.

### Class IV: Planned Spills

A Class IV spill is a discharge of a pollutant that has been pre-approved by the Ministry for one of two possible purposes. One type of pre-approved spill involves the unavoidable result of planned and essential maintenance of water systems as well as wastewater systems or pollution

abatement equipment. The other type of planned spill is a pre-authorized discharge for research or for training purposes.

Once the Ministry's consent has been obtained in advance of the planned release, these types of spills are exempt from all immediate reporting requirements under Part X of the EPA. All other Part X duties and responsibilities remain unaltered by the exemption.

An example of planned spill for water systems may involve routine and systematic cleaning of water mains. This is achieved by flushing and/or swabbing selected sections of water mains; a process that releases accumulated sediments and (normally) directs these to nearby storm drains. Of course, if the swabbing efforts result in the release of significant quantities of silt that threaten the receiving watercourse, the notification exemption would not apply. Examples of the second type of Class IV spill may involve the planned release of controlled and relatively small quantities of materials for research purposes, and where small quantities of substances such as coloured vegetable oils may be used in spill response training efforts or for periodic spill response exercises.

### Class V: Refrigerants

A Class V spill involves refrigerants that are already regulated by the Ministry under O. Reg. 189/94. A Class V spill of less than 100 kilograms of a substance to which O. Reg. 189/94 applies is exempt from the reporting provisions of Part X of the EPA if there are no side effects at the site where the discharge takes place. Records of Class V spills must be maintained which, in combination with other regulated inventory controls, allows the Ministry to monitor these refrigerants.

### Class VI: Motor Vehicles

Fluids under 100 litres, other than fluids transported as cargo, that may be released from the operating systems of motor vehicles, such as fuels or radiator fluids in motor vehicle accidents, are defined as Class VI spills. Since existing response systems to motor vehicle accidents take care to minimize the potential effect of such spills, it is not necessary for the Ministry to track these spills as well. Subject to three conditions, Class VI spills, therefore, are not required to be reported to the Ministry by the persons who own the vehicles involved nor by the police officers or other public servants who may investigate the event. The three conditions that must be met for the reporting exemption to apply are:

- the spill of operating system fluids does not enter and is not likely to enter directly or indirectly water or a watercourse, as defined by the *Ontario Water Resources Act*,
- the spill does not cause and is not likely to cause adverse effects other than those that are readily remediated through cleanup and restoration of surfaces prepared for vehicular traffic or adjacent paved, gravelled and sodded areas, and
- arrangements for remediation are made immediately.

## REGULATION 675/98 CLASSIFICATION AND EXEMPTIONS (Continued)

The duty to notify the municipality, the owner and the person in control remain, as these requirements may apply to the circumstances of a Class VI spill. However, the municipality is

probably already notified if the spill is the result of a traffic accident. The requirement to notify the owner and person in control remains for events where the person who spills or caused the spill is a party other than the owner or person in control. All other Part X duties and responsibilities remain unaltered as well by the exemption.

### Class VII: Electrical Utilities

A spill of mineral oil, other than a PCB liquid, of less than 100 litres from electrical transformers or capacitors owned by a municipal or provincial utility is classified as a Class VII spill. Subject to four conditions, Class VII spills need not be reported to the Ministry. Police officers or other public servants who may investigate or are otherwise aware of the spill also do not have to notify the Ministry. The four conditions that must be met for the reporting exemption to apply are:

- the spill of mineral oil does not enter and is not likely to enter directly or indirectly water or a watercourse, as defined by the *Ontario Water Resources Act*,
- the spill does not cause adverse effects other than those that are readily remediated through cleanup and restoration of paved, gravelled or sodded surfaces,
- arrangements for remediation are made immediately, and
- records of the spill are maintained.

All other Part X duties and responsibilities remain unaltered by the exemption, including the duty to notify the municipality, the owner and the person in control as these requirements may apply to the circumstances of a Class VII spill.

### Class VIII: Petroleum Sector

The spill of gasoline or an associated product of not more than 100 litres in areas restricted to the public, or not more than 25 litres in areas with public access, at a location defined as a bulk plant, marina, private outlet or retail outlet in O. Reg. 217/01 Liquid Fuels under the Technical Standards and Safety Act 2000, is classified as a Class VIII spill. Subject to four conditions, Class VIII spills need not be reported to the Ministry or to the municipality. Police officers or other public servants who may investigate or are aware of the spill also do not have to notify the Ministry. The four conditions that must be met for the reporting exemption to apply are:

- the spill of the gasoline or an associated product does not enter and is not likely to enter directly or indirectly water or a watercourse, as defined by the *Ontario Water Resources Act*,
- the spill does not cause adverse effects other than those that are readily remediated through cleanup and restoration of paved, gravelled or sodded surfaces,
- arrangements for remediation are made immediately, and
- records of the spill are maintained.

All other Part X duties and responsibilities remain unaltered by the exemption, including the duty to notify the owner and the person in control as these requirements may apply to the circumstances of a Class VIII spill.

## Class IX: Transportation of angerous Goods

Spills of goods and materials regulated as "dangerous goods" by the federal *Transportation of Dangerous Goods Act* and parallel provincial legislation, where the spill is below the minimum quantity for immediate reporting according to applicable transportation rules, are classified as Class IX spills. Subject to four conditions, Class IX spills are exempted from the Part X reporting requirements as these duties apply to notifying the Ministry and the municipality. Police officers or other public servants who may investigate a Class IX spill also do not have to notify the Ministry. The four conditions that must be met for the Part X reporting exemptions to apply are:

- the spill of dangerous goods does not enter and is not likely to enter directly or indirectly water or a watercourse, as defined by the *Ontario Water Resources Act*,
- the spill does not cause adverse effects other than those that are readily remediated through cleanup and restoration of paved, gravelled or sodded surfaces,
- arrangements for remediation are made immediately, and
- records of the spill are maintained.

All other Part X duties and responsibilities remain unaltered by the exemption, including the duty to notify the owner and the person in control as these requirements may apply to the circumstances of a Class IX spill.

## Class X: Contingency Plans

A Class X spill is an accidental spill described as "non reportable" in an acceptable spill contingency plan. For Class X spills, spill contingency plans are currently acceptable if they adhere to the Canadian Standards Association standard CAN/CSA-Z731, Emergency Planning for Industry, an equivalent standard approved by a Director as appropriate for the industry or by adhering to all the elements of O. Reg. 224/07, including s. 6(2). As of September 1, 2008 Class X Contingency Plans must meet the requirements of the Ministry's Spill Prevention Spill Contingency Regulation O. Reg. 224/07. Subject to several conditions, Class X spills need not be reported to the Ministry or to the municipality, and police officers or other public servants who may investigate the spill also do not have to notify the Ministry.

The conditions that must be met for the reporting exemption to apply are:

- the contingency plan is in effect before the spill,
- the spill is of a pollutant, and its associated quantity less than the reportable quantity, specified in the plan,
- the spill is not entering or likely to enter any waters (surface or groundwater)

- the plan describes the spill as not likely to cause adverse effects, based on experience, other than adverse effects that can be readily remediated through cleanup and restoration of paved, gravelled or sodded surfaces,
- the spill was not deliberate on the part of the owner or person in control,
- any concerns of the Ministry regarding the plan have been withdrawn by the Ministry before the spill,
- the plan will result in preventing adverse effects, other than those readily remedied through cleanup and restoration of paved, gravelled or sodded surfaces,
- arrangements for remediation are made and carried out immediately, and
- records of the spill are maintained for five years (commencing September 1, 2008).

All other Part X duties and responsibilities remain unaltered by the exemption, including the duty to notify the owner and the person in control as these requirements may apply to the circumstances of a Class X spill.

If adverse effects result and planned remediation is not effective or is not arranged and carried out forthwith as stipulated in the spill contingency plan, the reporting exemptions for Class X spills do not apply, and spills that would otherwise "not be reportable" must be then reported in accordance with s. 92 of the EPA requirements. In such eventualities, the Ministry must also be notified in writing within 30 days of the spill of corrective measures taken or the revisions made to the spill contingency plan to prevent the failure of the plan from recurring.

## Class XI: One-Window Reporting

A Class XI spill is one that is reportable to more than one provincial or federal agency. Subject to three conditions, Class XI spills need not be reported to the Ministry, and police officers or other public servants who are aware of or may investigate the spill also do not have to notify the Ministry. The conditions that must be met for the reporting exemption to apply are:

- a memorandum of understanding exists between the Ministry and the other agency with respect to resolving duplicate reporting,
- the spill meets all conditions specified in the memorandum of understanding, and
- records of the spilled pollutant are maintained.

All other Part X EPA duties and responsibilities remain unaltered by the exemption, including the duty to notify the owner and the person in control, as well as the duty to notify the municipality, as these requirements may apply to the circumstances of the spill.

As of the date of this document, SAC serves as the contractual reporting desk for Environment Canada for events reportable to Environment Canada under the *Fisheries Act* and for matters subject to immediate reporting requirements under the *Canadian Environmental Protection Act*. The primary purpose of the arrangements between the Ministry and Environment Canada is to minimize duplicate reporting for similar types of events addressed by provincial as well as federal statutes. Thus, the notification of a spill, as defined in the EPA, made forthwith to SAC that is also an event within the reporting requirements of the *Fisheries Act* satisfies the reporting requirements of both statutes. SAC also takes reports on behalf of Environment Canada for

matters reportable within Ontario under the *Canadian Environmental Protection Act*, thus notifications made to SAC effectively satisfies the reporting requirements applicable to all three statutes (within Ontario).

SAC also serves as the contractual reporting desk for Ontario's Technical Standards and Safety Authority ("TSSA") for a variety of events and mishaps reportable to TSSA. This includes spills that may occur at bulk terminals, service stations, etc., and that might otherwise be reportable to both agencies. The arrangements between SAC and TSSA effectively means that an event reportable to TSSA that is also a spill reportable to the Ministry would have been reported to both agencies with a single report made forthwith to SAC.

## Annex I

### Definitions of terms related to the EPA - Part X, Spills

Several words and terms are defined specifically for the purpose of Part X of the EPA. The following definitions are reproduced as presented in Part X, s, 91(1) of the EPA:

Section 91(1):

"**municipality**" means an upper-tier municipality, a lower-tier municipality or a single-tier municipality;

"**owner of the pollutant**" means the owner of the pollutant immediately before the first discharge of the pollutant, whether into the, natural environment or not, in a quantity or with a quality abnormal at the location where the discharge occurs, and "owner of a pollutant" has a corresponding meaning;

"**person having control of a pollutant**" means the person and the person's employee or agent, if any, having the charge, management or control of a pollutant immediately before the first discharge of the pollutant, whether into the natural environment or not, in a quantity or with a quality abnormal at the location where the discharge occurs, and "person having control of the pollutant" has a corresponding meaning;

"**pollutant**" means a contaminant other than heat, sound, vibration or radiation, and includes any substance from which a pollutant is derived [“contaminant” is defined in s. 1(1) of the EPA, see also page 15 of this Guide);

"**practicable**" means capable of being effected or accomplished;

"**regional municipality**" means the corporation of a metropolitan area, regional area or district area;

"**restore the natural environment**", when used with reference to a spill of a pollutant, means restore all forms of life, physical conditions, the natural environment and things existing immediately before the spill of the pollutant that are affected or that may reasonably be expected to be affected by the pollutant, and "restoration of the natural environment", when used with reference to a spill of a pollutant, has a corresponding meaning;

"**spill**", when used with reference to a pollutant, means a discharge,

into the natural environment,

from or out of a structure, vehicle or other container, and

that is abnormal in quality or quantity in light of all the circumstances of the discharge, and where used as a verb has a corresponding meaning;

"**substance**" means any solid, liquid or gas, or any combination of any of them.

Section 91(3):

"**Practicable**" In determining what is practicable for the purposes of this Part [Part X of the EPA], regard shall be had to the technical, physical and financial resources that are or can reasonably be made available.

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Part X of the EPA also relies on several other words and terms which are defined in the general provisions of the EPA, namely in s. 1, and which apply to the entire EPA. Some of these words and terms are of particular importance to the spills component of the Act and are highlighted here for the benefit of the reader.

Section 1:

(1) In this Act,

"**adverse effect**" means one or more of,

a) impairment of the quality of the natural environment for any use that can be made of it,
b) injury or damage to property or to plant or animal life,
c) harm or material discomfort to any person,
d) an adverse effect on the health of any person,
e) impairment of the safety of any person,
f) rendering any property or plant or animal life unfit for use by man,
g) loss of enjoyment of normal use of property, and
h) interference with the normal conduct of business.

"**contaminant**" means any solid, liquid, gas, odour, heat, sound, vibration, radiation or combination of any of them resulting directly or indirectly from human activities that causes or may cause an adverse effect;

"**discharge**", when used as a verb, includes add, deposit, leak or emit and, when used as a noun, includes addition, deposit, emission or leak;

"**inspection**" includes an audit, examination, survey, test and inquiry;

"**local municipality**" means a city, town, village or township;

"**Minister**" means the Minister of the Environment;

"**Ministry**" means the Ministry of the Environment;

"**municipality**" means the corporation of a county, metropolitan area, regional area, district area, city, town, village, township or improved district and includes a local board thereof and a board, commission or other local authority exercising any power with respect to municipal affairs or purposes, including school purposes, in an unorganized township or unsurveyed territory;

"**natural environment**" means the air, land and water, or any combination or part thereof, of the Province of Ontario;

"**person**" includes a municipality as defined in this subsection;

Section 2

**"Secondary discharge within building"**

A contaminant that is discharged into the air within a building or structure as a result of the discharge of the same or another contaminant in another building or structure shall be deemed to be discharged into the natural environment by the owner or the person who has the charge, management or control of the contaminant discharged in the other building or structure.

ONTARIO MINISTRY OF THE ENVIRONMENT

SPILLS ACTION CENTRE

**1 - 800 - 268 - 6060**
(TOLL-FREE, PROVINCE-WIDE, 24/7)

**416 - 325 - 3000**
(TORONTO AREA)

## Annex II

## Ontario Regulation 675/98 - Classification and Exemption of Spills - Summary

| Class of spill | Nature or type of discharge, and circumstances or activity where Part X-related exemptions apply | Exemptions | Conditions that must be met for exemption to apply |
|---|---|---|---|
| I | Approved discharge; authorized by and in accordance with a C of A, a provisional C of A., order, license, etc. | Exempted from all of Part X of the EPA** including reporting and cleanup. | ⇒ must have been in compliance with all orders or other requirements made under Ministry legislation; and<br>⇒ the spill does not contravene any other part of the EPA and other legislation including municipal by-laws. |
| II | Discharge of water; water from reservoirs formed by dams where the discharge is caused by natural events, and potable water from water mains. | Exempted from all of Part X of the EPA** including reporting and cleanup. | ⇒ none |
| III | Household fires; combustion products from a fire of materials in quantity not greater than normally found in residential properties of 10 or fewer households. | Exempted from all of Part X of the EPA** including reporting and cleanup. | ⇒ none |
| IV | Planned spills; pre-authorized and unavoidable discharges involving planned maintenance procedures to water or waste systems, or pre-authorized discharges for research or training purposes. | Exempted from all reporting requirements of Part X of the EPA**. | ⇒ application for Miistry consent is made at least 15 days prior to the release or spill, and<br>⇒ adverse effects must be monitored and a report must be filed with the Ministry within 5 days of the spill.<br><br>• With regard to obtaining prior Ministry consent:<br>◊ Ministry is required to give consent if potential risks and adverse effects are deemed acceptable, and<br>◊ Ministry may stipulate additional conditions. |
| V | Refrigerants; a spill of less that 100 Kg of a substances to which O. Reg.189/94 applies. | Exempted from all reporting requirements of Part X of the EPA**. | ⇒ no adverse effect to take place at location of discharge,<br>⇒ keep records. *** |

| Class of spill | Nature or type of discharge, and circumstances or activity where Part X-related exemptions apply | Exemptions | Conditions that must be met for exemption to apply |
|---|---|---|---|
| VI | Motor Vehicles; spills of 100 litres or less of fluid, other than fluids transported as cargo, from fuel or other operating systems of motor vehicles. | Exempted from the requirement to notify the Ministry and from having to provide additional information to the Ministry. Police and other public servants need not notify the Ministry. The duty to notify the municipality in which the spill occurs as well as the owner and the person in control of the pollutant spilled remains. | ⇒ the spill does not enter and is not likely to enter directly or indirectly water or a watercourse,<br>⇒ the spill does not cause and is not likely to cause any adverse effects other than those that are readily remediated through cleanup and restoration of surfaces prepared for vehicular traffic or adjacent paved, gravelled or sodded areas, and<br>⇒ arrangements for remediation are made immediately. |
| VII | Electrical utilities; spills of 100 litres or less of mineral oil, excluding PCB liquid, from transformers or capacitors owned by municipal or provincial utilities. | Exempted from the requirement to notify the Ministry. Also exempted from having to provide additional information to the Ministry. Police and other public servants need not notify the Ministry. The duty to notify the municipality, the owner and the person in control of the pollutant spilled, as applicable, remains. | ⇒ the spill does not enter and is not likely to enter directly or indirectly water or a watercourse,<br>⇒ the spill does not cause and is not likely to cause any adverse effects other than those that are readily remediated through cleanup and restoration of paved, gravelled or sodded surfaces,<br>⇒ arrangements for remediation are made immediately, and<br>⇒ keep records. *** |
| VIII | Petroleum sector; gasoline or associated product spills at a bulk plant, marina, and private or retail outlet of 100 litres or less in areas restricted from public access, and 25 litres or less in areas with public access. | Exempted from the requirement to notify the Ministry and the municipality in which the spill occurs. Also exempted from having to provide additional information to the Ministry. Police and other public servants need not notify the Ministry. The duty to notify the owner and the person in control of the pollutant spilled, as applicable, remains. | ⇒ the spill does not enter and is not likely to enter directly or indirectly water or a watercourse,<br>⇒ the spill does not cause and is not likely to cause any adverse effects other than those that are readily remediated through cleanup and restoration of paved, gravelled or sodded surfaces,<br>⇒ arrangements for remediation are made immediately, and<br>⇒ keep records. *** |
| IX | Transportation of dangerous goods; spilled goods or materials, otherwise regulated by the federal TDG Act and Regulations and the parallel provincial act and regulations, at a quantity below the minimum reportable as stipulated by the federal transportation rules. | Exempted from the requirement to notify the Ministry and the municipality in which the spill occurs. Also exempted from having to provide additional information to the Ministry. Police and other public servants need not notify the Ministry. The duty to notify the owner and the person in control of the pollutant spilled, as applicable, remains. | ⇒ the spill does not enter and is not likely to enter directly or indirectly water or a watercourse,<br>⇒ the spill does not cause and is not likely to cause any adverse effects other than those that are readily remediated through cleanup and restoration of paved, gravelled or sodded surfaces,<br>⇒ arrangements for remediation are made immediately, and<br>⇒ keep records. *** |

| Class of spill | Nature or type of discharge, and circumstances or activity where Part X-related exemptions apply | Exemptions | Conditions that must be met for exemption to apply |
|---|---|---|---|
| X | Contingency plans; accidental spills of materials below reportable quantities as specified in a contingency plan that meets CSA or other acceptable standards. (As of September 1, 2008 all Contingency plans must meet the requirements of the Ministry's Spill Prevention Spill Contingency Regulation). | Exempted from the requirement to notify the Ministry and the municipality in which the spill occurs. Also exempted from having to provide additional information to the Ministry. Police and other public servants need not notify the Ministry. The duty to notify the owner and the person in control of the pollutant spilled, as applicable, remains. | ⇒ the contingency plan is in effect before the spill,<br>⇒ the spill involves a material, and its associated quantity less than the reportable quantity, specified in the plan,<br>⇒ the spill is not entering or likely to enter any waters (surface or groundwater)<br>⇒ the plan describes the spill as not likely to cause any adverse effects based on experience,<br>⇒ the spill was not deliberate on the part of the owner or person in control,<br>⇒ any concerns of the Ministry regarding the plan have been withdrawn by the Ministry before the spill,<br>⇒ the plan will result in preventing adverse effects other than those that are readily remediated through cleanup and restoration of paved, gravelled or sodded surfaces,<br>⇒ arrangements for remediation are made immediately, and<br>⇒ keep records. *** |
| XI | One-window reporting; spills reportable to more than one provincial or federal agency. | Exempted from the requirement to notify the Ministry immediately, but the Ministry retains the right to request information. Police and other public servants need not notify the Ministry. The duty to notify the municipality in which the spill occurs as well as the owner and the person in control of the pollutant spilled remains. | ⇒ the spill meets all conditions of the memorandum of understanding that exists between the Ministry and another agency with respect to resolving duplicate reporting of spills, and<br>⇒ keep records. *** |

**Note:** * The summary cannot reflect all details of O. Reg. 675/98. The reader is urged to review O. Reg. 675/98 in detail

** The term EPA in this summary refers to the *Environmental Protection Act*, R.S.O. 1990, c. E. 19.

*** Details of records to be prepared and kept for two years (5 years in the case of Class X spills as of September, 2008) as specified in s. 12 of O. Reg. 675/98 and include: date, time, location and duration of the release; identity and quantity of the pollutant; circumstances of the spill; containment and clean-up efforts utilized; disposal and re-use method used within compliance of s. 96 of the EP; and specifics of any adverse effect observed. Records for Class 5 spills, refrigerants, need only include: date, time, location and duration of the release; identity and quantity of the pollutant; and the circumstances of the spill. Spills not captured by O. Reg. 675/98 must be reported to the Ministry, to the municipality in which it occurred, and to others (s. 92 of the EPA).

# Appendix B: Property Line Setback Assessment Report

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Suite 600, 235 Yorkland Boulevard
Toronto, Ontario M2J 1T1
Tel: 416 499 3110
Fax: 416 499 9658
morrisonhershfield.com

**Project Number:** **1104037.00**

**Project Title:** **HAF WIND ENERGY PROJECT**

**Title:** **PROPERTY LINE SETBACK ASSESSMENT REPORT**

**Prepared For:** **Vineland Power Inc.**
**222 Martindale Road, P.O. Box 1116**
**St. Catharines, Ontario**
**L2R 7A3**

**Date:** **February, 2014**

Prepared By Morrison Hershfield Limited

Vineland Power
Stewards of sustainable energy.

# Table of Contents

# 1.0 Introduction

The **HAF Wind Energy Project** ("the Project") Property Line Setback Assessment Report has been prepared in accordance with the requirements of the Ministry of the Environment's Renewable Energy Approvals Regulation ("the Regulation"), O.Reg 359/09, specifically with consideration of *Section 53* of the Regulation.

The HAF Wind Energy Project is to be situated in the Township of West Lincoln, in Niagara Region of Ontario. The Project consists of five (5) Vestas V-100 1.8 megawatt wind turbines producing a nameplate capacity of 9.0 megawatts. The wind turbines are being erected for the purpose of capturing energy from the wind, a renewable resource, and converting it into clean, useable electricity. This electricity will be transported to consumers via interconnection facilities, including transformers and distribution lines. The footprint of these facilities is captured and described in reports prepared for this Renewable Energy Approval (REA).

## *1.1 Setback Requirements*

The purpose of the Property Line Setback Assessment Report is to provide a review of potential adverse impacts and preventative measures for wind turbines located within the prescribed setback from non-participating parcels of land.

All of the proposed turbine sites meet the minimum setback requirement of at least 550 metres from the nearest non-participating noise receptor. None of the proposed turbine sites are located less than the length of the turbine blades plus 10 metres (i.e. 59 metres) from a non-participating property line. However four (4) turbines are located closer to a non-participating property line than the height of the turbine tower (95 metres). Mapping for each turbine location illustrating setback distances has been provided within this report.

In accordance with Section 53 of O. Reg. 359/09, this report has been prepared to:

- Demonstrate that the proposed location of the wind turbine will not result in adverse impacts on nearby business, infrastructure, properties or land use activities; and
- Describe any preventative measures that are required to be implemented to address the possibility of any adverse impacts.

# 2.0 Property Line Setback Analysis

An analysis for each of the four (4) turbines that do not meet the hub height setback, including the distance of each turbine site from the non-participating property line, and the distance of overlap, is provided in **Table 1**. This includes an assessment of features within the overlap such as businesses, infrastructure and land use activities along with preventative measures that will be employed to minimize the potential effects related to the unlikely event of turbine collapse. HAF Turbines 1, 2, 3 and 5 which are subject to the property line setback analysis are illustrated in **Figures 1-3** of this report. Chambers and Associated Surveying LTD was retained by Vineland Power Inc. to determine exact property line setback distances as part of this assessment. A copy of the survey is provided in **Appendix A**.

The Property Line Setback Analysis determined that the HAF Wind Energy Project's Turbine 1, 2, 3, and 5 locations will not result in any significant adverse impacts to neighbouring properties. The primary preventative measure relates to the design and construction of the turbines. The turbines would be constructed and designed by professional engineers, undergo regular maintenance and monitoring by operational staff, and contain automatic shutdown mechanisms in instances such as extreme weather. All of these measures are standard best practices detailed in the REA documents.

**Figure 1: Property Line Setback for Turbines 1 and 2**

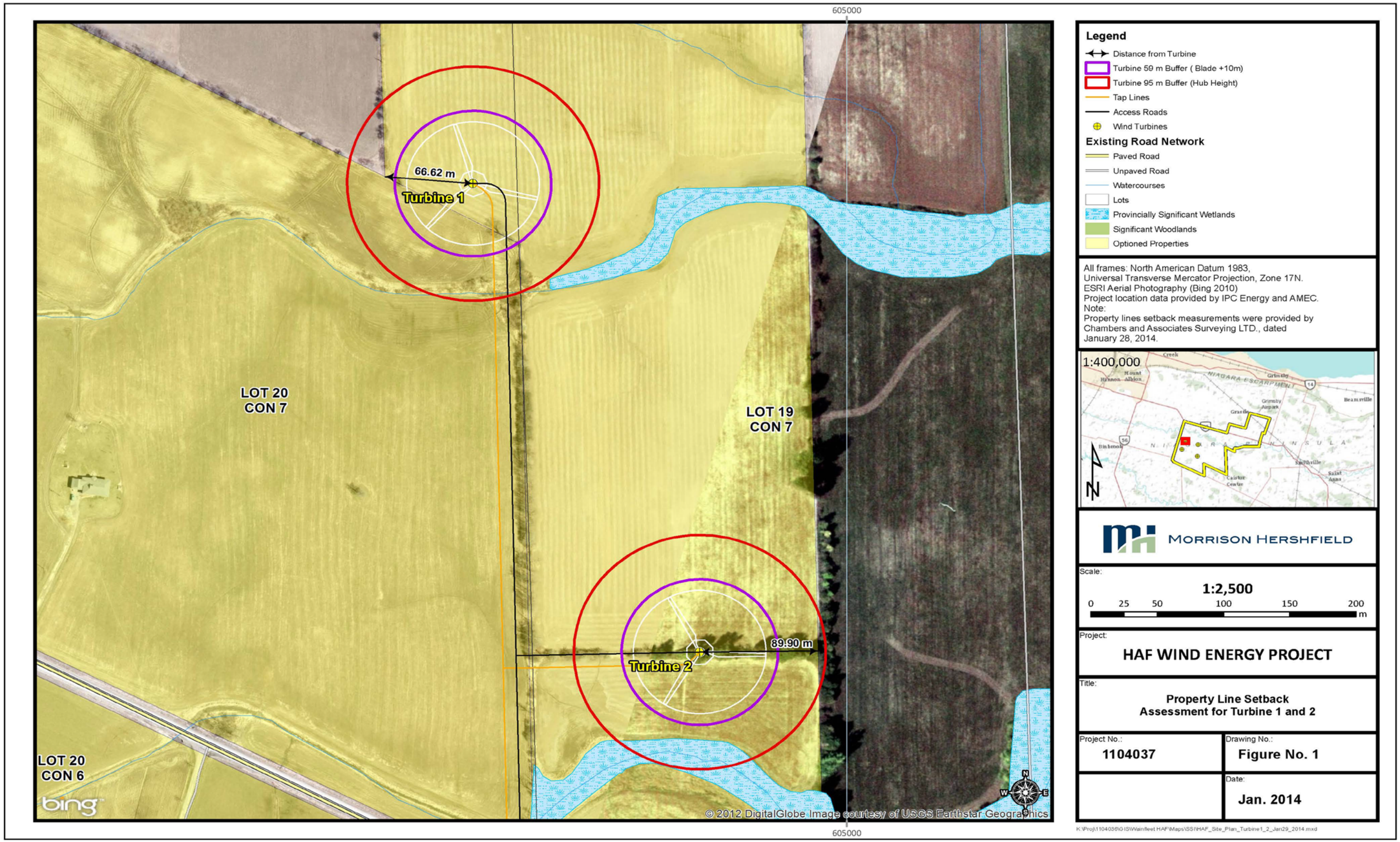


Figure 2: Property Line Setback for Turbine 3

**Figure 3: Property Line Setback for Turbine 5**

**Table 1: Summary of Property Line Setback Assessment**

| Turbine ID | Distance to Property Line (m) | Distance of Overlap (m) | Features Within Overlap | Potential Adverse Impacts | Preventative Measures |
|---|---|---|---|---|---|
| 1 | 66.62 | 28.38 | Infrastructure: ☐<br>Land Use and Businesses: ☒<br>Hedgerows: ☒<br>Woodlots: ☐<br>Watercourses: ☐ | The primary land use within the overlap is Agriculture (cash crop). No structures (barns, storage buildings, stables, noise receptors etc.) were identified within the overlap.<br><br>Adverse impacts to agricultural land, including crop damage and soil compaction, may occur in the unlikely event of turbine collapse.<br><br>Adverse impacts to hedgerows, including vegetation damage and disturbance to related wildlife habitat, may occur in the unlikely event of turbine collapse. | The turbines would be constructed and designed by professional engineers, undergo regular maintenance and monitoring by operational staff, and contain shutdown mechanisms in instances such as extreme weather or malfunction.<br><br>In the unlikely event of damage to agricultural land due to turbine collapse, landowners would be compensated by Vineland Power Inc. for any crop damage, and measures are outlined in the Environmental Impact Study Report and the Water Assessment and Impact Report to mitigate soil compaction.<br><br>Mitigation measures for vegetation, including damage and disturbance to related wildlife habitat, are outlined in the Environmental Impact Study Report.<br><br>An Emergency Response Plan has been prepared for the project, which outlines specific steps and response procedures to deal with emergency situations, such as the unlikely event of turbine collapse. |
| 2 | 89.9 | 5.1 | Infrastructure: ☐<br>Land Use and Businesses: ☒<br>Hedgerows: ☒<br>Woodlots: ☐<br>Watercourses: ☐ | The primary land use within the overlap is Agriculture (cash crop). No structures (barns, storage buildings, stables, noise receptors etc.) were identified within the overlap.<br><br>Adverse impacts to agricultural land, including crop damage and soil compaction, may occur in the unlikely event of turbine collapse.<br><br>Adverse impacts to hedgerows, including vegetation damage and disturbance to related wildlife habitat, may occur in the unlikely event of turbine collapse. | The turbines would be constructed and designed by professional engineers, undergo regular maintenance and monitoring by operational staff, and contain shutdown mechanisms in instances such as extreme weather or malfunction.<br><br>In the unlikely event of damage to agricultural land due to turbine collapse, landowners would be compensated by Vineland Power Inc. for any crop damage, and measures are outlined in the Environmental Impact Study Report and the Water Assessment and Impact Report to mitigate soil compaction.<br><br>Mitigation measures for vegetation, including damage and disturbance to related wildlife habitat, are outlined in the Environmental Impact Study Report.<br><br>An Emergency Response Plan has been prepared for the project, which outlines specific steps and response procedures to deal with emergency situations, such as the unlikely event of turbine collapse. |

| | | | | | |
|---|---|---|---|---|---|
| 3 | Property to the north:<br>79.35<br><br>Property to the east:<br>73.59 | Property to the north:<br>15.65<br><br>Property to the east:<br>21.41 | Infrastructure: ☐<br>Land Use and Businesses: ☒<br>Hedgerows: ☒<br>Woodlots: ☐<br>Watercourses: ☒ | The primary land use within the overlap is Agriculture (cash crop). No structures (barns, storage buildings, stables, noise receptors etc.) were identified within the overlap.<br><br>Adverse impacts to agricultural land, including crop damage and soil compaction, may occur in the unlikely event of turbine collapse.<br><br>Adverse impacts to hedgerows, including vegetation damage and disturbance to related wildlife habitat, may occur in the unlikely event of turbine collapse.<br><br>Adverse impacts to watercourses, including siltation and disturbance to fish and fish habitat, may occur in the unlikely event of turbine collapse. | The turbines would be constructed and designed by professional engineers, undergo regular maintenance and monitoring by operational staff, and contain shutdown mechanisms in instances such as extreme weather or malfunction.<br><br>In the unlikely event of damage to agricultural land due to turbine collapse, landowners would be compensated by Vineland Power Inc. for any crop damage, and measures are outlined in the Environmental Impact Study and the Water Assessment and Impact Reports to mitigate soil compaction.<br><br>Mitigation measures for vegetation, including damage and disturbance to related wildlife habitat and watercourses are outlined in the Environmental Impact Study and the Water Assessment and Impact Reports.<br><br>Turbine 3 is located approximately 34 meters (from blade tip) south of an intermittent stream. As a result of the active agriculture practices in the area, this tributary has been highly influenced by sedimentation, runoff and channelization. The fish habitat at this location is considered poor. A Water Assessment and Impacts Report has been prepared and includes mitigation measures for watercourses, including erosion and sedimentation response measures and mitigation for fish and fish habitat.<br><br>An Emergency Response Plan has been prepared for the project, which outlines specific steps and response procedures to deal with emergency situations, such as the unlikely event of turbine collapse. |
| 5 | 88.7 | 6.3 | Infrastructure: ☐<br>Land Use and Businesses: ☒<br>Hedgerows: ☒<br>Woodlots: ☐<br>Watercourses: ☐ | The primary land use within the overlap is Agriculture (cash crop). No structures (barns, storage buildings, stables, noise receptors etc.) were identified within the overlap.<br><br>Adverse impacts to agricultural land, including crop damage and soil compaction, may occur in the unlikely event of turbine collapse.<br><br>Adverse impacts to hedgerows, including vegetation damage and disturbance to related wildlife habitat, may occur in the unlikely event of turbine collapse. | The turbines would be constructed and designed by professional engineers, undergo regular maintenance and monitoring by operational staff, and contain shutdown mechanisms in instances such as extreme weather or malfunction.<br><br>In the unlikely event of damage to agricultural land due to turbine collapse, landowners would be compensated by Vineland Power Inc. for any crop damage, and measures are outlined in the Environmental Impact Study and Water Assessment and Impact Reports to mitigate soil compaction.<br><br>Mitigation measures for vegetation, including damage and disturbance to related wildlife habitat, are outlined in the Environmental Impact Study Report.<br><br>An Emergency Response Plan has been prepared for the project, which outlines specific steps and response procedures to deal with emergency situations, such as the unlikely event of turbine collapse. |

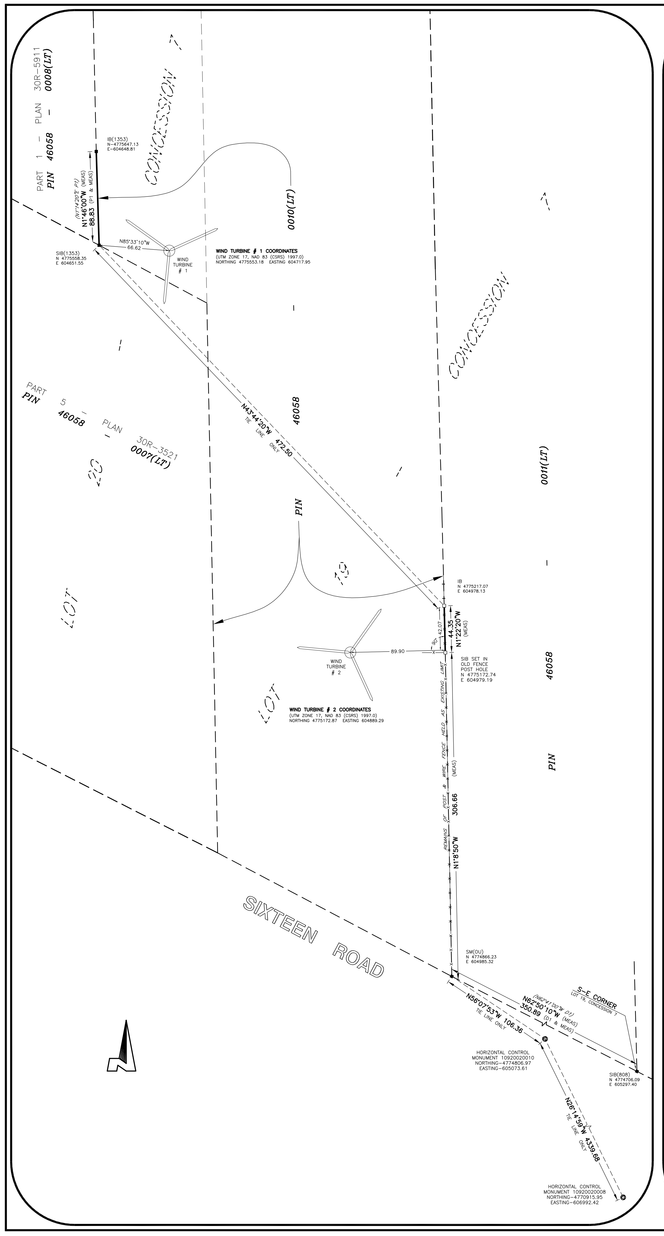
# 3.0 Consultant Legal Statement

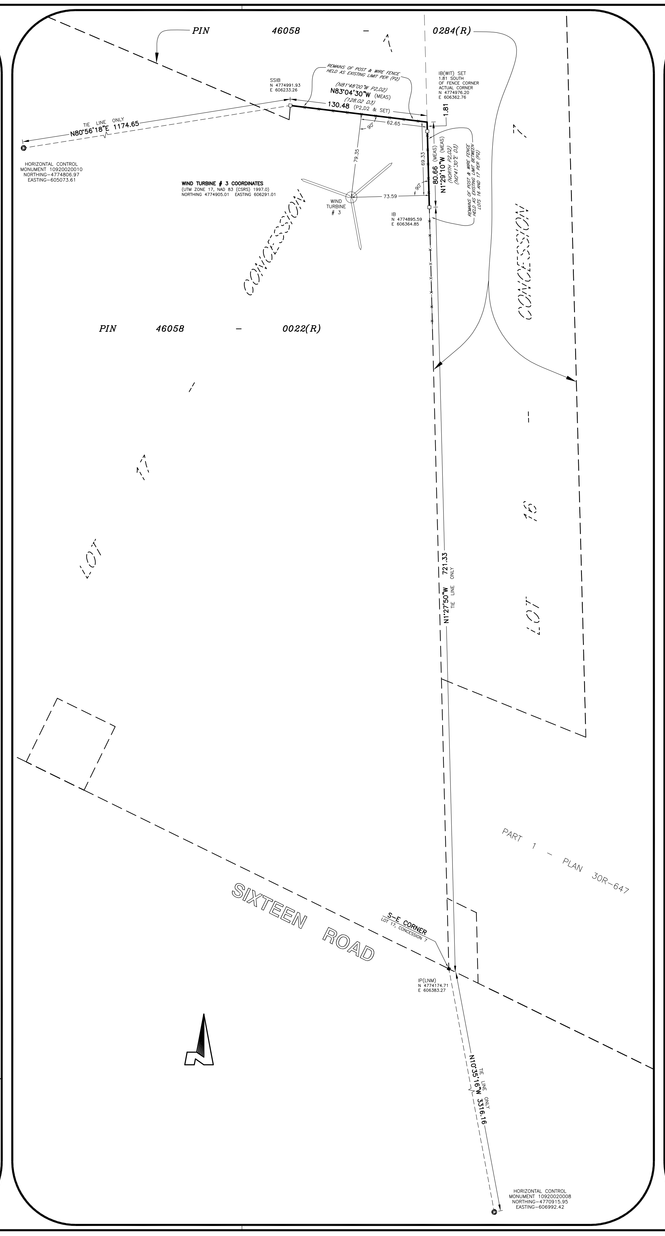
Morrison Hershfield Limited ("MH") produced this report in accordance with our Proposal and information provided by IPC Energy and Vineland Power Inc. ("the Client") and is based upon statements by the Client on the proposed design, construction, operations, maintenance, and decommissioning of the proposed wind energy project. The information and statements contained herein are for the sole benefit of the Client for the purposes of the Renewable Energy Approval.

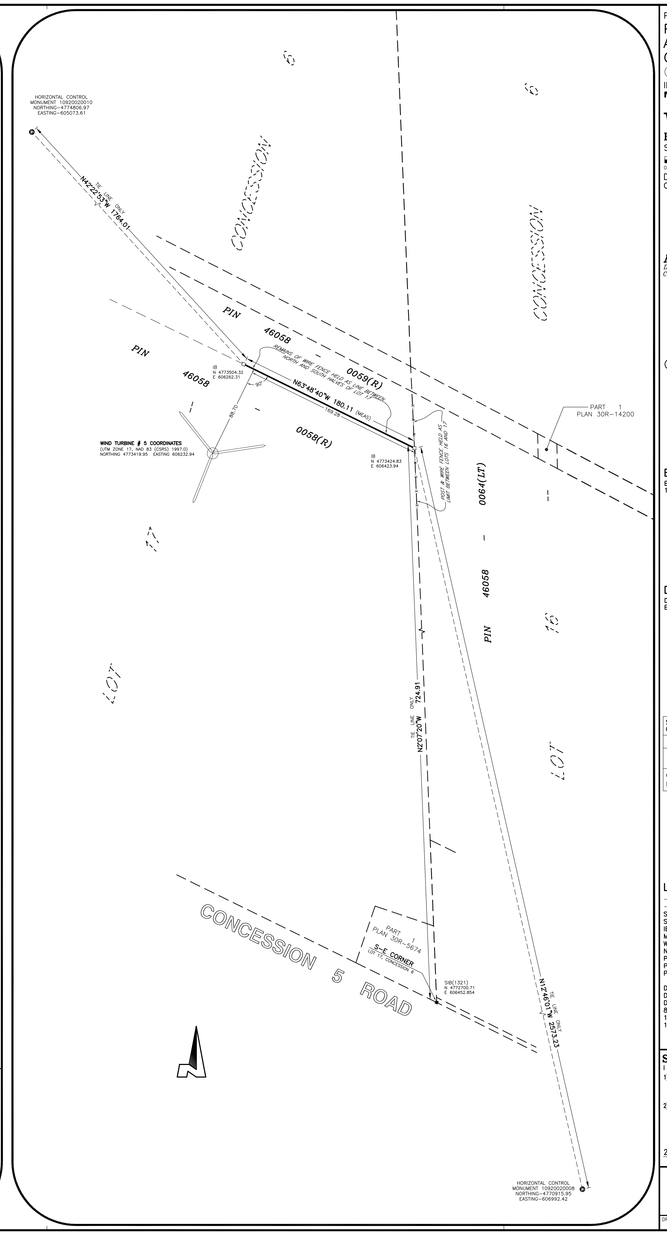
The contents of this report are based upon our understanding of guidelines, regulations, and statutes which we believe to be current at this time. Changes in guidelines, regulations, statutes, and enforcement policies can occur at any time, and such changes could affect the conclusions and recommendations of this report.

While we have referred to and made use of reports and specifications prepared by others, we assume no liability for the accuracy of the information contained within those reports and specifications.

# APPENDIX A:
# PROPERTY LINE SURVEY




PLAN OF SURVEY OF
PART OF LOT 17, CONCESSION 6
AND PART OF LOT 17, 19 AND 20
CONCESSION 7
GEOGRAPHIC TOWNSHIP OF CAISTOR
IN THE
# TOWNSHIP OF WEST LINCOLN
REGIONAL MUNICIPALITY OF NIAGARA
SCALE 1 : 2000

0 10 20 30 40 50 100 200 METRES

DONALD G. CHAMBERS
ONTARIO LAND SURVEYOR

***METRIC NOTE***
*DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.*



## BEARING NOTE
BEARINGS ARE UTM GRID, DERIVED FROM SPECIFIED CONTROL POINTS 10920020008 AND 10920020010, UTM ZONE 17, NAD83 (CSRS) (1997.0)

## DISTANCE NOTE
DISTANCES ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.99971.0.

SPECIFIED CONTROL POINTS (SCPs): UTM ZONE 17, NAD 83 (CSRS) (1997.0). CO-ORDINATES TO URBAN ACCURACY PER SEC. 14 (2) OF O.REG. 216/10

| POINT ID | NORTHING | EASTING |
|---|---|---|
| SCP 10920020008 | 4770915.95 | 606992.42 |
| SCP 10920020010 | 4774806.97 | 605073.61 |

CO-ORDINATES CANNOT, IN THEMSELVES, BE USED TO RE-ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.

## LEGEND

| | DENOTES | |
|---|---|---|
| —■— | | SURVEY MONUMENT FOUND |
| —○— | " | SURVEY MONUMENT SET |
| SIB | " | STANDARD IRON BAR |
| SSIB | " | SHORT STANDARD IRON BAR |
| IB | " | IRON BAR |
| MEAS | " | MEASURED |
| WIT | " | WITNESS |
| N/S/E/W | " | NORTH/SOUTH/EAST/WEST |
| PIN | " | PROPERTY IDENTIFICATION NUMBER |
| P1 | " | DEPOSITED PLAN 30R-5911 |
| P2 | " | PLAN BY L. N. MYERS, O.L.S. DATED NOVEMBER 27, 1953 |
| D1 | " | INSTRUMENT No RO543910 – PIN 46058–0011(LT) |
| D2 | " | INSTRUMENT No RO2245933 – PIN 46058–0284(LT) |
| D3 | " | INSTRUMENT No RO724510 – PIN 46058–0022(R) |
| 808/LNM | " | L. N. MYERS, O.L.S. |
| 1321 | " | R. D. RASCH, O.L.S. |
| 1353 | " | G. E. GIDDY, O.L.S. |

## SURVEYOR'S CERTIFICATE
I CERTIFY THAT:
1) THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT AND THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM;
2) THE SURVEY WAS COMPLETED ON THE 23rd DAY OF JANUARY, 2014.

28 JANUARY 2014
DATE
DONALD G. CHAMBERS, B. Sc., O.L.S.

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
1889723
THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR
In accordance with Regulation 1026, Section 29(3)

CHAMBERS AND ASSOCIATES SURVEYING LTD.
12 THOROLD ROAD EAST
WELLAND ONTARIO
L3C 3T2
(905) 735-7841 / 735-7844
FAX (905) 735-7333
www.cas-surveying.com

| DRAWN BY: | MSCAD: | DWG: | FILE No: |
|---|---|---|---|
| D. H. T. | 13027_DAVE | 13027_TURBINES | 13-27-1 |

# APPENDIX B:
# PROPERTY LINE PHOTOGRAPHS

**Figure 1. Overhead view of Turbine 1 Overlap. Picture facing west from Hub of Turbine 1**

**Figure 2. Overhead view of Turbine 1 Overlap. Picture facing west from Hub of Turbine 1**

**Figure 3. Overhead view of Turbine 2 Overlap. Picture taken from Turbine 1 Facing Southeast**

**Figure 4. Looking east toward property line from base of Turbine 2**

**Figure 5. Looking north toward property line from base of Turbine 3**

**Figure 6. Overhead view of Turbine 3 Overlap to the north. Picture taken from Hub of Turbine 3**

**Figure 7. Overhead view of Turbine 3 Overlap to the east. Picture taken from Hub of Turbine 3.**

**Figure 7. Overhead view of Turbine 3 Overlap to the east. Picture taken from Hub of Turbine 3.**

**Figure 8. Overhead view of Turbine 5 Overlap. Picture taken from Hub of Turbine 5.**

**Figure 9. Overhead view of Turbine 5 Overlap. Picture taken from Hub of Turbine 5.**