SUNCOR ENERGY CEDAR POINT WIND POWER PROJECT

PROJECT DESCRIPTION REPORT

File No.: 160960709
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Prepared for:

Suncor Energy Products Inc.
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Executive Summary

Suncor Energy Products Inc. ("Suncor") is proposing to develop the Suncor Energy Cedar Point Wind Power Project (the Project) within the Town of Plympton-Wyoming, the Municipality of Lambton Shores, and Warwick Township all within Lambton County, Ontario. The proposed Project was awarded a Feed-In-Tariff (FIT) contract with the Ontario Power Authority (OPA) in July, 2011 for up to 100 MW (FIT Contract F-002175-WIN-130-601).

It is envisioned that the proposed Project will include up to 46 wind turbines. The proposed Project would also include access roads, meteorological towers (met towers), electrical collector lines, substation, and a 115 kV transmission line. Suncor has elected to assess and seek approval for some alternative wind turbine locations. The Renewable Energy Approval (REA) application will consider up to nine (9) alternative turbine locations. Final selection of the turbine sites will be determined prior to Project construction and will be based on consultation activities, potential effects assessments, and detailed design / engineering work.

This Project Description Report is one component of the Renewable Energy Approval (REA) application for the Project, and has been prepared in accordance with Ontario Regulation 359/09 (O. Reg. 359/09), the Ontario Ministry of Natural Resources' (MNR's) *Approval and Permitting Requirements Document (APRD) for Renewable Energy Projects* (September 2009), and MOE's "Technical Guide to Renewable Energy Approvals".

The following table summarizes the requirements of this report as specified under O. Reg. 359/09:

Project Description Report Requirements (as per O. Reg. 359/09 – Table 1)		
Requirements	**Completed**	**Section Reference**
Set out a description of the following in respect of the renewable energy project:		
1. Any energy sources to be used to generate electricity at the renewable energy generation facility.	✓	2.1
2. The facilities, equipment or technology that will be used to convert the renewable energy source or any other energy source to electricity.	✓	3.0
3. If applicable, the class of the renewable energy generation facility.	✓	2.1
4. The activities that will be engaged in as part of the renewable energy project.	✓	4.0
5. The name plate capacity of the renewable energy generation facility.	✓	2.1
6. The ownership of the land on which the project location is to be situated.	✓	2.1 & Appendix B
7. If the person proposing to engage in the project does not own the land on which the project location is to be situated, a description of the permissions that are required to access the land and whether they have been obtained.	✓	2.1
8. Any negative environmental effects that may result from engaging in the project.	✓	6.0
9. If the project is in respect of a Class 2 wind facility and it is determined that the project location is not on a property described in	N/A	N/A

Project Description Report Requirements (as per O. Reg. 359/09 – Table 1)		
Requirements	**Completed**	**Section Reference**
Column 1 of the Table to section 19, a summary of the matters addressed in making the determination.		
10. If the project is in respect of a Class 2 wind facility in respect of which section 20 applies and it is determined that the project location does not meet one of the descriptions set out in subsection 20 (2) or that the project location is not in an area described in subsection 20(3), a summary of the matters addressed in making the determination.	N/A	N/A
11. An unbound, well marked, legible and reproducible map that is an appropriate size to fit on a 215 millimetre by 280 millimetre page, showing the project location and the land within 300 metres of the project location.	✓	Appendix A

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1.0 Introduction

1.1 PROJECT OVERVIEW

Suncor Energy Products Inc. ("Suncor") is proposing to develop the Suncor Energy Cedar Point Wind Power Project (the Project) within the Town of Plympton-Wyoming, the Municipality of Lambton Shores, and Warwick Township all within Lambton County, Ontario. The proposed Project was awarded a Feed-In-Tariff (FIT) contract with the Ontario Power Authority (OPA) in July, 2011 for up to 100 MW (FIT Contract F-002175-WIN-130-601).

It is envisioned that the proposed Project will include up to 46 wind turbines. The proposed Project would also include access roads, meteorological towers (met towers), electrical collector lines, substation, and a 115 kV transmission line. Suncor has elected to assess and seek approval for some alternative Project configurations. The Renewable Energy Approval (REA) application process will consider up to nine (9) alternative turbine locations. Final selection of the turbine sites will be determined prior to Project construction and will be based on consultation activities, potential effects assessments, and detailed design / engineering work. The Project site plan is provided in **Appendix A**. Commercial operation is currently planned for December 2014.

The Cedar Point Wind Power Project is to supply electricity to the Provincial Grid at a connection point on a 500 kV circuit which spans between the Bruce Power nuclear facility and London, ON. In addition to the Cedar Point Wind Power Project transmission facility, the power generated by the project will be transported through a transmission facility owned by Jericho Wind, Inc. and a shared transmission facility jointly owned by Jericho Wind, Inc. (Jericho Wind Energy Centre), Kerwood Wind, Inc. (Adelaide Wind Energy Centre) and Bornish Wind, LP (Bornish Wind Energy Centre). The transmission facility owned by Jericho Wind, Inc. is to be permitted, designed, and constructed by Jericho Wind, Inc. Similarly, the shared transmission facility is to be permitted, designed, and constructed by its owners. For additional details regarding the transmission facilities owned by Jericho Wind, Inc., Kerwood Wind, Inc., and Bornish Wind, LP, please visit the following website (www.nexteraenergycanada.com) and refer to REA documentation for the proposed Jericho Wind Energy Centre.

The Project Location includes all land and buildings/structures associated with the Project and any air space in which the Project will occupy. This includes structures such as turbines, access roads and power lines that will be utilized throughout the life of the Project. A "Zone of Investigation" has been identified based on the requirements of O. Reg. 359/09 and the MNR's APRD. The zone of investigation encompasses the Project Location and an additional 120 m surrounding the Project Location (50 m surrounding collector lines and the transmission line).

Suncor has retained Stantec Consulting Ltd. (Stantec) to help prepare the Renewable Energy Approval (REA) application, as required under O. Reg. 359/09. According to subsection 6.(3) of O. Reg. 359/09, the proposed Project is classified as a Class 4 Wind Facility. The Project Description Report is one component of the REA application for the Project, and has been prepared in accordance with Item 10, Table 1 of O. Reg. 359/09, and the Ministry of the Environments' (MOE) "Technical Guide to Renewable Energy Approvals".

2.0 General Information

2.1 KEY PROJECT INFORMATION

The following table provides key project information.

Table 2.1: Key Project Information

Name of the Project	**Suncor Energy Cedar Point Wind Power Project**	
Proponent	Suncor Energy Products Inc.	
Project Location	Town of Plympton-Wyoming, the Municipality of Lambton Shores, and Warwick Township. Lambton County	
Land Ownership	Privately owned lands (leased to Suncor) and within road right-of-ways	
Legal Description of Land Parcel	Legal description of the parcels of land that will be used for the Project are provided in **Appendix B**.	
Energy Source	Wind energy. No supplementary fuel sources would be used to generate electricity	
Nameplate Capacity	Up to 100 MW.	
Class of Facility	Class 4 Wind Facility.	
Proponent Contact Information	**Dianne Zimmerman** Manager, Strategic Relations Suncor Energy Products Inc. 150 6th Ave SW Calgary, AB T2P 3E3 Telephone: (519) 719-9181 Email: CedarPoint@Suncor.com	**Christopher Scott** Project Developer Suncor Energy Products Inc. 150 6th Avenue SW Calgary, AB T2P 3E3 Telephone: 1-866-344-0178 Email: CedarPoint@Suncor.com
Consultant Contact Information	**Mark Kozak** Project Manager Stantec Consulting Ltd. 70 Southgate Drive, Suite 1 Guelph, ON N1G 4P5 Telephone: (519) 836-6050 Fax: (519) 836-2493	
Project Contact Information	Phone: 1-866-344-0178 Email: CedarPoint@suncor.com Web: suncor.com/cedarpointwind	

2.2 PROJECT LOCATION

The proposed Project will be located on privately owned lands (turbines, access roads, power lines, etc.) and within municipal road right-of-ways (power lines). The legal description of the parcels of land that will be used for the Project is provided in **Appendix B**.

A map showing the site plan is provided in **Appendix A**. In accordance with O. Reg. 359/09, the Project Location includes all land and buildings/structures associated with the Project and any air space in which the Project will occupy. This includes structures such as turbines, access roads and power lines as well as any temporary work areas (the "constructible areas" for the Project) which are required to be utilized during the construction of the Project.

The Project is not located in any areas protected under provincial plans and policies described in O. Reg. 359/09, including the Greenbelt Plan, Oak Ridges Moraine Conservation Plan, Niagara Escarpment Plan, and the Lake Simcoe Protection Plan.

2.3 OTHER REQUIRED APPROVALS

At the federal, provincial and municipal levels, multiple permits, licenses and authorizations may be required to facilitate the development of the Project, in addition to the REA. The ultimate applicability of all permits, licenses and authorizations will be determined based on the Project's detailed design and consultation with applicable authorities.

2.3.1 Federal

A Federal Screening report is not expected to be required for the Project, as the Project will not cause a 'trigger' under the *Canadian Environmental Assessment Act (CEAA)*. However, the consultation program for the Project will include applicable federal departments and agencies typically interested in wind power projects (e.g., Department of National Defence, Environment Canada, Transport Canada, Fisheries and Oceans Canada, etc.). Potential federal permits, licenses and authorizations that may be required for the Project include those listed in Table 2-2 with the potential for additional approvals if requested by regulatory agencies.

Table 2.2: Key Federal Permits and Authorizations

Permit / Authorization	Administering Agency	Rationale and Status
Aeronautical Obstruction Clearance	Transport Canada – Aviation Division	Turbine lighting and marking (in progress)
Land Use Clearance	NavCanada	Aeronautical safety mapping and designations (in progress)

2.3.2 Provincial

The following is a list of key permits and approvals that may be required at the provincial level; however additional permits may also be required. The ultimate applicability of each permit will

be determined throughout the REA process based on the Project design and discussions with provincial agencies.

Table 2.3: Key Provincial Permits and Authorizations

Key Permit / Authorization	Administering Agency	Rationale
Approval of Connection	Independent Electrical System Operator (IESO)	Electrical interconnect with IESO regulated network
Connection Cost Recovery Agreement (CCRA)	Hydro One Networks Inc. (HONI)	Recovery of costs to grid operator of changes to allow connection
System Impact Assessment	IESO	Integration of project with IESO-controlled transmission system
Customer Impact Assessment	HONI	Integration of project with Hydro One and its impact on customers
Development, Interference with Wetlands, and Alterations to Shorelines and Watercourses Permit	St. Clair Region Conservation Authority (SCRCA), Ausable Bayfield Conservation Authority (ABCA)	Work within floodplains, water crossings, river or stream valleys, hazardous lands and within or adjacent to wetlands. Projects requiring review, *Fisheries Act* authorization and/or assessment under the *Canadian Environmental Assessment Act* are forwarded to the Department of Fisheries and Oceans (DFO)
Certificate of Inspection	Electrical Safety Authority (ESA)	A record that electrical work complies with the requirements of the Ontario Electrical Safety Code.
Generator's License	Ontario Energy Board (OEB)	Generation of electrical power for sale to grid
Special vehicle configuration permit	Ministry of Transportation (MTO)	Use of non-standard vehicles to transport large components
Transportation Plan	MTO	Adherence to road safety and suitability
Change of Access and Heavy/Oversize Load Transportation Permit	MTO	Compliance with provincial highway traffic and road safety regulations
Wide or excess load permit	MTO	Transportation of large or heavy items on provincial highways

2.3.3 Municipal

Several permits and authorizations may also be required from the local Municipalities (Town of Plympton-Wyoming, the Municipality of Lambton Shores, and Warwick Township) and the County (Lambton).

Table 2.4: Key Municipal Permits and Authorizations

Key Permit / Authorization	Rationale
Municipal Consent, Work within the municipal R.O.W	Required for works in municipal road allowances
Road Cut Permit	May be required for access roads from county roads or works to county roads
Pre-Condition Road Survey	Assessment of pre-construction road conditions for engineering staff
Building Permit	Compliance with building codes
Entrance Permit	Entrance from county roads
Transportation Plan	Adherence to road safety and suitability
Additional Plans related to	Required supporting information/plans

Table 2.4: Key Municipal Permits and Authorizations

Key Permit / Authorization	Rationale
general engineering (e.g. siltation control, lot grading, plan of services, etc.), water, wastewater, storm water, transportation, and geotechnical	

3.0 Project Components

3.1 WIND TURBINE GENERATORS

The Siemens SWT - 2.3 – 113 has been selected as the turbine model, details of which are provided below in Table 2.1 (additional information including noise characteristics is provided in the **Wind Turbine Specifications Report**).

Table 3.1: Siemens SWT – 2.3 - 113 Turbine Description

Operating Data	Specification
General	
Nameplate Capacity (MW)	2.030 - 2.221
Cut-in wind speed (m/s)	3.0 (12.6 km/hr)
Cut-out wind speed (m/s)	25 (90 km/hr)
Rotor	
Number of rotor blades	3
Rotor diameter (m)	113
Swept Area (m^2)	10,000
Rotor/Rotational Speed (rpm)	6 - 13
Blade length (m)	55
Tower	
Hub height above grade (m)	99.5
Tip height (m)	154.5

The following are the turbine coordinates of the proposed turbine locations (note that only up to 46 of these locations will be constructed):

Table 3.2: Wind Turbine Coordinates

Wind Turbine ID	Easting	Northing	Nameplate Capacity (MW)
1	423325	4779947	2.126
2	423377	4779347	2.126
4	422879	4778982	2.126
5	423245	4778344	2.126
6	422802	4778019	2.126
7	421230	4778183	2.126
8	422865	4777231	2.126
9	422893	4775653	2.126
10	419153	4777370	2.030
11	422661	4775135	2.126
13	419265	4776572	2.126
14	419035	4775996	2.126
15	420667	4774508	2.126
16	421160	4774047	2.126
17	419179	4775153	2.221
18	420545	4773644	2.221
19	418499	4774532	2.126
20	420881	4773009	2.126

Table 3.2: Wind Turbine Coordinates			
Wind Turbine ID	**Easting**	**Northing**	**Nameplate Capacity (MW)**
21	416732	4776214	2.030
22	416903	4775746	2.126
23	416180	4775949	2.221
24	416619	4775229	2.126
25	417026	4774693	2.126
26	421545	4770967	2.221
27	416257	4774033	2.221
29	420519	4770627	2.221
30	414976	4774473	2.221
31	414508	4773498	2.221
32	413984	4773786	2.221
34	413419	4773597	2.221
35	413504	4771876	2.221
36	412817	4771516	2.221
37	412242	4771844	2.221
39 (Alt)	410803	4771647	2.221
40	412134	4769169	2.221
41	410537	4769264	2.221
42 (Alt)	413558	4766375	2.221
43	410885	4768546	2.221
44	409812	4769400	2.221
46 (Alt)	413838	4765546	2.221
47	408115	4768818	2.221
48	408411	4768249	2.221
50 (Alt)	410398	4765477	2.221
51	408572	4766648	2.221
53	408885	4765445	2.221
54 (Alt)	407818	4765618	2.221
69	412533	4768085	2.221
70	413660	4767965	2.221
71 (Alt)	414270	4770586	2.221
72 (Alt)	414073	4766424	2.221
76	413336	4768393	2.126
79 (Alt)	411606	4765300	2.221
80 (Alt)	412204	4765167	2.221
81	413092	4768868	2.221
82	421271	4777618	2.221
Transformer (1)	416857	4775052	N/A
Transformer (2)	416857	4775031	N/A
Met Tower 1	423085	4780168	N/A
Met Tower 48	408134	4768275	N/A
Met Tower 26	421468	4770720	N/A
Met Tower 4	422650	4779049	N/A
Met Tower 23	416044	4776189	N/A
Met Tower 37	412193	4772075	N/A

3.2 TURBINE FOUNDATIONS

Turbine foundations are made of poured in place reinforced concrete. Foundations will be designed based on a site specific geotechnical assessment. Foundation designs could be either a gravitational spread type footing with or without piles. Piles may be required at some locations should soil conditions require piling. Gravitational spread type footings are octagonal in shape with an approximate diameter of 18 m, 2-3 m deep. Piles would be added to the foundation if necessary. Piles would be driven until refusal. The foundation will also include a grounding grid. During the operation of the turbines the majority of the foundation will be covered with top soil enabling the landowners to continue utilizing the land for agricultural purposes.

3.3 TURBINE TRANSFORMERS AND COLLECTOR LINES

A generator step-up (GSU) transformer, located immediately adjacent to each turbine, is required to transform the electricity generated in the nacelle of each turbine to a common collection system line voltage (i.e. 690 V to 34.5 kV). From each GSU, 34.5 kV underground and/or overhead collector circuits carry the electricity to the Project's substation to be located south of Cedar Point Line and west of Fuller Road. The collector lines will be buried underground on private property from the turbines to the municipal road rights-of-way at which time the lines may be switched to overhead lines or remain underground, generally depending upon other utilities within the road right-of-way. A total of 124 km of collector lines will be required.

Where necessary, junction boxes will be placed at the junction of the collector line from the turbine and the collector line in the road allowance. Underground collector lines have been incorporated into the design of the access roads to reduce the area required for construction and minimize potential construction impacts. The cables would be installed immediately to one side of the access road, just off the graveled surface.

At each end of a cable run either a junction box or an underground utility vault would be required to allow for splicing of cable reels, if needed. During the excavation for underground cabling, an excavation would be made for the utility vaults where required. The construction will typically consist of granular materials to form a base slab on which the vault will be positioned. The vault would either be lifted into place from a flatbed delivery truck or be poured-in-place. Cable splicing will be avoided to the extent possible.

Wherever possible, junction boxes at the end of access roads would be used for cable splice locations to reduce the number of cable vaults required. Junction boxes would primarily be located on participating lands associated with turbine access roads where they connect to the main collector system. Where junction boxes are required at splice points within the main collector system, they would be located within the municipal road allowance or immediately adjacent to the road allowance on participating private land.

Some sections of the collector system may have to be installed overhead on poles if required to pass sensitive natural features or other obstacles to underground cables. In these cases, where there are existing distribution lines within the municipal road allowance, the Proponent will work with Hydro One or appropriate entity to develop shared pole user agreements. In the areas where poles would be shared, existing poles may need to be replaced with larger wood poles. The overhead lines (if used) will be constructed on single pole structures, similar to existing distribution lines located throughout the area. Generally, the poles are spaced 60 m apart. Underground lines are buried at a minimum depth of 1.0 m so that agricultural production can continue on the lands above the collector lines.

The data communication system would run with the collector lines throughout the Project, both above and below grade.

3.4 TRANSFORMER SUBSTATION

A transformer substation will be built to accumulate the power circuits from the wind generation equipment outlined above. The accumulated power of up to 100 MW at 34.5 kV will arrive to the transformer substation via the collector lines. Two transformers, located within the substation, will step up the voltage from the 34.5 kV collector bus to 115 kV for the power transfer to the transmission line.

The transformer substation will consist of a prepared area of approximately 23,600 m^2 in size. An approximate 2.4 m high perimeter chain link fence will enclose the substation for safety reasons. The substation site would house the switching, control, protection, communication and metering equipment required to support the operation of the substation. The grounding design of the substation will be informed through an investigation of earth resistance at the location and ground grid resistance designed to industry standards. The substation will be built in accordance with the current regulations and standards.

Within the substation footprint itself, the transformers will be equipped with an oil containment system to capture oil in the event of a leak. The oil containment system is sized based on the volume of the oil from both transformers. Additionally, the oil containment system will be designed to distinguish between oil and water to only let water pass through the system. This will allow rain water to drain off the site through normal operation of the facility when no oil leaks are detected.

A sound attenuation wall, approximately 5 m high, will be constructed along the west side of the transformers. The barrier will minimize the escape of transformer noise into the surrounding environment and to break the line of sight with adjacent noise receptors.

3.5 TRANSMISSION LINE

A 115 kV overhead and/or underground transmission line will be installed between the Project's transformer substation (near Fuller Road and Cedar Point Line) and a proposed substation to be built as part of the Jericho Wind Energy Centre (located near Jericho Road as shown in the Site Plan). The transmission line will connect to the high voltage side of the Jericho substation via a 115 kV circuit breaker. The transmission line would be approximately 15 km in length.

If overhead, the transmission line will be constructed on single pole structures approximately 20 m in height. Generally, the poles are spaced 60 m – 150 m apart. Typically, a 20 m wide (66 feet) area cleared of tall vegetation is required for the transmission line (when overhead). If installed underground, the transmission line would buried at a minimum depth of 1.0 m. The cables would be backfilled with sand around the vicinity of the cables with wide electrical caution tape buried above the electrical cables to serve as a warning. Additionally, buried high voltage warning signs may be installed near road crossings. Native soils will be compacted to bring the trench to grade. The proposed transmission line is intended to be installed overhead, however underground sections would be installed where environmental constraints require.

3.6 ACCESS ROADS

Access roads are required to access each turbine site from existing roads during both the construction and operation phases of the Project. Where possible, access has been planned in a manner that reduces the amount of land required to access the turbine sites, thus reducing potential impacts on the existing environment.

Access roads are up to15 m wide during construction. Following construction, in some cases roads may be decreased in size (to 5 m) based on consultation with landowners. Access roads will be constructed of native materials or engineered fill. Alternatively, a woven geotextile could also be utilized with a reduced granular material depth or a cement/soil stabilizing agent. A total of approximately 39 km of access roads will be required.

3.7 WATER CROSSINGS

Permanent culvert installations would be required at locations where access roads and associated collector systems cross watercourses or surface drainage features. Watercourse crossings will also be required for the collector system where not associated with access roads.

Crossings in Conservation Authority Regulated Areas and where fish habitat is present would require approval from the SCRCA, ABCA and/or DFO. These approvals will be sought prior to construction of the Project when further details related to culvert sizing are confirmed.

3.8 STORMWATER MANAGEMENT SYSTEM

Area drainage from the transformer substation will be accomplished through swales/ditches adjacent to the substation that will collect and convey runoff from the substation area and the associated access road. The total drainage area associated with the substation and access road "hard" surfaces is less than 2 ha and therefore a "wet" water quality control pond (i.e. one containing a permanent pool) is inappropriate, as per the MOE SWM Planning and Design Guidelines Manual (2003). In addition to the conveyance of runoff, the swales will also provide water quality control, which is a suitable stormwater management practice for such an area according to the MOE guidelines.

3.9 OPERATIONS AND MAINTENANCE BUILDING

An operation and maintenance building may be installed within the constructible area of the substation and would be used to store spare parts/vehicles and monitor the day to day operations of the facility. Servicing would be provided via a buried septic tank (pumped out via a licensed third party) and municipal water supply. Permits for these services will be sought from the Municipality of Lambton Shores.

3.10 MET TOWER

Suncor has two active 60 m tubular guyed met towers which were installed in 2006 and 2008. An 80 m lattice tower was installed in 2005 but was subsequently decommissioned in 2010. These met towers have been used to identify the quality of the wind resource for the proposed Project. The wind data collected will be used to determine the best orientation of the wind turbines such that wind speed reduction from adjacent wind turbines will be minimized. These towers are prospecting towers and may be removed upon reaching commercial operation.

Up to six permanent met towers may be installed for use during the operation phase of the Project. The permanent met towers will be installed as per requirements by the Independent Electrical System Operator (IESO). The met towers are used for two functions: to complete a power performance study to confirm performance of the wind turbines installed and to provide data to the IESO to support their wind forecasting activities and operations of the electrical system. The permanent met towers will remain and be maintained for the duration of the Project's operating life.

Met towers would be a steel lattice type structure up to 100 m high. The tower foundation, depending on ground conditions, is typically a steel reinforced concrete-filled tubular pile. These towers would either be freestanding supported entirely by the foundation or would have guy wires for lateral support. Guy wires would be mounted on steel anchors embedded into buried reinforced concrete.

3.11 TEMPORARY COMPONENTS

Lands to be temporarily used during the construction of the Project are staging areas for access road construction, delivery truck turnaround areas, staging areas at each turbine location including the construction pads, crane paths, some watercourse crossings and the central laydown area (within the substation area). Any temporary office buildings used during construction would not be serviced, and would be placed within the delineated construction work areas.

The land use prior to construction at all of these areas is agricultural.

Following construction activities, all of the temporary locations would be restored to pre-existing conditions. Restoration work would start following installation of each wind turbine and removal of all construction materials and equipment from each turbine site. This includes removal of the granular and geotextile material from applicable areas.

3.11.1 Turbine Locations

3.11.1.1 Turbine Staging Areas

A staging area would be used within the approximately 140 m x 140 m staked constructible area delineated around the turbine tower location, which would be used for temporary storage of the turbine components, parking, and foundation spoil pile. Staging areas for the turbine components would not be graveled. Portions of the constructible area have been reduced on a site-by-site basis to avoid natural features and water bodies, where possible.

Turbine components would be delivered directly to the staging areas for temporary storage until assembled; they would not be stored at a central laydown area.

Turbine constructible areas would be actively used throughout the construction phase, to varying degrees during all construction activities at the turbine siting areas. These same staging areas would be used in the future should maintenance during the operation of the wind turbine require large components to be removed/replaced from the turbine.

3.11.1.2 Crane Pads

A graveled crane pad would be constructed at each turbine location at the end of each access road to be used during turbine assembly. Alternatively, if appropriate, top soil would be removed and stock piled, the subsoils would be compacted and temporary crane mats made of timber would be used under each of the crane stabilizer arms. The general crane pad area would be approximately 20 m x 40 m. To minimize the amount of land occupied by the Project during operation, crane pads will be removed following turbine assembly and the areas will be restored to pre-existing conditions. Crane pads would be re-installed for decommissioning activities.

3.11.1.3 Crane Paths

A heavy-lift crawler and mobile cranes would be used to assemble the turbines. The movement of the crane between turbine sites, termed ‘crane paths’, would take place along access roads and municipal or county roads where possible. The crane would be, in some places, broken down and transported to other turbine locations for re-assembly. However, there are instances where it is more effective, to minimize potential impact to municipal or county roads and avoid demobilization of the crane, to move the crane along the most direct path possible between two turbines. Any crane paths would be routed on private lands along collector line routes (to minimize land disturbance) where landowners have agreements with the Proponent.

Crane paths would be approximately 15 m wide, and would be relatively level and rolled as required. Timbers, crane mats and/or steel plates would be used where required to facilitate the crane moving through soft or wet areas.

3.11.2 Access Road Locations

3.11.2.1 Staging Areas

A staging area would be used within the 40 m staked constructible area along access roads for construction of the access road. Portions of the constructible areas have been reduced on a site-by-site basis to mitigate impacts to natural features and water bodies.

3.11.2.2 Delivery Truck Turnaround Areas

Some access roads require turnaround areas for delivery trucks. Turnaround areas would have an associated staging area of the same design as access roads.

3.11.2.3 Access Road Turning Radii

Turning radii are required for the delivery of wind turbine components to maneuver equipment around bends. This gravel would be removed during the operation phase.

3.11.3 Temporary Water Crossings

Temporary crossings of watercourses for crane paths would occur by temporary bridges such as wooden mats (swamp mats), portable bridges or culvert/gravel fill ramps.

Crossings in Conservation Authority Regulated Areas and where fish habitat is present would require approval from the SCRCA, ABCA and/or DFO.

3.11.4 Central Laydown Area

A graveled central laydown area, designed to store Project components during the construction phase, would be constructed on the same property as the substation. The central laydown area is not anticipated to be used for mass storage of the wind turbines; it is planned that the turbine components would be delivered directly to the turbine sites. The central laydown area would be primarily used for storage of other Project components such as electrical cabling, pad-mount transformers, as well as resources and general construction materials such as gravel and steel. This area will become the site of the operations and maintenance facility, if installed.

4.0 Project Activities

4.1 OVERVIEW OF ACTIVITIES

A general overview of the activities that would be engaged in during construction, operation, and decommissioning of the Project are provided in Table 4.1 below. Additional details are provided in the **Construction Plan Report**, **Design and Operations Report**, and **Decommissioning Plan Report**.

Table 4.1: Key Project Activities

Project Phase	Activities
Construction	Turbine Sites
	Staking of site work area and significant natural features, and installation of erosion and runoff controls
	Vegetation clearing, trimming of trees, and site grading
	Delineation of temporary work areas and installation of temporary facilities
	Construction of culverts and temporary access roads and crane paths
	Installation of construction pads or mats
	Installation of turbine and met tower foundations
	Installation of precast concrete vault for the turbine pad-mount transformer (if required)
	Installation of pad-mount transformers and grounding grid
	Turbine and met tower erection
	Installation of underground cabling and data lines
	Completion of permanent access roads
	Restoration of temporary work areas and crane pads (de-compaction, topsoil replacement, reseeding, etc.)
	Collector and Transmission System
	Staking of site work area and significant natural features, and installation of erosion and runoff controls
	Tree trimming and vegetation clearing as necessary
	Installation of cable trenches (underground), cabling, junction boxes, utility vaults, and data lines within the existing road allowance or directly adjacent to the road allowance on private land
	Installation of overhead lines
	Grading and restoration of the site
	Substation Site
	Staking of site work area and significant natural features, and installation of erosion and runoff controls
	Vegetation clearing, trimming of trees, and site grading
	Preparation of central laydown area
	Installation of stormwater management features e.g. ditches and/or culverts
	Construction of concrete footings and pads
	Installation of substation
	Restoration of temporary work areas (de-compaction, topsoil replacement, possible reseeding, etc.)
	Installation of fencing and landscaping of the site
Operation	Turbine Sites
	Preventative and routine maintenance
	Unplanned maintenance

Table 4.1: Key Project Activities

Project Phase	Activities
	Meter calibrations
	Grounds keeping
	Substation Site
	Preventative and routine maintenance
	Unplanned maintenance
	Remote wind farm condition monitoring
	Additional Activities
	Collector and transmission line maintenance
Decommissioning	Turbine Sites
	Removal of turbine and met tower infrastructure
	Turbine site grading (dependent upon new proposed use)
	Possible removal of access roads dependent upon agreement with landowner
	Possible excavation and removal of underground collector lines depending upon depth and agreement with property owner
	Substation Site
	Disconnection of substation from the Hydro One switchyard
	Removal of substation
	Additional Activities
	Component removal and reuse, recycling, or proper disposal at a landfill
	Removal of overhead and underground transmission system in municipal road allowances (remove wires and poles as required, dependent upon agreements)

4.2 FACILITY PHASES, TIMING AND SCHEDULING

The projected starting dates for Project construction, operation and decommissioning activities are provided in Table 4.2 below.

Operation and maintenance activities would occur as required throughout the life of the Project. The specific schedule for decommissioning would be determined at the time it is undertaken. The wind turbines used for the Project can be expected to be in service for the term of the 20 year Ontario Power Authority Power Purchase Agreement. Following the term of the contract, a decision would be made regarding whether to extend the life of the facility or to decommission. Barring routine scheduled maintenance, the turbines are expected to be operational 24 hours a day, 7 days a week, assuming appropriate wind conditions.

Table 4.2: Major Project Phases and Scheduling Milestones

Construction	Operation	Decommissioning/Repowering
February 2014 to December 2014	December 2014 to 2034	2034

4.3 KEY PROCESS ACTIVITIES

The following sections provide information relating to key process features as identified in O. Reg. 359/09 and MOE's guidance document *Technical Guide to Renewable Energy Approvals*.

4.3.1 Waste Generation

4.3.1.1 Construction and Decommissioning

During construction and decommissioning, waste material would be generated at, and transported from, the Project Location. Waste material produced by the Project is expected to consist of construction material (e.g., excess fill, soil, brush, scrap lumber and metal, banding, plastic wrap removed from palletized goods, equipment packaging, grease and oil, steel, etc.) and a minor amount of domestic waste (i.e., garbage, recycling and organics).

4.3.1.2 Operation

Lubricating and hydraulic oils associated with turbine maintenance and operation used for the Project, include oily rags, empty grease/oil containers, and cleaning fluids in low volumes. The proposed Siemens SWT-2.3-113 wind turbine model is a direct drive system that does not have a gearbox. This will significantly reduce the requirements for petroleum hydrocarbons during the operation of the wind farm.

Used oil would be stored in a designated area of the operation and maintenance building, and picked up by a certified contractor with the appropriate manifests in place. A minor amount of domestic waste (i.e. garbage, recycling, and organics) would be generated during standard operation and maintenance activities.

4.3.2 Air Emissions and Dust Generation

4.3.2.1 Construction and Decommissioning

Construction and decommissioning activities would rely on the use of a wide range of mobile equipment, such as bulldozers, dump trucks, and cranes. The engine exhaust from these vehicles, especially from those operating on diesel fuel, represents a source of particulate and other emissions.

Construction related traffic and various construction activities (e.g. excavation, grading, soil stripping, and exposed areas) have the potential to create dust but the effects are expected to be short term and localized.

4.3.2.2 Operation

During operations minor localized air emissions would occur from the periodic use of maintenance equipment over the life of the Project. In addition, personnel vehicles and waste management haulers would travel to and from the substation site during regular business hours. Operations related traffic has the potential to create dust in the immediate vicinity of the facility however; effects are anticipated to be short-term in duration and highly localized.

4.3.3 Noise Emissions

4.3.3.1 Construction and Decommissioning

During construction of the Project, noise would be generated by the operation of heavy equipment at each of the work areas and associated vehicular traffic on-site and on haul routes.

4.3.3.2 Operation

Mechanical and aerodynamic noise would be emitted from the wind turbines in addition to environmental noise from the transformers located at the substation. A *Noise Assessment Report* has been undertaken for the Project in accordance with the MOE *Noise Guidelines for Wind Farms*, dated October 2008 and O. Reg. 359/09.

4.3.4 Hazardous Materials

4.3.4.1 Construction and Decommissioning

Hazardous materials are limited to fuels and lubricants that would be on-site for use in equipment. These materials would be stored in appropriate storage containers during the construction phase by the construction contractor. Designated storage areas and the type of storage areas would be confirmed by the construction contractor prior to construction.

4.3.4.2 Operation

Hazardous materials to be used during the course of Project operation are limited to lubricants and fluids for the operation and maintenance of the turbines, the substation, and other equipment. These would be brought to the Project Location by the facility operator. There are no other known hazardous by-products of the wind energy generation process itself.

4.3.5 Sewage

4.3.5.1 Construction and Decommissioning

Sanitary waste generated by the construction and decommissioning crews would be collected via portable toilets and wash stations supplied by a contracted third party. Disposal of these wastes would be the responsibility of the contracted party and would be done in accordance with regulatory requirements.

4.3.5.2 Operation

A buried septic tank will be installed within the operation and maintenance building. Sewage will be removed via a licensed third party.

4.3.6 Stormwater Management

4.3.6.1 Construction and Decommissioning

During construction and decommissioning, proper grading would be conducted and mitigation measures implemented to reduce potential for runoff at the work areas.

4.3.6.2 Operation

As per the MOE *Stormwater Management Planning and Design Guidelines Manual* (2003) the total drainage area associated with the substation and access road "hard" surfaces is less than 2 ha and therefore a "wet" water quality control pond is not required. In addition to the conveyance of runoff, the swales will also provide water quality control, which is a suitable stormwater management practice for such an area according to the MOE guidelines.

4.3.7 Water-taking Activities

4.3.7.1 Construction and Decommissioning

There is a limited potential for groundwater to be encountered during the installation of the turbine foundations, turbine access roads, underground collector lines, and substation. However, rainwater has the potential to collect in the open excavations during construction; therefore, it is possible that some dewatering activities would be required. It is anticipated that groundwater withdrawal amounts will be well below 50,000 L/d. Historical water well records will be reviewed and piezometers will be installed at some turbine locations to assess the ground water level at the site.

However, rainwater has the potential to collect in the open excavations during construction. Therefore, it is possible that some dewatering activities would be required. It is possible that some watercourse crossings would require the use of a dam and pump, where the water may be moved by mechanical means.

If it is determined that withdrawn water could exceed 50,000 L per day, additional detail will be provided in the REA application in accordance with the guidance for an application for a Permit to Take Water.

4.3.7.2 Operation

No surface water-taking activities are planned as part of the operation of the facility

4.3.8 Accidental Spills

Standard containment facilities and emergency response materials (spill kits) will be maintained on-site as required. Refueling, equipment maintenance, and other potentially contaminating activities will occur in designated areas only.

In the event of a potential discharge of fluids associated with the Project, Suncor will determine the source of the spill and the extent of contamination. Containment facilities and emergency response materials will be used to minimize the extent of any contamination. Suncor will then assess the extent of contamination (e.g. soils, surface water, and groundwater) and rectify the contaminated lands/water. For example, once a spill is under control, Suncor will remove contaminated soil and dispose of it in accordance with the current appropriate provincial legislation, such as Ontario Regulation 347, the General – Waste Management Regulation and the site will be restored. The Emergency Response Plan will contain procedures for spill contingency and response plans (including any required monitoring), spill response training, notification procedures, and necessary cleanup materials and equipment. As per s.13 of the *Environmental Protection Act*, all spills that could potentially have an adverse environmental effect, are outside the normal course of events, or are in excess of prescribed regulatory levels should be reported to the MOE's Spills Action Centre.

5.0 Project Related Setbacks

A key component of the REA process is the establishment of common setbacks for all renewable energy facilities in the Province. The Project has been designed to meet all REA setback requirements (e.g. receptors, road rights of way, etc.) and where Project related infrastructure will be located within the setbacks as permitted within the Regulation, additional analysis (i.e., Environmental Impact Study) has been provided. Additional information with respect to adherence to setback requirements including visual representations is provided within the **Natural Heritage Assessment/Environmental Impact Study**, and the **Design and Operations Report** (including appendices such as the Noise Assessment Report and Property Line Setback Assessment).

Key setbacks which have been applied throughout the design of the Project are as follows:

Table 5.1: REA Setback Regulations

Feature	Setback Distance from Turbine	Study Alternative When Within Setback
Non-participating receptor	550 m (from turbine base)	An Environmental Noise Impact Assessment will be completed for the Project according to MOE Noise Guidelines.
Public road right-of-way and railway right-of-way	Turbine blade length + 10 m (from the centre of the turbine base)	N/A
Property line	Turbine height (excluding blades) (from the centre of the turbine base)	Does not apply to parcels of land if the abutting parcel of land is a participant in the Project or if it is demonstrated that the wind turbine will not result in adverse impacts on nearby business, infrastructure, properties or land use activities.
Provincially significant southern wetland	120 m	Development not permitted within feature. Development and site alteration may be possible within setback area; EIS required.
Provincially significant ANSI (Earth Science)	50 m	Development and site alteration may be possible within natural feature and setback area; EIS required.
Provincially significant ANSI (Life Science)	120 m	Development and site alteration may be possible within natural feature and setback area; EIS required.
Significant valleyland	120 m	Development and site alteration may be possible within natural feature and setback area; EIS required.
Significant woodland	120 m	Development and site alteration may be possible within natural feature and setback area; EIS required.
Significant wildlife habitat	120 m	Development and site alteration may be possible within natural feature and setback area; EIS required.
Lake	120 m from the average annual high water mark	Development and site alteration may be possible within setback area; additional report required. No turbine or transformer located within a lake or within 30 m of the average annual high water mark.

Table 5.1: REA Setback Regulations

Feature	Setback Distance from Turbine	Study Alternative When Within Setback
Permanent or intermittent stream	120 m from the average annual high water mark	Development and site alteration may be possible within setback area; additional report required. No turbine or transformer located within a permanent or intermittent stream or within 30 m of the average annual high water mark.
Seepage area	120 m	Development and site alteration may be possible within setback area; additional report required. No turbine or transformer located within 30 m of a seepage area.

6.0 Description of Potential Environmental Effects

The effects of constructing, operating, and maintaining a renewable energy facility is well understood and can be typically mitigated through well-known and accepted techniques and practices. For example, siting infrastructure outside of wetlands and away from residential (sound) receptors reduces the potential for negative environmental effects.

The following potential effects, mitigation measures, monitoring plans, and contingency plans have been identified which may result from the Project within the zone of investigation (see **Tables 6.1** and **6.2** below).

The environmental effects monitoring plans (for both construction and operation) for the Project have been designed to monitor implementation of the proposed protection and mitigation measures and to verify compliance of the Project with O. Reg. 359/09. Suncor and/or the Construction Contractor/Operation and Maintenance Contractor would be the primary party responsible for the implementation of effects monitoring and contingency plans identified below. Implementation of these measures would be undertaken in compliance with applicable municipal, provincial, and federal standards and guidelines.

Note that mitigation measures and contingency plans associated with accidental spills will be responded to in accordance with the information contained above in Section 4.3.8 and is not repeated in the tables below given the potential for accidental spills to impact multiple environmental features.

6.1 CONSTRUCTION

The following table (Table 6.1) identifies potential effects, mitigation measures, monitoring plans, and contingency plans that been identified which may result from the construction of the Project. Additional details related to the construction of the Project are provided in the **Construction Plan Report**. Given the similarities between the process for constructing and decommissioning the Project, the following table also provides an indication of the potential effects associated with decommissioning.

Table.6.1: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Construction

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
Heritage and Archaeological Resources[1]					
Protected Properties and Heritage Resources	• Although heritage structures (not protected properties) were determined to have cultural heritage value or interest, no direct or indirect impacts are anticipated. • As no cultural heritage landscapes were determined, there are no adverse impacts anticipated to the cultural heritage landscape. • As no protected properties are located at or adjacent to the Project Location, there are no adverse impacts anticipated to protected properties.	• Minimize potential impacts to protected properties and heritage resources. • Avoid the use of protected properties and heritage resources.	• None	• None	• No direct or indirect impacts are anticipated.
Archaeological Resources	• Encounter non-documented archaeological resources during construction activities such as excavation and component installation.	• Document and/or removed (as appropriate) archaeological resources from the Project Location prior to construction.	• All work within the vicinity of an archaeological find would be suspended and a Ministry of Tourism and Culture archaeologist and aboriginal communities would be contacted.	• In the event that human remains are encountered or suspected of being encountered before or during construction, all work would stop immediately. Notification would then be made to the Ontario Provincial Police or local police.	• No net effects are anticipated to known archaeological resources during construction.
Natural Heritage Resources[2]					
Significant Wetlands	• Indirect impacts such as dust generation, sedimentation, and erosion from construction activities including excavation, drilling, and use of dirt roads. • Change in surface water drainage to wetlands as a result of Project infrastructure (access roads) or site grading/compaction. • Loss of wetland habitat function.	• Minimize potential impacts to significant wetlands. • No direct loss of wetland habitat.	• Project Location is located outside of wetland boundaries thus there will be no direct loss of wetland habitat. • Construction contractor to ensure no work occurs outside of the limits of construction envelope. • Minimize alteration to surface water drainage patterns and installation of culverts as required to maintain flows. • Stockpiling of materials will not occur within 30 m of wetland boundary. • If crossing of a wetland is required by a collector line, horizontal directional drill (HDD) under the wetland boundary. • Erosion control devices will be installed at the HDD location and drill cuttings will be collected and removed from the site for disposal in an approved and appropriate manner. • No clearing of trees in or near any wetlands that could result in wetland desiccation or drying. • Silt barriers (e.g., fencing) will be erected along the edge of wetland boundary.	• Inspectors will ensure construction vehicles and personnel stay within the construction envelope, thereby limiting the disturbance of wetlands. • Inspection of the erosion and sediment controls after each significant rainfall event or weekly, whichever is more frequent. • Inspection of culverts and surface drainage patterns to wetlands. Grading and/or other surface water flow mitigation measures to be implemented if proposed mitigation measures do not function properly. • If siltation to a wetland occurs, related construction activities should cease immediately until the situation is rectified.	• No net effects are anticipated. • No direct loss of wetland habitat is proposed. • No anticipated disruption of wetland function.
Areas of Natural and Scientific Interest	• As no Areas of Natural and Scientific Interest were identified, there are no anticipated impacts	• N/A	• N/A	• N/A	• None
Valleylands	• As no valleylands were identified, there are no anticipated impacts	• N/A	• N/A	• N/A	• None
Significant Woodlands	• Indirect impacts such as dust generation, sedimentation, and erosion from construction activities including excavation, drilling, and use of dirt roads. • Temporary disturbance to woodland habitat from construction related noise.	• Minimize potential impacts to significant woodlands. • Minimize direct loss of woodlands.	• Install components in previously cleared areas. • Where development is planned within a woodland boundary, clearing to take place along outer edges of the woodlot to prevent fragmentation. • To the extent practical, pruning/tree removal would be avoided during leaf fall, typically between	• Inspectors will ensure construction vehicles and personnel stay within the construction envelope, thereby limiting the disturbance of woodland vegetation. • Inspection of the erosion and sediment controls after each significant rainfall event or weekly,	• Minimal direct impacts to woodlands. • No net effects are anticipated given the mitigation and

[1] Suncor Energy Cedar Point Wind Project – Stage 1 and 2 Archaeological Assessments and Heritage Assessment Report
[2] Suncor Energy Cedar Point Wind Project – Natural Heritage Assessment / Environmental Impact Study

Table.6.1: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Construction

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
	• Minimal pruning of trees in order to transport turbine components into proposed turbine locations. • Removal of trees to accommodate the installation and use of the transmission line.		September to November and be completed prior to or after the breeding season for migratory birds (May 1 to July 31). • As appropriate and prior to construction, the limits of tree pruning/clearing would be marked in the field. The Construction Contractor would ensure that no construction disturbance occurs beyond the marked limits. • Cleared trees would be provided to the landowner for personal use and/or sale in an attempt to minimize waste. • If required, replanting of native species and restoration of damaged areas with native species. • Adherence to the principles of any tree-cutting bylaws such as replacement requirements.	whichever is more frequent. • Should pruning/removal be required during the breeding bird season, prior to construction, surveys will be undertaken to identify the presence/absence of nesting birds. If a nest is located, a designated buffer would be marked off within which no construction activity would be allowed while the nest is active. The radius of the buffer width ranges from 5 - 60 m depending on the species. • One year post-pruning a certified arborist would undertake an evaluation of the health of the pruned trees. • Post-construction monitoring to ensure re-vegetated areas are functioning properly. Additional replanting/restoration in the event that previous works were unsuccessful.	contingency measures proposed.
Provincial Parks and Conservation Reserves	• As no Provincial Parks and Conservation Reserves were identified, there are no anticipated impacts	• N/A	• N/A	• N/A	• None
Significant Wildlife Habitat (includes birds, bats, amphibians and other wildlife)	• Indirect impacts such as dust generation, sedimentation, and erosion from construction activities including excavation, drilling, and use of dirt roads. • Amphibian road mortality. • Disturbance/removal to vegetation within Significant Wildlife Habitat. • Temporary disturbance to Significant Wildlife Habitat from construction noise and activities. • Fragmentation of habitat. • Changes in surface water patterns adversely affecting Significant Wildlife Habitat.	• Minimize potential impacts to significant wildlife habitat. • Minimize direct loss of Significant Wildlife Habitat.	• All new access roads are proposed in previously cleared agricultural lands. • Minimize construction activities adjacent to significant wildlife habitat during sensitive periods (i.e. the breeding season). • Where development is planned within significant wildlife habitat, clearing to take place along outer edges of the feature to prevent/minimize fragmentation. • Minimal alteration to surface water drainage patterns is proposed and culverts will be installed as required to maintain existing flows. • Restriction of construction activities primarily to daytime hours when breeding amphibian movement is less likely. • Vehicle speeds should be restricted to 30 km/h or less on access roads. • Silt barriers (e.g., fencing) will be erected along the edge of features when construction is proposed adjacent to the feature.	• Undertake studies to determine the actual use of the habitat prior to any construction activities occurring within 120 m of the habitat (species dependent, see NHA/EIS). Results to be provided to the MNR. • Inspectors will ensure construction vehicles and personnel stay within the construction envelope, thereby limiting the disturbance of natural vegetation.	• Minimal if any net effects to wildlife as a result of limited loss of habitat. • Minimal if any alteration of groundwater or surface water flow is anticipated from the Project. • No fragmentation of habitat is anticipated. • Minimal disturbance to local amphibian populations due to increased activity during construction as construction is temporary.
Vegetation (not considered as part of a significant natural feature)	• Removal and/or damage as a result of construction activities such as site clearing/grading and component installation,	• Minimize the amount of vegetation to be removed and/or impacted.	• Avoid vegetated areas in the design of the Project. • As appropriate and prior to construction, the limits of the constructible areas including vegetated areas to be cleared would be marked in the field. The Construction Contractor would ensure that no construction disturbance occurs beyond the marked limits. • Inspectors will ensure construction vehicles and personnel stay within the construction envelope, thereby limiting the disturbance of natural vegetation. • Replanting of native species when removal is required and restoration of damaged areas with native species. • Adherence to the principles of any tree-cutting bylaws including replacement requirements.	• Post-construction monitoring to ensure re-vegetated areas are functioning properly. Additional replanting/restoration in the event that previous works were unsuccessful.	• No net effects are anticipated given the minimal amount of vegetation that is anticipated to be impacted and given the replanting/restoration efforts to be undertaken.

Table.6.1: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Construction

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
Water Bodies and Aquatic Resources					
Groundwater	• Encounter groundwater during excavations	• No impacts to private residential wells. • No effects on groundwater quality.	• Seepage is anticipated to be nominal and controllable with standard sump pumps. • Any water pumped from excavated areas will be directed away from natural features, including wetlands. • Withdrawal amounts are anticipated to be below the threshold of 50,000 L/day.	• If private well water quality or quantity is disturbed as a result of construction, Suncor will provide a temporary potable water supply until corrective measures are taken and will comply with MOE Guideline B-9: Resolution of Groundwater Interference Problems.	• It is anticipated any potential effects would be short term in nature and have little to no effect on groundwater quality and adjacent private water wells.
Surface Water, Fish, and Fish Habitat[3]	• Increase in watercourse turbidity. • Disturbance to aquatic biota and habitat during access road/culvert installation. • Permanent enclosure of portions of a watercourse. • Loss of bed material within the culvert structure. • Disturbance or loss of riparian vegetation. • Collapse of punch and bore hole under watercourse (underground collector line). • Introduction of deleterious substances to watercourse during machinery fording (underground collector line)	• Vegetation removal on the slopes of watercourses to be minimized to the extent possible. • Minimize the risk of slope failure and siltation. • Minimize impacts to fish and fish habitat.	• No wind turbines have been located within 30 m of the average annual high water mark of a lake or a permanent or intermittent watercourse • Collector line crossing will be completed via horizontal directional drill activities to avoid disturbance of the surface water body. • Applicable DFO Operational Statements to be followed to protect fish and fish habitat. • All in-water work should have regard for in-water construction timing windows. • Erect silt fence before grading begins (along water body edges located within 30 m of construction work areas). • Direct runoff via swales and erosion control berms (where necessary). • Install temporary rock check dams in swales where appropriate to help attenuate flows, reduce erosive velocities, and encourage sediment deposition. • Immediately stabilize all disturbed areas not subject to construction activities within 30 days.	• A Construction Contractor representative would be on-site during installation of Project components that could potentially affect aquatic habitats to ensure compliance with specifications, site plans and permits. • If siltation to a watercourse occurs, related construction activities should cease immediately until the situation is rectified. • Inspection of the erosion and sediment controls after each significant rainfall event or weekly, whichever is more frequent. • Erosion and sediment control measures to remain securely installed until permanent vegetation measures are successful and areas are stabilized. • Additional monitoring requirements as may be identified in Conservation Authority permits. • Compensation strategies and/or permits from Fisheries and Oceans Canada and/or conservation authorities, as applicable, would likely include conditions of approval such as construction and post-construction monitoring.	• Effects to surface water and water bodies would be both spatially and temporally limited. • No negative net effects are anticipated to surface water, water bodies and fish and fish habitat.
Air Quality and Environmental Noise					
Air Quality	• Emissions from construction equipment. • Short-term nuisance dust effects from construction activities including excavation, drilling, and use of dirt roads.	• Minimize duration and magnitude of emissions.	• Operate vehicles in a manner that reduces air emissions to the extent practical, including: o Using multi-passenger vehicles as possible; and o Avoid idling vehicles. • Equipment and vehicles would be maintained in a manner that reduces air emissions. • Protect stockpiles of friable material with a barrier or windscreen and in the event of dry conditions and excessive dust. • Dust suppression (e.g. water).	• Adherence to Complaint Response Protocol. • All vehicles identified through the monitoring program that fail to meet the minimum emission standards would be repaired immediately or replaced as soon as practical.	• Any net effects are expected to be short-term in duration and highly localized.
Environmental Noise	• Noise emitted from construction equipment and activities such as excavation, drilling, and operation of construction vehicles.	• Minimize noise emissions to a reasonable extent • Noise levels arising from equipment to be compliant with sound levels established	• All engines associated with maintenance equipment would be equipped with mufflers and/or silencers in accordance with MOE and/or MTO guidelines and regulations. • Routine maintenance to ensure equipment is	• Adherence to Complaint Response Protocol. • If construction activities that cause excessive noise must be completed outside of normal time frames, adjacent residents will be notified in advance and by-law conformity will occur, as	• Any net effects are expected to be limited to short-term, intermittent noise increases during daylight or evening hours

[3] Suncor Energy Cedar Point Wind Project – Water Assessment and Water Body Report

Table.6.1: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Construction

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
		by the MOE and County/Township guidelines (if applicable).	operating properly and efficiently. • To the greatest extent possible, activities that could create excessive noise would be restricted to regular business hours, when residents are less sensitive to noise, and adhere to any local noise by-laws.	required.	at the work areas and/or along the haul routes.
Land Use and Socio-Economic Resources					
Agricultural Lands	• Change in use from agricultural to renewable energy development on lands (primarily Class 2 agricultural lands) used during construction. • Adverse effects to artificial drainage. • Soil erosion or crop loss on adjacent lands due to flooding as a result of temporary or permanent disruption to water flow. • Encounter and disruption of contaminated soils.	• Minimize disturbance to agricultural lands and operations. • Minimize land required for the Project. • Avoid impacting artificial tile drains. • Minimize disturbance to drainage patterns. • Properly manage contaminated soils if encountered.	• Landowners are being financially compensated for the lease of the private lands and thus offset the effect of removing the land from agricultural production. • Efforts have been made to site the turbines, access roads and collector lines in such a way as to minimize disturbances to existing agricultural lands and operations. • The location of artificial tile drainage and associated drains would be confirmed with each landowner on a site-specific basis prior to construction activities. • Should tile drains be damaged, locations should be recorded and flagged. If a main drain, header tile, or large diameter tile is severed, a temporary repair should be made to maintain field drainage and prevent flooding of the work area and adjacent lands. • If contaminated soil is encountered, the contaminated material will be disposed of in accordance with the current appropriate provincial legislation, such as Ontario Regulation 347, the General – Waste Management Regulation.	• Following the completion of construction, as appropriate, temporary workspaces would be graded and de-compacted (if required), the topsoil replaced, and the area left as close to pre-existing condition as possible.. • An agricultural tile drainage contractor would carry out any re-alignment works as well as repair tiles and/or drains that may experience construction related damage.	• Any net effects are expected to be short-term until mitigation and corrective actions are completed. • The Project provides positive income to participating landowners through land lease agreements for agricultural lands.
Mineral, Aggregate, and Petroleum Resources	• Impacts to petroleum resources operations.	• Does not require the creation of a new pit or quarry to provide the required aggregate materials. • No impacts to petroleum resources operations.	• The source of the required aggregate will be determined prior to construction, however it is planned that local sources will be used to the greatest extent possible. • On-site surveying will take place prior to construction to identify petroleum resources operations within 75 m of the Project Location.	• An Engineer's Report will be prepared for all petroleum resources operations within 75 m of the Project Location. The purpose of the Engineer's Report will be to demonstrate that there are no effects to the petroleum resources operations as a result of the construction of the Project. • If a potential effect to the petroleum resources operations is identified, construction methods may be altered (staying within the Project Location) to minimize or eliminate any potential effects.	• No anticipated net effects. • Project will not require the creation of a new pit or quarry to provide the required aggregate materials and as such a licence of permit under the *Aggregate Resources Act* will not be sought for the Project.
Game And Fishery Resources	• Disturbance to game species from construction activities. • Limiting access to lands for hunting and fishing.	• Minimize disturbance to game and fishery resources. • Minimize length of time that lands are inaccessible.	• Hunting and other recreational uses will not be permitted on lands required during construction (unless permitted by Suncor and/or the construction contractor) as it would be unsafe due to the large construction equipment on-site. • Routine maintenance to ensure equipment is operating properly and efficiently, thus limiting noise and potential disturbance to game resources.	• N/A	• The net effect of limiting access to land due to safety concerns and potential disturbance to game resources will be temporary and spatially limited.
Provincial Plans, Policies, and Recreation Areas	• None	• N/A	• N/A	• N/A	• None
Local Traffic	• Increase in traffic. • Temporary road/lane closures.	• Minimize disturbance to local traffic.	• There may be instances where excess loads (e.g. turbine components) will require special traffic	• Permits will be obtained from the County/Township and/or MTO to implement	• A limited, short term effect on local traffic, but

Table.6.1: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Construction

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
			planning. • Construction Contractor will implement a Traffic Management Plan. • Understanding local school bus routes and timing to avoid traffic congestion.	road work activities once final transportation routes and requirements have been finalized.	will be managed through the implementation of a Traffic Management Plan.
Local Economy	• Increase in direct, indirect and induced employment. • Local economic benefits from land lease payments, local expenditures, municipal taxes, etc. • Disruptions to local businesses.	• Create positive effects on local economy.	• To the extent possible, Suncor would source required goods and services from qualified local suppliers. • Disruptions in the vicinity of local businesses would be largely due to an increase in traffic, and would be short term and are not expected to affect use of these businesses.	• None required.	• A positive net effect is anticipated on the local economy during construction of the Project. • It is expected that on average 60 persons may be directly employed during the construction period.
Viewscape	• Viewscape from areas surrounding the Project Location will be altered due to the presence of construction equipment and personnel along with changes to the physical landscape.	• Minimize potential for visual disturbance.	• Minimal mitigation measures are available to address concerns related to visual changes to the area during the construction of the Project.	• Adherence to Complaint Response Protocol.	• Will be a net effect (either positive or negative based on perceptions) due to the change in viewscape of the surrounding area.
Existing Infrastructure[4]					
Provincial and Municipal Infrastructure	• Abnormal wear and/or road upgrades on local roads. • Damage to municipal drains. • Temporary impacts to existing utilities. • Disruption of local snowmobile trails may occur during construction activities. • Additional potential effects which may be identified via the Municipal Consultation Form that is completed by each local municipality and County.	• Minimize impacts to local roads. • Minimize impacts to municipal drains. • Minimize disruptions/impacts to other existing utilities. • Minimize disruptions/impacts to snow mobile trails. • Minimize any effects identified via the Municipal Consultation Form.	• Consultation with MTO regarding any necessary agreements related to use of roads for transportation of Project materials in addition to obtaining the required permits for use of provincial highways. • Detailed plans or agreements regarding maintenance and/or repairs of the local roads and road rights-of-way damaged during construction will be developed with the County/Township. • Agreements would be developed for use of the municipal road allowance for routing of the power lines. • Where there are existing distribution lines within the municipal road allowance, Suncor will work with the hydro provider to develop shared pole user agreements (if reasonable to do so). • Drains superintendents from the County/Township will be requested to attend site visits and be part of the discussions with the Conservation Authorities during the *Fisheries Act* permitting process for the Project. • Locate all utilities within municipal road allowances prior to construction. • Where a conflict to the snowmobile route may be identified, Suncor will meet and discuss with potential conflict with trail organizers to determine a temporary alternate route. • Create appropriate warning signage for trail users during construction.	• Pre and post construction road surveys will be conducted and Suncor will be responsible for any required upgrades/repairs directly associated with Project construction as per agreements with the Township/County. • Local roads would be restored to their pre-construction conditions to the satisfaction of local authorities as applicable to the agreements with County/Township. Some municipal roads requiring structural enhancement/upgrades may be left in their upgraded form if requested. • Permits will be obtained from the County/Township and/or MTO to implement road work activities once final transportation routes and requirements have been finalized. • In the event that utilities within municipal road allowances are damaged as a result of the construction of the Project, Suncor would rectify damages. • Affected roadside ditches and drains would be repaired if required and monitored to ensure that they are functioning properly. • Determination of temporary snowmobile routes.	• Abnormal wear on local roads may be unavoidable. However, the effect of constructing the various Project components is anticipated to have a limited, short term effect on local roads given Suncor's commitment to developing maintenance and/or repair plans or agreements with the County/Township. • No anticipated net effects to snowmobile trail users.

[4] Stantec Consulting Inc. 2013. Suncor Energy Cedar Point Wind Power Project Consultation Report.

Table.6.1: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Construction

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
Navigable Waters	• Temporary barrier due to crossings.	• Avoid navigable waterways. • Minimize length of disturbance to navigable waterways.	• Confirmation of the presence of these waters will be obtained from Transport Canada and permits (if required) will be obtained prior to construction.	• To be identified as part of any permits (if required).	• None
Telecommunication and Radar Systems	• Potential to interfere with telecommunication and radar systems	• Minimize interference with telecommunication and radar systems	• Suncor has consulted with relevant agencies and licensed providers to identify any likely effects to telecommunication and radar systems. • In the unlikely event that signal disruption is experienced, Suncor will meet with owner of system to discuss potential options for mitigation.	• Adherence to Complaint Response Protocol. • Suncor would review potential incidents of telecommunications interference on a case by case basis.	• No net effects to telecommunication/ radar systems are anticipated
Aeronautical Systems	• Aeronautical obstruction.	• Minimize potential hazard to low flying aircraft.	• Once the turbines are erected (and prior to operation), turbine lighting will conform to Transport Canada standards. • Nav Canada would be responsible for updating all aeronautical charts with the turbine locations.	• None	• No anticipated net effects to aeronautical systems.
Public Health and Safety					
Public Health and Safety	• Potential traffic safety hazards. • Accidents and malfunctions.	• Minimize traffic safety hazards. • Minimize potential for accidents or malfunctions.	• As appropriate, for public safety all non-conventional loads would have front and rear escort or “pilot” vehicles accompany the truck movement on public roads. May provide notification of non-conventional load movements. • Implementation of a Traffic Management Plan and a detailed Health and Safety/Emergency Response Plan. • Construction Contractor will adhere to Suncor’s safety policies. • The Construction Contractor to employ good site safety practices.	• Design and approval of the Emergency Response Plan with local emergency services personnel. • If required, Suncor would participate in a training session for these workers.	• With adherence to safety policies and procedures, there is minimal increased or new risk to public health and safety.

6.2 OPERATION

The following table (Table 6.2) identifies potential effects, mitigation measures, monitoring plans, and contingency plans that been identified which may result from the operation of the Project within the zone of investigation. Additional details related to the operation of the Project are provided in the **Design and Operations Report**.

Table 6.2: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Operation

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
Heritage and Archaeological Resources[5]					
Protected Properties and Heritage Resources	• Although heritage features (not protected properties were determined to have cultural heritage value or interest, no direct or indirect impacts are anticipated. • As no cultural heritage landscapes were determined, there are no adverse impacts anticipated to the cultural heritage landscape. • As no protected properties are located at or adjacent to the Project Location, there are no adverse impacts anticipated to protected properties.	• Minimize potential impacts to protected properties and heritage resources. • Avoid the use of protected properties and heritage resources.	• None	• None	• None
Archaeological Resources	• There are no areas that would be excavated during the operation phase that would not have been previously assessed prior to construction; therefore no effects are anticipated to archaeological resources during operation.	• None required	• None	• None	• None
Natural Heritage Resources[6]					
Significant Wetlands	• The dust and disturbance to wetland vegetation as a result of maintenance vehicle traffic is expected to be negligible due to the infrequency of these activities. • Potential disturbance effects to wildlife inhabiting wetlands are discussed under Significant Wildlife Habitat.	• No Project infrastructure is within wetland boundaries.	• N/A	• N/A	• None
Areas of Natural and Scientific Interest	• As no Areas of Natural and Scientific Interest were identified, there are no anticipated impacts.	• N/A	• N/A	• N/A	• None
Valleylands	• As no valleylands were identified, there are no anticipated impacts.	• N/A	• N/A	• N/A	• None
Significant Woodlands	• Tree pruning of previously cleared areas within the easement required for the transmission line in accordance with electrical safety standards. • The dust and disturbance to woodland vegetation as a result of maintenance vehicle traffic is expected to be negligible due to the infrequency of these activities. • Potential disturbance effects to wildlife inhabiting woodlands are discussed under Significant Wildlife Habitat.	• Minimize the extent of tree pruning required.	• To the extent practical, pruning would be avoided during leaf fall, typically between September to November and be completed prior to or after the breeding season for migratory birds (May 1 to July 31). • Pruned trees would be provided to the landowner for personal use and/or sale in an attempt to minimize waste. • If required, replanting of native species and restoration of damaged areas with native species. • Adherence to the principles of any tree-cutting bylaws such as replacement requirements.	• Should pruning be required during the breeding bird season, surveys will be undertaken to identify the presence/absence of nesting birds. If a nest is located, a designated buffer would be marked off within which no pruning activity would be allowed while the nest is active. The radius of the buffer width ranges from 5 - 60 m depending on the species.	• No net effects are anticipated given the minimal amount of tree pruning that would be required.
Provincial Parks and Conservation Reserves	• As no Provincial Parks and Conservation Reserves were identified, there are no anticipated impacts.	• N/A	• N/A	• N/A	• None
Significant Wildlife Habitat (includes birds, bats, amphibians and other wildlife)	• Disturbance in the form of dust, noise, and tree pruning from maintenance activities. • Avian and bat mortality from collisions with turbine blades.	• Minimize potential impacts to significant wildlife habitat • No loss of Significant Wildlife Habitat outside of previously	• To the extent practical, pruning would be restricted to previously cleared areas and would be avoided during leaf fall, typically between September to November and be completed prior	• Monitoring of disturbance effects. • Bird and bat mortality monitoring will be conducted according to MNR's Bat Guidelines (2011) and MNR's Bird Guidelines (2010) for a	• Given the low potential for effects and the proven effectiveness of

[5] Golder Associates. 2013. Suncor Energy Cedar Point Wind Project Heritage Assessment Report.
[6] Stantec Consulting Inc. 2013. Suncor Energy Cedar Point Wind Project Natural Heritage Assessment / Environmental Impact Study

Table 6.2: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Operation

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects

	• Mortality from collisions with maintenance vehicles on access roads.
	• Changes in surface water patterns adversely affecting Significant Wildlife Habitat
		cleared areas for the transmission line	to or after the breeding season for migratory birds (May 1 to July 31).
			• Minimal alteration to surface water drainage patterns and installation of culverts (during construction) as required to maintain flows.
			• Maintenance vehicle speeds should be restricted to 30 km/h or less on wind turbine access roads.
			• Disturbance of wildlife due to increased activity would be temporary during maintenance activities.
				minimum of 3 years – see Appendix C – Environmental Effects Monitoring Plan for monitoring commitments.
				• Implementation of operational controls when the mortality thresholds are exceeded (see Appendix C – Environmental Effects Monitoring Plan for mortality thresholds):
				• Operational controls may include:
				  • Birds:
				  • Development of a response plan including an analysis of the species, timing and distribution of fatalities to determine potential risk factors leading to mortality.
				  • Periodic shut-down of select turbines at specific times of year.
				  • Blade feathering at specific times of year
				  • Bats:
				  • Increasing cut-in speed to 5.5 m/s or feathering wind turbine blades when wind speeds are below 5.5 m/s between sunset and sunrise, from July 15 to September 30.
				  • Should the cut-in speed mitigation be implemented and the bat mortality thresholds continue to be exceeded, Suncor will work with the MNR to determine additional mitigation and scoped monitoring requirements.
					the proposed mitigation, no net effects are predicted to significant wildlife habitat.
					• Most North American studies have shown that direct bird mortality attributable to wind facilities is low, especially when compared to other anthropogenic structures[7], and for birds, is not expected to be significant at a population level[8] .
					• Post-construction disturbance and mortality monitoring would be conducted to verify effects predictions and additional operational mitigation would be implemented if unanticipated net effects occur.

Water Bodies and Aquatic Resources					
Groundwater	• None	• None required	• None	• None	• None
Surface Water, Fish, and Fish Habitat[9]	• Erosion, sedimentation, and surface water turbidity during maintenance activities.	• Minimize the risk of erosion, sediment transport or surface water turbidity.	• No wind turbines have been located within 30 m of the average annual high water mark of a lake or a permanent or intermittent watercourse. • Minimize removal of vegetation on the slopes of watercourses. • Following completion of the maintenance activity, stream banks should be restored to their original grade. • If siltation to a watercourse occurs, activities should cease immediately until the situation is rectified.	• An Operations Contractor representative would be on-site during maintenance of Project components that could potentially affect aquatic habitats to ensure compliance with specifications, site plans and permits. • If siltation to a watercourse occurs, related activities should cease immediately until the situation is rectified. • Erosion and sediment control measures (if required for maintenance activity) are to remain securely installed until maintenance activities are completed. • Compensation strategies and/or permits from Fisheries and Oceans Canada and/or	• Effects to surface water and water bodies would be both spatially and temporally limited to the maintenance activity. • No net negative effects are anticipated to surface water, water bodies and fish and fish habitat.

[7] Arnett et al., 2007; Kingsley and Whittam, 2007; National Academy of Sciences, 2007
[8] Arnett et al., 2007
[9] Stantec Consulting Inc. 2013. Suncor Energy Cedar Point Wind Project Water Body and Water Assessment Report

Table 6.2: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Operation

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
				conservation authorities, as applicable, would likely include conditions of approval such as monitoring activities.	
Air Quality and Environmental Noise					
Air Quality	• Emissions from equipment and vehicles during maintenance activities.	• Minimize duration and magnitude of emissions.	• Operate vehicles in a manner that reduces air emissions to the extent practical, including: o Using multi-passenger vehicles as possible; and o Avoid idling vehicles. • Equipment and vehicles would be maintained in a manner that reduces air emissions.	• Adherence to Complaint Response Protocol. • All vehicles identified through the monitoring program that fail to meet the minimum emission standards would be repaired immediately or replaced as soon as practical.	• Any net effects are expected to be short-term in duration and highly localized.
Environmental Noise[10]	• Noise emitted from a turbine and/or transformers.	• Noise at all non-participating receptors to meet MOE Noise Guidelines.	• Design of the wind farm was completed to be compliant with the applicable MOE environmental noise guidelines. • A regular maintenance program would largely mitigate potential effects related to noise. • All turbines have been located at least 550 m from all non-participating receptors. • Installation of a sound attenuation wall.	• Noise monitoring would be conducted in accordance with the REA for the Project • Turbine shutdown in the event of a malfunctioning turbine or extreme weather event. • Turbine maintenance to ensure turbines are running properly and efficiently.	• No net effects are anticipated since the project was designed to the MOE environmental noise guidelines.
Land Use and Socio-Economic Resources					
Agricultural Lands	• Change in use from agricultural to renewable energy development on lands (primarily Class 2 agricultural lands) used during operation. • Disruption to agricultural operations. • Stray voltage impacts on livestock.	• Minimize disturbance to agricultural lands and operations. • Minimize land required for the Project. • Eliminate potential stray voltage.	• Landowners are being financially compensated for the lease of the private lands and thus offset the effect of removing the land from agricultural production. • Efforts have been made to site the turbines, access roads and collector lines in such a way as to minimize disturbances to existing agricultural lands and operations. • Operational and maintenance activities would be restricted to the delineated Project areas (e.g. access roads). • All electrical collector lines would be installed to meet the Ontario Electrical Safety Code and be certified by the Electrical Safety Authority.	• Adherence to Complaint Response Protocol.	• No anticipated net effects. • The Project provides positive income to participating landowners through land lease agreements for agricultural lands.
Mineral, Aggregate, and Petroleum Resources	• None	• None required	• None	• None	• None
Game And Fishery Resources	• Disturbance to game species from operational activities such as large scale maintenance activities. • No effects identified to fishery resources.	• Minimize disturbance to game resources.	• Routine maintenance to ensure equipment is operating properly and efficiently, thus limiting potential disturbance to game resources. • Current agricultural, recreational and hunting activities provide some disturbance, and none of the game species occupying the area are known to be particularly wary of human activity, so it is anticipated that they will adapt to the presence of operational turbines[11]. • Hunting and other recreational uses will be permitted on lands occupied and adjacent to the	• N/A	• The net effect of limiting access to land due to safety concerns and potential disturbance to game resources will be temporary during large scale maintenance events.

[10] HGC. 2013. Suncor Energy Cedar Point Wind Project Noise Assessment Report (Appendix B to the Design and Operations Report)
[11] Arnett et al., 2007

Table 6.2: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Operation

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
			Project (not withstanding private property restrictions). • The operation of the Project will not result in the creation of access to previously inaccessible areas as the Project is located in areas already cleared for agricultural uses.		
Provincial Plans, Policies, and Recreation Areas	• None	• N/A	• N/A	• N/A	• None
Local Traffic	• Temporary increase in traffic. • Temporary road/lane closures.	• Minimize disturbance to local traffic.	• There may be instances where maintenance activities require excess loads (e.g. cranes) and will require special traffic planning. • Operations and Maintenance Contractor will implement a Traffic Management Plan during instances of large scale equipment transport.	• Permits will be obtained (if required) from the County/Township and/or MTO.	• A limited, short term effect on local traffic during large scale maintenance activities, but will be managed through the implementation of a Traffic Management Plan.
Local Economy	• Small Increase in direct employment. • Local economic benefits from land lease payments, local expenditures, municipal taxes, etc.	• Create positive effects on local economy.	• To the extent possible, Suncor would source required goods and services from qualified local suppliers.	• None required.	• A positive net effect is anticipated on the local economy during operation of the Project. • On average, it is expected that 3 to 5 persons may be directly employed during operation.
Viewscape	• Viewscape from areas surrounding the Project Location will be altered due to the presence of wind turbine.	• Minimize potential for visual disturbance.	• Minimal mitigation measures are available to address concerns related to visual changes to the area due to the physical size of the turbines. • Turbines will be light grey in colour to better blend into the environment.	• None.	• Will be a net effect (either positive or negative based on perceptions) due to the change in viewscape of the surrounding area.
Existing Infrastructure					
Provincial and Municipal Infrastructure	• None	• None	• None	• None	• None
Navigable Waters	• None	• None	• None	• None	• None
Telecommunication and Radar Systems	• Potential to interfere with telecommunication and radar systems	• Minimize interference with telecommunication and radar systems	• Suncor has consulted with relevant agencies and licensed providers to identify any likely effects to telecommunication and radar systems. • In the unlikely event that signal disruption is experienced, mitigation measures may include: o Replacing the receiving antenna with one that has a better discrimination to the unwanted signals; o Relocating either the transmitter or receiver; or o Switching to an alternate means of receiving	• Adherence to Complaint Response Protocol. • Suncor would review potential incidents of telecommunications interference on a case by case basis.	• No anticipated net effects to telecommunication/ radar systems.

Table 6.2: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Operation

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
			the information		
Aeronautical Systems	• Aeronautical obstruction.	• Minimize potential hazard to low flying aircraft.	• Once the turbines are erected (and prior to operation), turbine lighting will conform to Transport Canada standards. Turbine lighting would be selected with the minimal allowable flash duration, narrow beam, and would be synchronized. • Nav Canada would be responsible for updating all aeronautical charts with the turbine locations. • Low-level aircraft such as ultra-lights and crop dusters are to be familiar with the area they are flying over and are prohibited from night-time flights.	• Adherence to Complaint Response Protocol.	• No anticipated net effects to aeronautical systems. • Low-level aircrafts, such as crop dusters may need to re-route their flight paths or consult with Suncor when spraying is to occur.
Public Health and Safety					
Public Health and Safety	• Potential traffic safety hazards. • Accidents and malfunctions. • Ice throw	• Operational performance target of zero (0) reportable instances on an annual basis. Suncor's "Journey to Zero" protocol.	• As appropriate, all non-conventional loads would have front and rear escort or "pilot" vehicles accompany the truck movement on public roads. May provide notification of non-conventional load movements. • Implementation of a Traffic Management Plan and a detailed Health and Safety/Emergency Response Plan. • The wind turbines would be designed, installed, operated and maintained according to applicable industry standards/certifications. • Project components have been designed to withstand the effects from extreme events. • All turbines have been located at least 550 m from all non-participating receptors and within the pre-scribed limits to property lines and public roads as per O. Reg. 359/09. • All personnel operating the wind farm will be provided with all necessary training and personal protective equipment to work safely.	• Adherence to Complaint Response Protocol. • Discussions with local emergency services personnel shall take to address concerns of local emergency services personnel. If required, Suncor would participate in a training session for these workers. • Failsafe devices are capable of shutting down the turbine blades in the event of excessive wind conditions, imbalance or malfunction of other turbine components. • Turbines would be monitored electronically twenty-four hours a day, seven-days a week, to allow operational changes to be noted and assessed quickly. • Inspections of turbines would occur after extreme weather events. • Annual safety reporting would be required.	• With adherence to safety policies and procedures, there is minimal increased or new risk to public health and safety

7.0 Closure

This Project Description Report has been prepared by Stantec for Suncor in accordance with Item 10, Table 1 of Ontario Regulation 359/09, and the "Technical Guide to Renewable Energy Approvals".

This report has been prepared by Stantec for the sole benefit of Suncor, and may not be used by any third party without the express written consent of Suncor and Stantec. The data presented in this report are in accordance with Stantec's understanding of the proposed Project as it was presented at the time of the Report.

STANTEC CONSULTING LTD.

Mark Kozak
Project Manager

Rob Rowland
Senior Project Manager

8.0 References

Arnett, E. B., D. B. Inkley, D. H. Johnson, R. P. Larkin, S. Manes, A. M. Manville, R. Mason, M. Morrison, M. D. Strickland and R. Thresher. 2007. Impacts of Wind Energy Facilties on Wildlife and Wildlife Habitat. Wildlife Society Technical Review 07-2. The Wildlife Society, Bethesda, Maryland, USA

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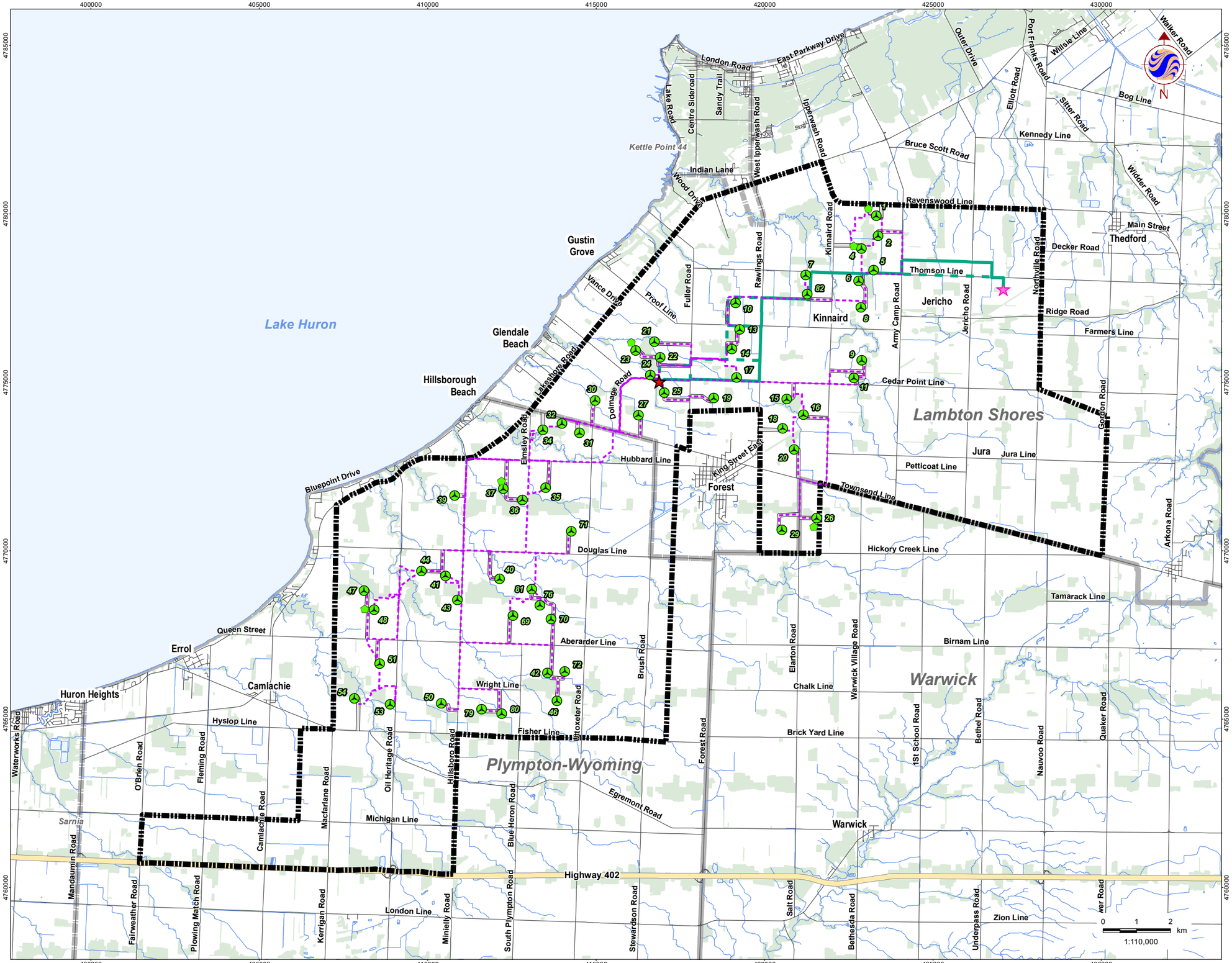
O. Reg. 359/09. As amended. Ontario Regulation 359/09 made under the Environmental Protection Act Renewable Energy Approvals Under Part V.0.1 of the Act.

Appendix A

Figures



Legend

- Project Boundary

Proposed Project Components

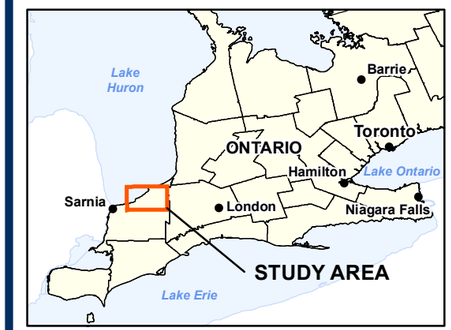
- Turbine
- Substation
- MET Tower
- Access Road
- Collector Line
- Transmission Line
- Transmission Line Alternate Route

Other Infrastructure

- Substation- NextEra Jericho

Existing Features

- Expressway / Highway
- Road
- Wooded Area
- Watercourse
- Waterbody
- Municipal Boundary



Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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Stantec

January, 2013
160960709

Client/Project
Suncor Energy
Cedar Point Wind Power Project

Figure No.
1.0

Title
Project Location

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Revised: 2013-01-24 By: dharvey

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4767000 4766000 4765000 4764000

Lakeshore Road
Aberarder Line
Bonnie Doon Creek
Oil Heritage Road
Hyslop Line
Egremont Road
Fisher Line
MacFarlane Road
51
53
54
N
0 250 500 m
1:15,000

Legend

- Project Boundary
- 300m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- MET Tower
- Transformer
- Access Road
- Transmission Line
- Transmission Line Alternate Route
- Collector Line
- Access Road Constructible Area (40m)
- Transmission Line Constructible Area
- Substation/ Operation and Maintenance Building
- Turbine Constructible Area
- Collector Line Constructible Area (20m)
- Participating Property
- HD Location

Other Infrastructure

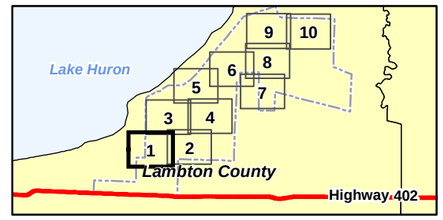
- Transformer- NextEra Jericho
- Substation- NextEra Jericho

Existing Features

- Road
- Contour Lines (5m intervals)
- Constructed Drain
- Utility Line
- Watercourse
- Property Boundary
- Municipal Boundary
- Waterbody

Noise Receptors

- Participating Occupied
- Participating Vacant
- Non-Participating Occupied
- Non-Participating
- School



Notes

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Imagery Date: 2010

Stantec

April 2013
160960709

Client/Project

Suncor Energy
Cedar Point Wind Power Project

Figure No.

2.1

Title

Draft Site Plan Mapbook

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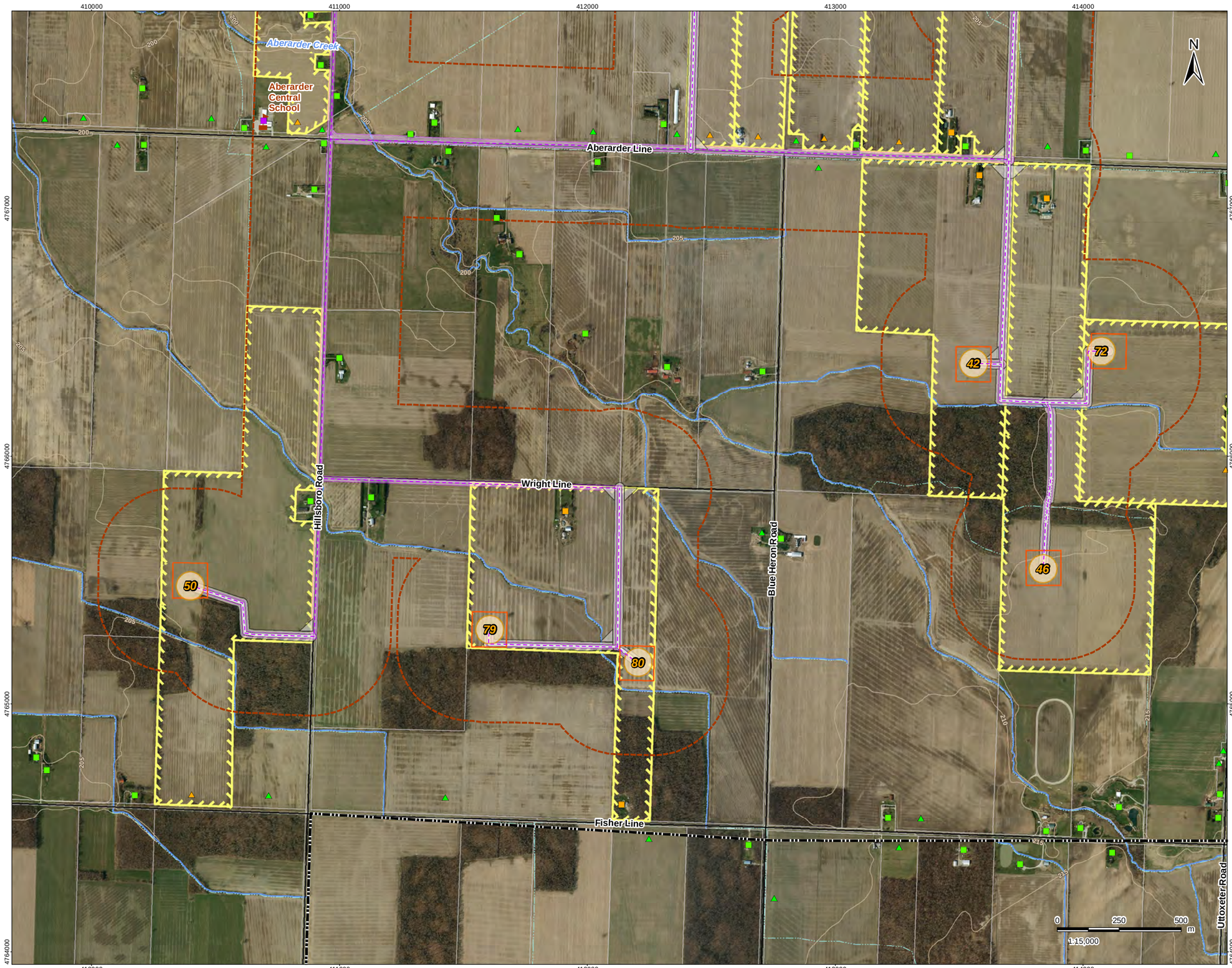


Legend

- Project Boundary
- 300m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- MET Tower
- Transformer
- Access Road
- Transmission Line
- Transmission Line Alternate Route
- Collector Line
- Access Road Constructible Area (40m)
- Transmission Line Constructible Area
- Substation/ Operation and Maintenance Building
- Turbine Constructible Area
- Collector Line Constructible Area (20m)
- Participating Property
- HD Location

Other Infrastructure

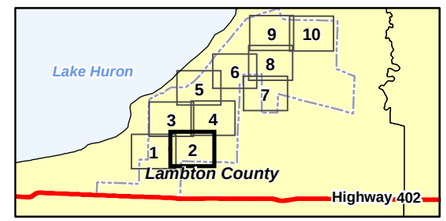
- Transformer- NextEra Jericho
- Substation- NextEra Jericho

Existing Features

- Road
- Contour Lines (5m intervals)
- Constructed Drain
- Utility Line
- Watercourse
- Property Boundary
- Municipal Boundary
- Waterbody

Noise Receptors

- Participating Occupied
- Participating Vacant
- Non-Participating Occupied
- Non-Participating
- School



Notes

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April 2013
160960709

Client/Project

Suncor Energy
Cedar Point Wind Power Project

Figure No.

2.2

Title

Draft Site Plan Mapbook

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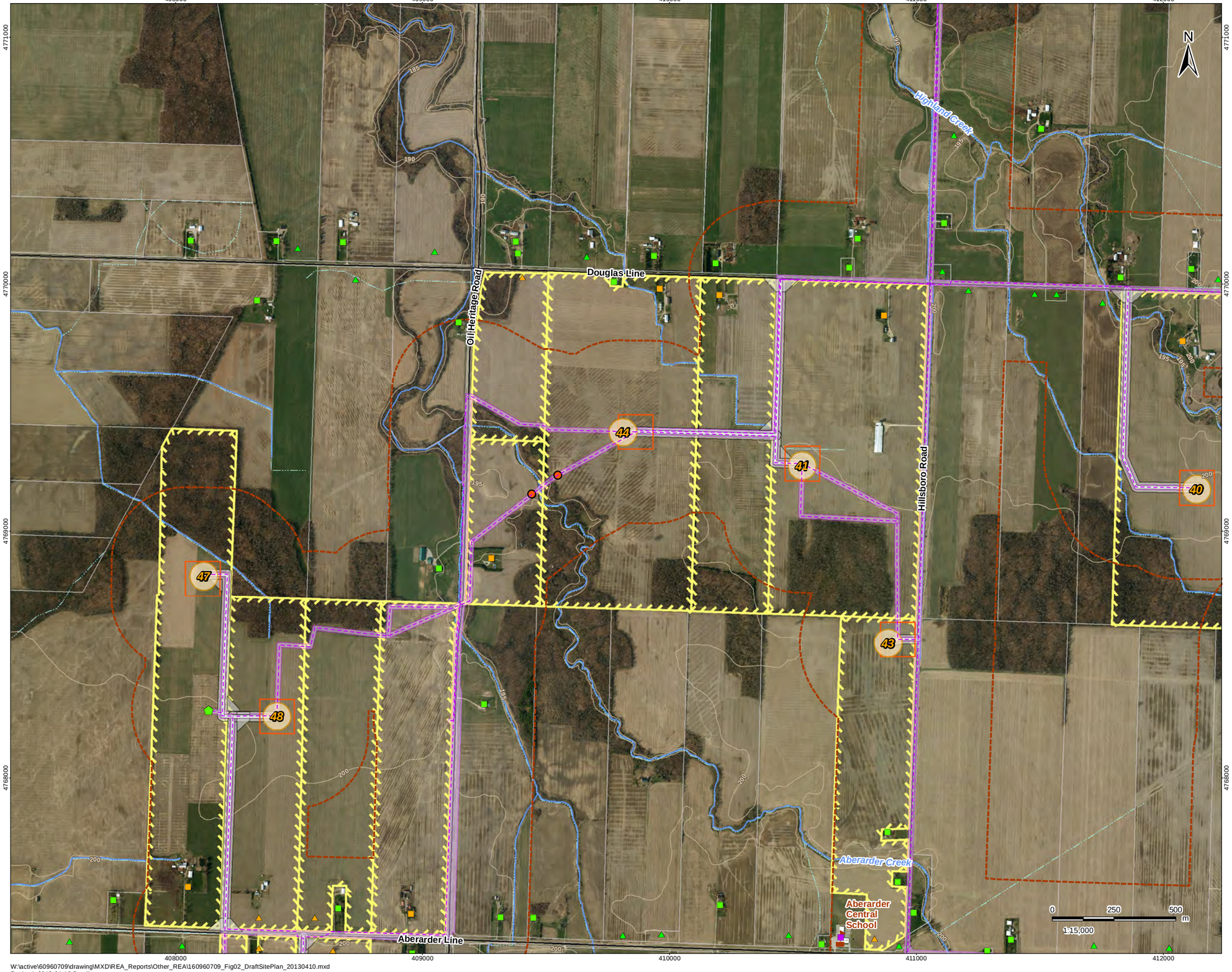


Legend

- Project Boundary
- 300m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- MET Tower
- Transformer
- Access Road
- Transmission Line
- Transmission Line Alternate Route
- Collector Line
- Access Road Constructible Area (40m)
- Transmission Line Constructible Area
- Substation/ Operation and Maintenance Building
- Turbine Constructible Area
- Collector Line Constructible Area (20m)
- Participating Property
- HD Location

Other Infrastructure

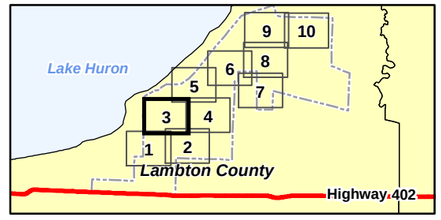
- Transformer- NextEra Jericho
- Substation- NextEra Jericho

Existing Features

- Road
- Contour Lines (5m intervals)
- Constructed Drain
- Utility Line
- Watercourse
- Property Boundary
- Municipal Boundary
- Waterbody

Noise Receptors

- Participating Occupied
- Participating Vacant
- Non-Participating Occupied
- Non-Participating
- School



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Client/Project

Suncor Energy
Cedar Point Wind Power Project

Figure No.

2.3

Title

Draft Site Plan Mapbook

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Revised: 2013-04-10 By: dharvey

412000 413000 414000 415000 416000

4771000 4770000 4769000 4768000

Douglas Line

Uttoxeter Road

Brush Road

Highland Creek

71 40 81 76 69 70

N

0 250 500 m

1:15,000

Legend

- Project Boundary
- 300m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- MET Tower
- Transformer
- Access Road
- Transmission Line
- Transmission Line Alternate Route
- Collector Line
- Access Road Constructible Area (40m)
- Transmission Line Constructible Area
- Substation/ Operation and Maintenance Building
- Turbine Constructible Area
- Collector Line Constructible Area (20m)
- Participating Property
- HD Location

Other Infrastructure

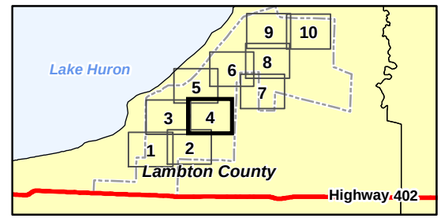
- Transformer- NextEra Jericho
- Substation- NextEra Jericho

Existing Features

- Road
- Contour Lines (5m intervals)
- Constructed Drain
- Utility Line
- Watercourse
- Property Boundary
- Municipal Boundary
- Waterbody

Noise Receptors

- Participating Occupied
- Participating Vacant
- Non-Participating Occupied
- Non-Participating
- School



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Client/Project

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Cedar Point Wind Power Project

Figure No.

2.4

Title

Draft Site Plan Mapbook

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Revised: 2013-04-10 By: dharvey

Legend

- Project Boundary
- 300m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- MET Tower
- Transformer
- Access Road
- Transmission Line
- Transmission Line Alternate Route
- Collector Line
- Access Road Constructible Area (40m)
- Transmission Line Constructible Area
- Substation/ Operation and Maintenance Building
- Turbine Constructible Area
- Collector Line Constructible Area (20m)
- Participating Property
- HD Location

Other Infrastructure

- Transformer- NextEra Jericho
- Substation- NextEra Jericho

Existing Features

- Road
- Contour Lines (5m intervals)
- Constructed Drain
- Utility Line
- Watercourse
- Property Boundary
- Municipal Boundary
- Waterbody

Noise Receptors

- Participating Occupied
- Participating Vacant
- Non-Participating Occupied
- Non-Participating
- School

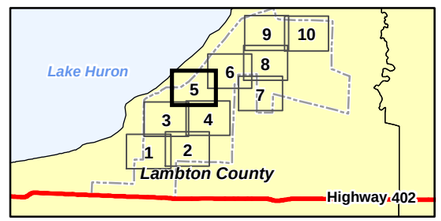

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Figure No.

2.5

Title

Draft Site Plan Mapbook

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415000 416000 417000 418000 419000

4776000 4775000 4774000 4773000

Lakeshore Road
Cedar Point Line
Hanley Drain
Dolmage Road
North Street Drain
Fuller Road
Townsend Line
Brush Road
Uttoxeter Road
Hickory Creek
Hickory Creek

21 23 22 24 25 14 17 19 30 27 31

205 200 195

N

Legend

- Project Boundary
- 300m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- MET Tower
- Transformer
- Access Road
- Transmission Line
- Transmission Line Alternate Route
- Collector Line
- Access Road Constructible Area (40m)
- Transmission Line Constructible Area
- Substation/ Operation and Maintenance Building
- Turbine Constructible Area
- Collector Line Constructible Area (20m)
- Participating Property
- HD Location

Other Infrastructure

- Transformer- NextEra Jericho
- Substation- NextEra Jericho

Existing Features

- Road
- Contour Lines (5m intervals)
- Constructed Drain
- Utility Line
- Watercourse
- Property Boundary
- Municipal Boundary
- Waterbody

Noise Receptors

- Participating Occupied
- Participating Vacant
- Non-Participating Occupied
- Non-Participating
- School

0 250 500 m
1:15,000

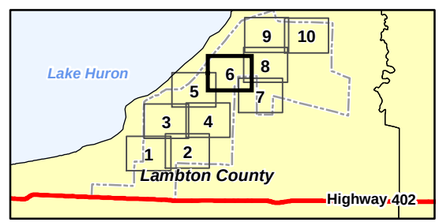

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Figure No.

2.6

Title

Draft Site Plan Mapbook

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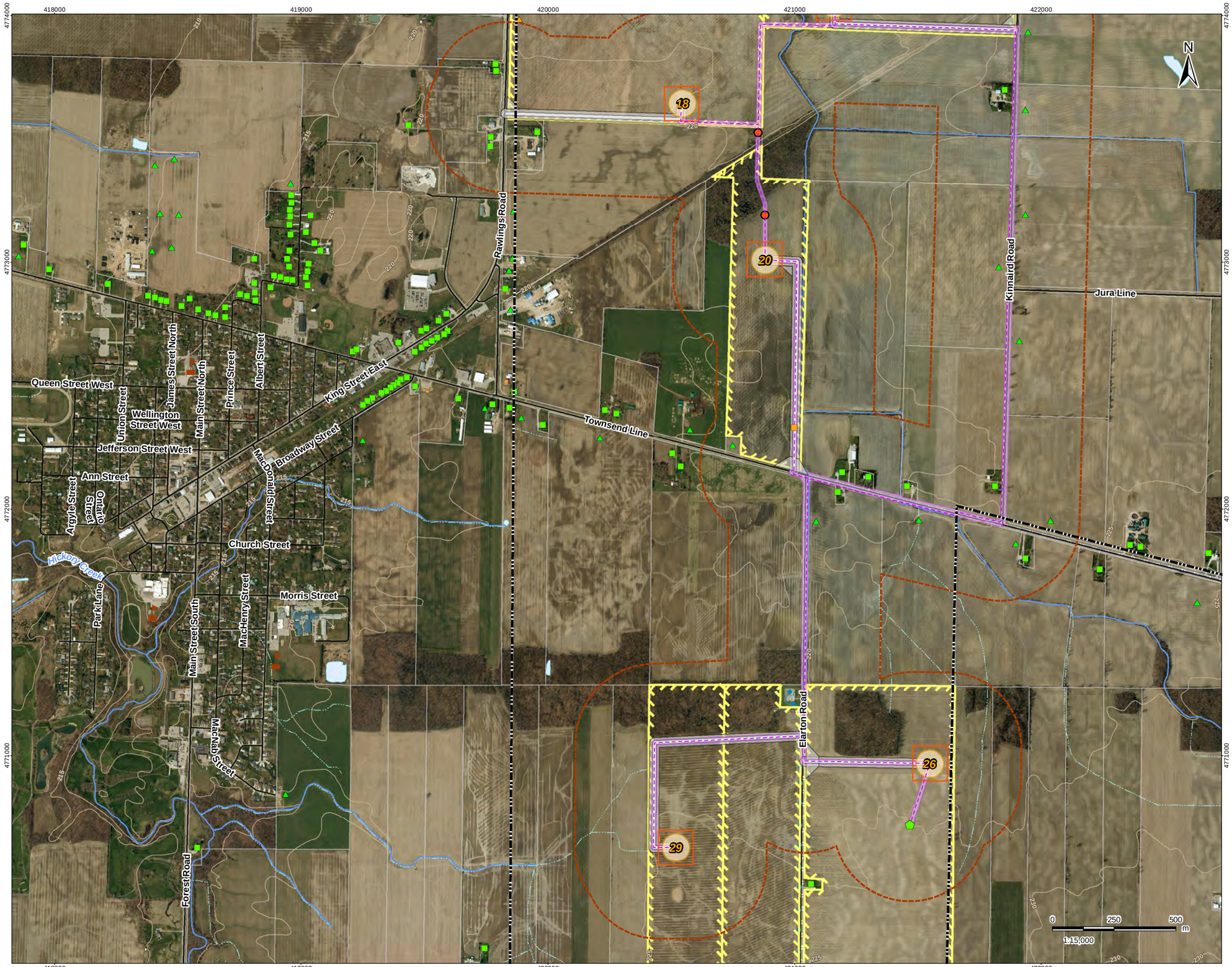

Legend

- Project Boundary
- 300m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- MET Tower
- Transformer
- Access Road
- Transmission Line
- Transmission Line Alternate Route
- Collector Line
- Access Road Constructible Area (40m)
- Transmission Line Constructible Area
- Substation/ Operation and Maintenance Building
- Turbine Constructible Area
- Collector Line Constructible Area (20m)
- Participating Property
- HD Location

Other Infrastructure

- Transformer- NextEra Jericho
- Substation- NextEra Jericho

Existing Features

- Road
- Contour Lines (5m intervals)
- Constructed Drain
- Utility Line
- Watercourse
- Property Boundary
- Municipal Boundary
- Waterbody

Noise Receptors

- Participating Occupied
- Participating Vacant
- Non-Participating Occupied
- Non-Participating
- School

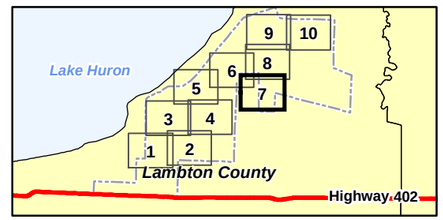

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Figure No.

2.7

Title

Draft Site Plan Mapbook

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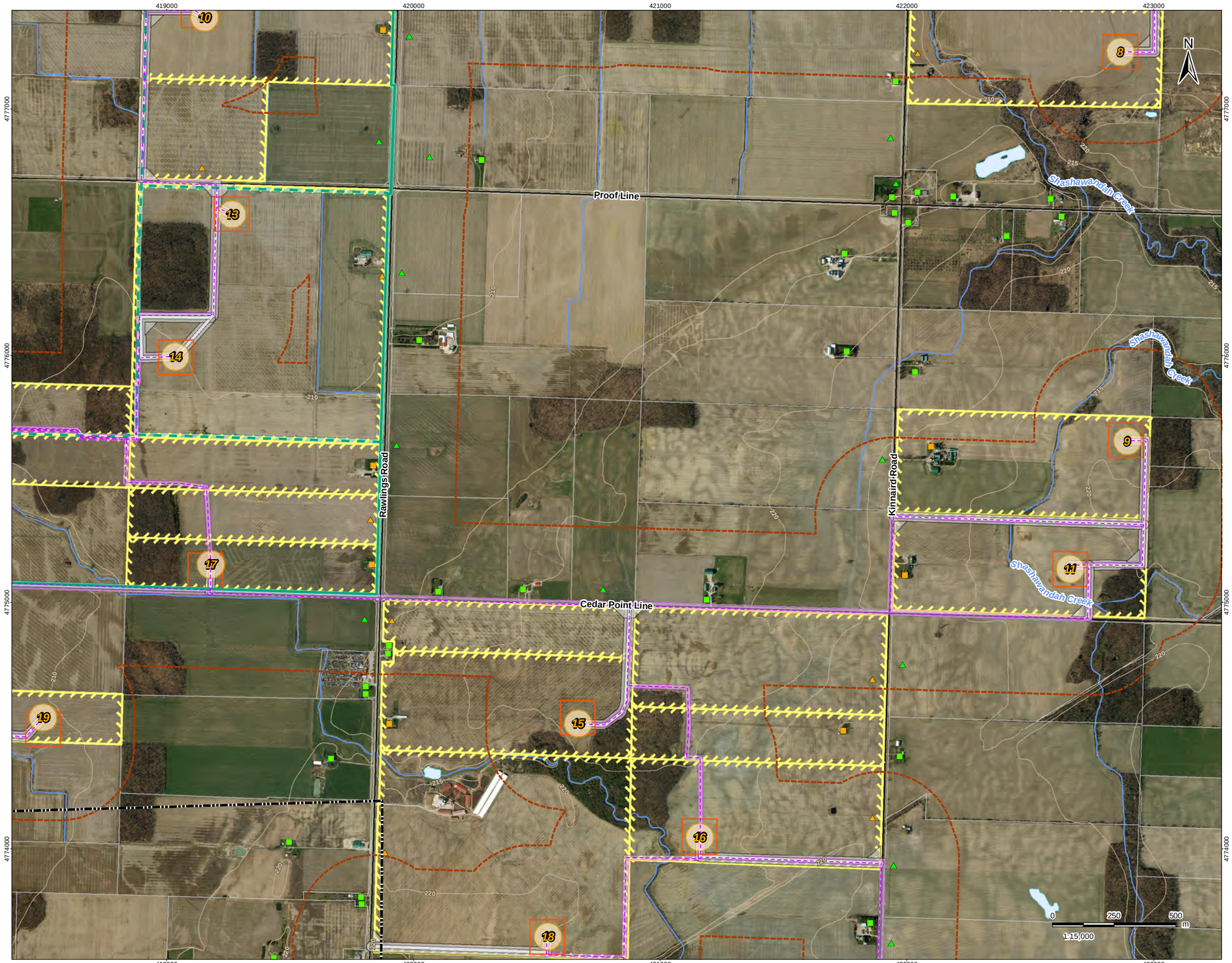


Legend

- Project Boundary
- 300m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- MET Tower
- Transformer
- Access Road
- Transmission Line
- Transmission Line Alternate Route
- Collector Line
- Access Road Constructible Area (40m)
- Transmission Line Constructible Area
- Substation/ Operation and Maintenance Building
- Turbine Constructible Area
- Collector Line Constructible Area (20m)
- Participating Property
- HD Location

Other Infrastructure

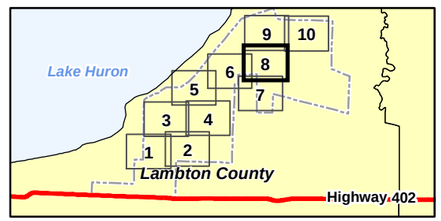
- Transformer- NextEra Jericho
- Substation- NextEra Jericho

Existing Features

- Road
- Contour Lines (5m intervals)
- Constructed Drain
- Utility Line
- Watercourse
- Property Boundary
- Municipal Boundary
- Waterbody

Noise Receptors

- Participating Occupied
- Participating Vacant
- Non-Participating Occupied
- Non-Participating
- School



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2.8

Title

Draft Site Plan Mapbook

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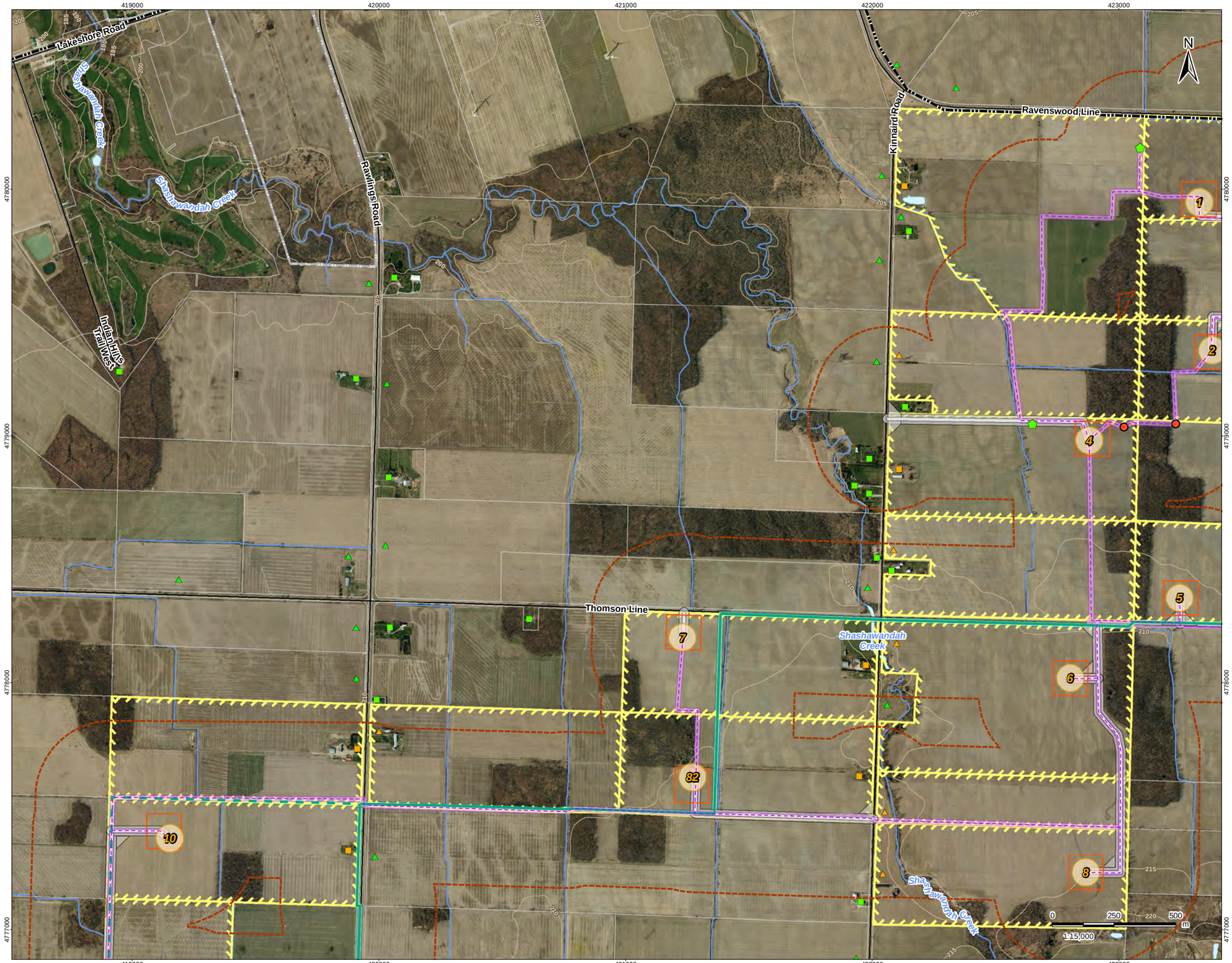

Legend

- Project Boundary
- 300m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- MET Tower
- Transformer
- Access Road
- Transmission Line
- Transmission Line Alternate Route
- Collector Line
- Access Road Constructible Area (40m)
- Transmission Line Constructible Area
- Substation/ Operation and Maintenance Building
- Turbine Constructible Area
- Collector Line Constructible Area (20m)
- Participating Property
- HD Location

Other Infrastructure

- Transformer- NextEra Jericho
- Substation- NextEra Jericho

Existing Features

- Road
- Contour Lines (5m intervals)
- Constructed Drain
- Utility Line
- Watercourse
- Property Boundary
- Municipal Boundary
- Waterbody

Noise Receptors

- Participating Occupied
- Participating Vacant
- Non-Participating Occupied
- Non-Participating
- School

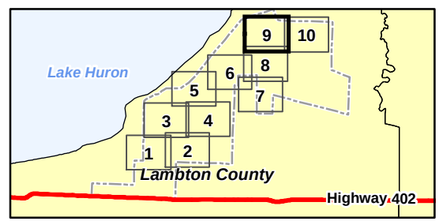

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Figure No.

2.9

Title

Draft Site Plan Mapbook

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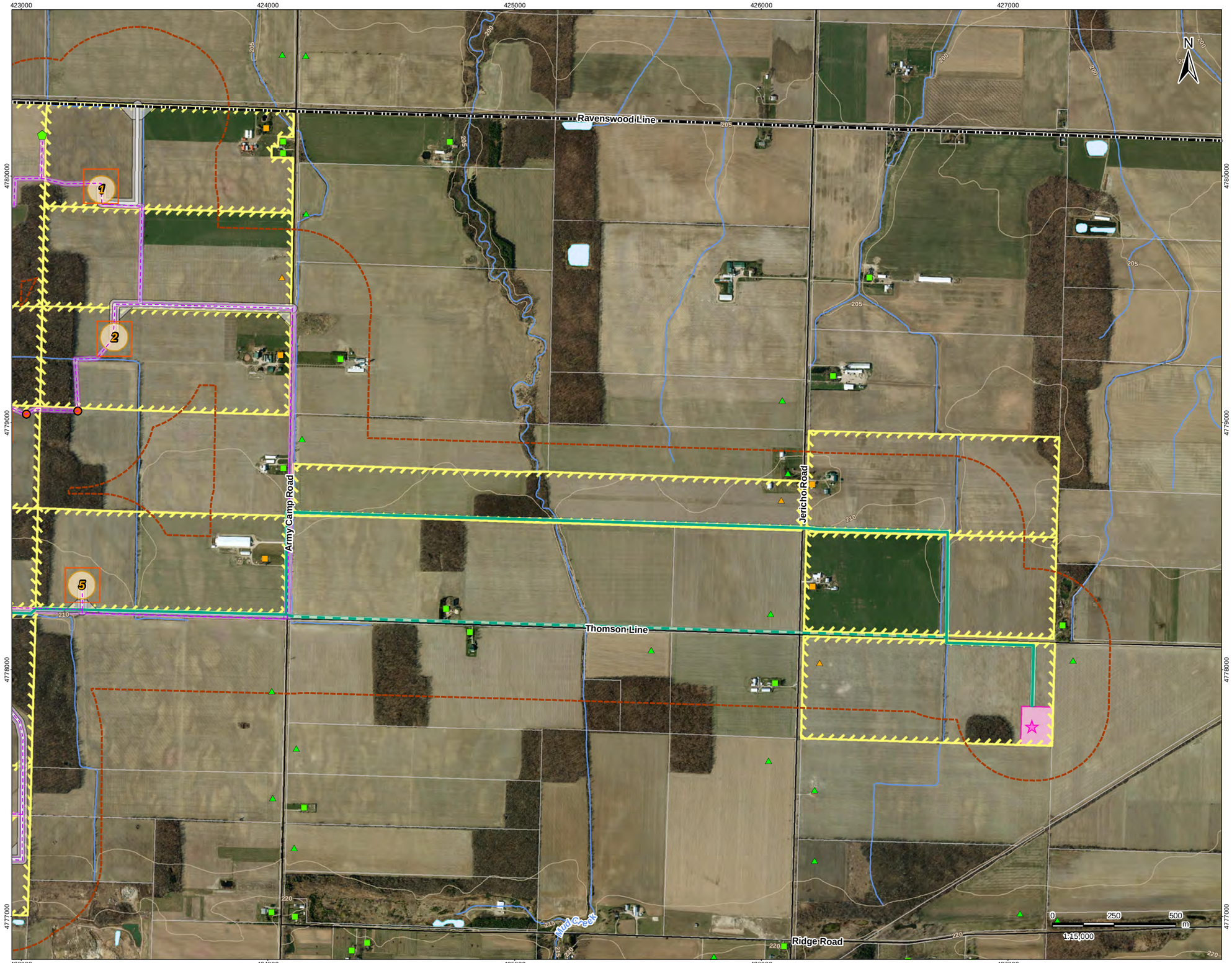

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Revised: 2013-04-10 By: dharvey

Legend

- Project Boundary
- 300m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- MET Tower
- Transformer
- Access Road
- Transmission Line
- Transmission Line Alternate Route
- Collector Line
- Access Road Constructible Area (40m)
- Transmission Line Constructible Area
- Substation/ Operation and Maintenance Building
- Turbine Constructible Area
- Collector Line Constructible Area (20m)
- Participating Property
- HD Location

Other Infrastructure

- Transformer- NextEra Jericho
- Substation- NextEra Jericho

Existing Features

- Road
- Contour Lines (5m intervals)
- Constructed Drain
- Utility Line
- Watercourse
- Property Boundary
- Municipal Boundary
- Waterbody

Noise Receptors

- Participating Occupied
- Participating Vacant
- Non-Participating Occupied
- Non-Participating
- School

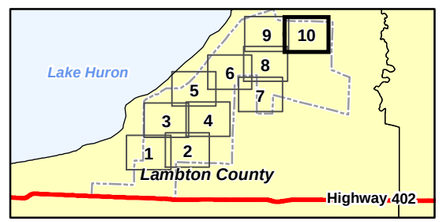

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Figure No.

2.10

Title

Draft Site Plan Mapbook

406000 407000 408000 409000 410000

4767000 4766000 4765000 4764000

Aberarder Line
Lakeshore Road
Boon Creek
Bonnie Doon Creek
Augusta Street
Hyslop Line
Egremont Road
Fisher Line
MacFarlane Road
Oil Heritage Road
DWA - 62
WOTH-62
062
HOWA-62
062a
51
54
53
WOTH-58
058

N

0 250 500 m
1:15,000

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Revised: 2013-04-03 By: dharvey

Legend

- Project Boundary
- Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- MET Tower
- Transformer
- Access Road
- Transmission Line
- Transmission Line Alternate Route
- Collector Line
- Access Road Constructible Area (40m)
- Transmission Line Constructible Area
- Substation/ Operation and Maintenance Building
- Turbine Constructible Area
- Collector Line Constructible Area (20m)
- HD Location

Other Infrastructure

- Transformer- NextEra Jericho
- Substation- NextEra Jericho

Existing Features

- Road
- Watercourse
- Constructed Drain
- Waterbody
- Municipal Boundary

Significant Natural Features

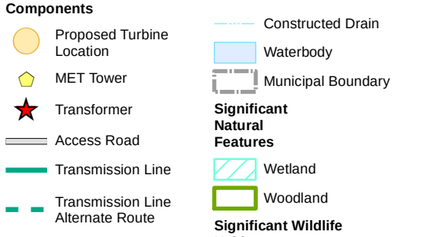
- Wetland
- Woodland

Significant Wildlife Habitats

- Amphibian Breeding-Woodland (ABW)
- Deer Wintering Area (DWA)
- Hooded Warbler Habitat (HOWA)
- Plant Species of Conservation Concern Habitat (PCC)
- Rare Vegetation Community - Generalized
- Snake Hibernacula (SH)
- Wood Thrush Habitat (WOTH)
- Wood Thrush Habitat- Generalized (WOTH)

Waterbody Status

- REA Water Body
- Not a REA Water Body



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Client/Project

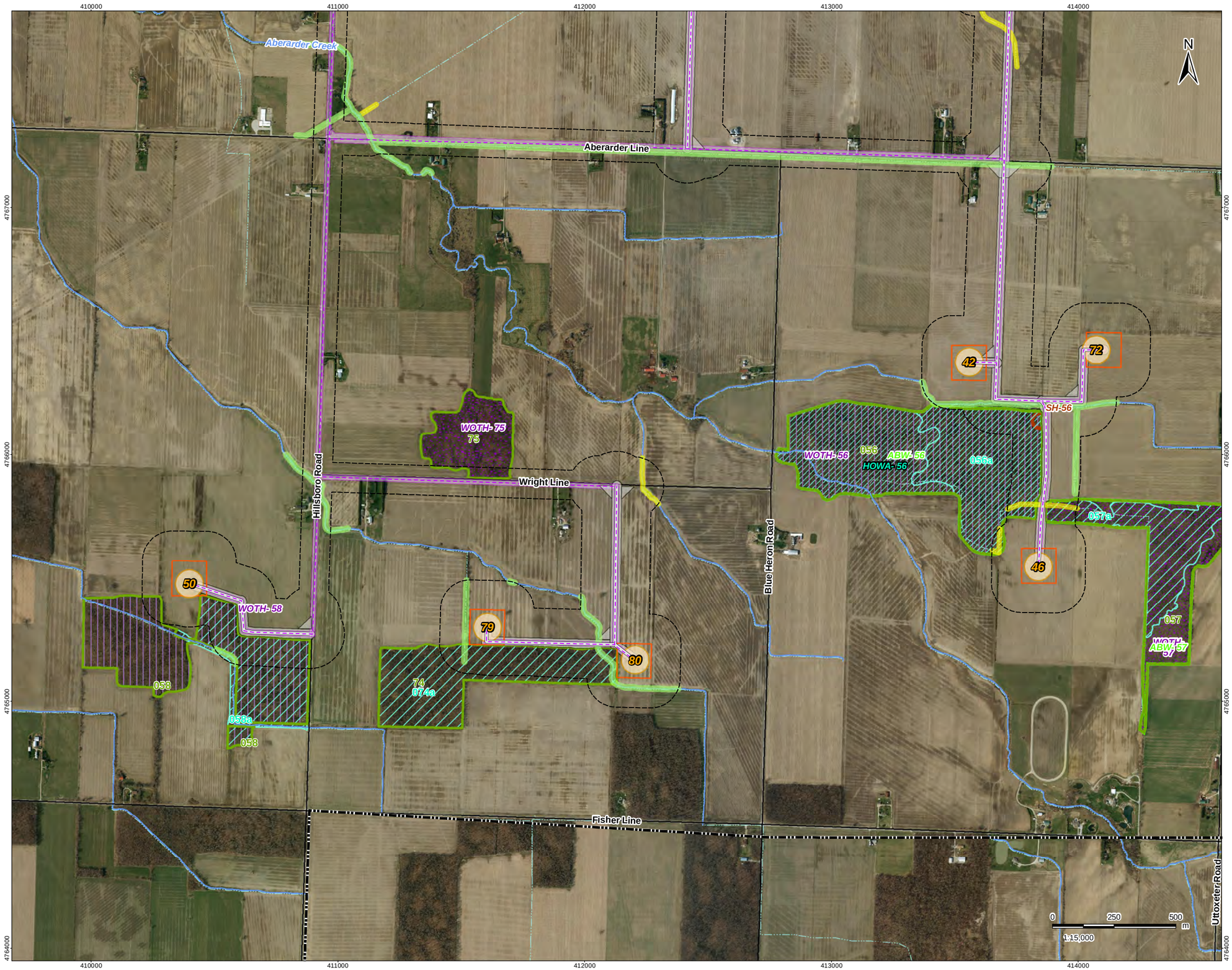
Suncor Energy
Cedar Point Wind Power Project

Figure No.

3.1

Title

Significant Natural Features and Wildlife Habitat



Legend

- Project Boundary
- Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- MET Tower
- Transformer
- Access Road
- Transmission Line
- Transmission Line Alternate Route
- Collector Line
- Access Road Constructible Area (40m)
- Transmission Line Constructible Area
- Substation/ Operation and Maintenance Building
- Turbine Constructible Area
- Collector Line Constructible Area (20m)
- HD Location

Other Infrastructure

- Transformer- NextEra Jericho
- Substation- NextEra Jericho

Existing Features

- Road
- Watercourse
- Constructed Drain
- Waterbody
- Municipal Boundary

Significant Natural Features

- Wetland
- Woodland

Significant Wildlife Habitats

- Amphibian Breeding-Woodland (ABW)
- Deer Wintering Area (DWA)
- Hooded Warbler Habitat (HOWA)
- Plant Species of Conservation Concern Habitat (PCC)
- Rare Vegetation Community - Generalized
- Snake Hibernacula (SH)
- Wood Thrush Habitat (WOTH)
- Wood Thrush Habitat- Generalized (WOTH)

Waterbody Status

- REA Water Body
- Not a REA Water Body

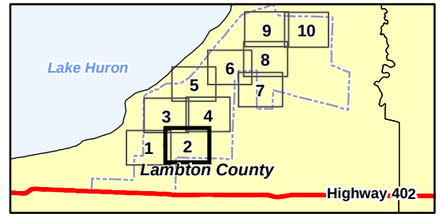


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Figure No.

3.2

Title

Significant Natural Features and Wildlife Habitat

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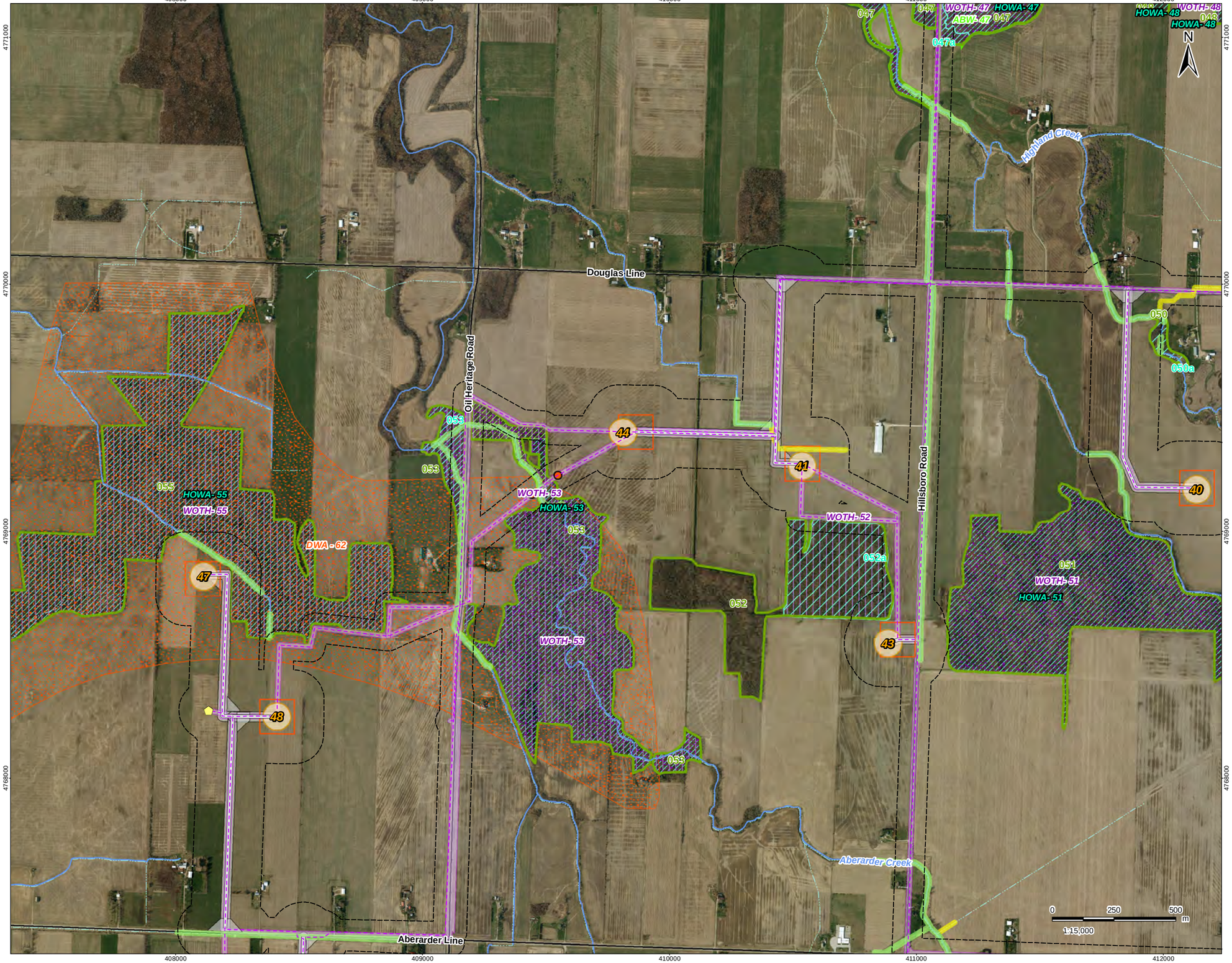
Revised: 2013-04-03 By: dharvey



Legend

- Project Boundary
- Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- MET Tower
- Transformer
- Access Road
- Transmission Line
- Transmission Line Alternate Route
- Collector Line
- Access Road Constructible Area (40m)
- Transmission Line Constructible Area
- Substation/ Operation and Maintenance Building
- Turbine Constructible Area
- Collector Line Constructible Area (20m)
- HD Location

Other Infrastructure

- Transformer- NextEra Jericho
- Substation- NextEra Jericho

Existing Features

- Road
- Watercourse
- Constructed Drain
- Waterbody
- Municipal Boundary

Significant Natural Features

- Wetland
- Woodland

Significant Wildlife Habitats

- Amphibian Breeding-Woodland (ABW)
- Deer Wintering Area (DWA)
- Hooded Warbler Habitat (HOWA)
- Plant Species of Conservation Concern Habitat (PCC)
- Rare Vegetation Community - Generalized
- Snake Hibernacula (SH)
- Wood Thrush Habitat (WOTH)
- Wood Thrush Habitat- Generalized (WOTH)

Waterbody Status

- REA Water Body
- Not a REA Water Body

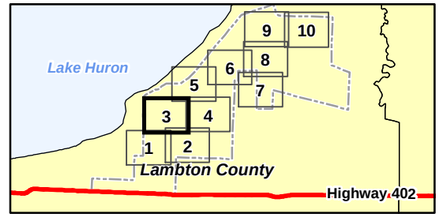


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Figure No.

3.3

Title

Significant Natural Features and Wildlife Habitat

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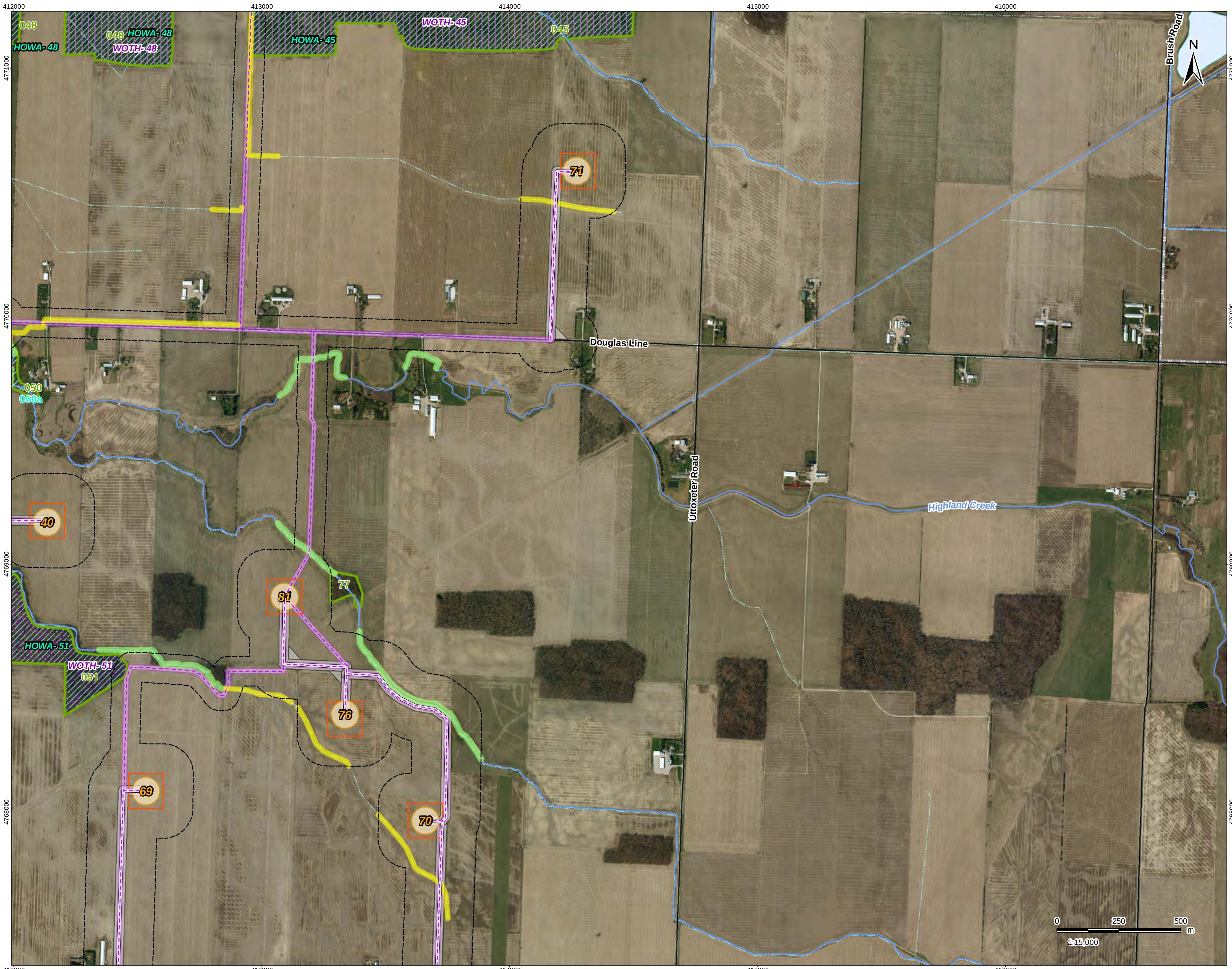


Legend

Project Boundary

Zone of Investigation

Proposed Project Components

Proposed Turbine Location

MET Tower

Transformer

Access Road

Transmission Line

Transmission Line Alternate Route

Collector Line

Access Road Constructible Area (40m)

Transmission Line Constructible Area

Substation/ Operation and Maintenance Building

Turbine Constructible Area

Collector Line Constructible Area (20m)

HD Location

Other Infrastructure

Transformer- NextEra Jericho

Substation- NextEra Jericho

Existing Features

Road

Watercourse

Constructed Drain

Waterbody

Municipal Boundary

Significant Natural Features

Wetland

Woodland

Significant Wildlife Habitats

Amphibian Breeding- Woodland (ABW)

Deer Wintering Area (DWA)

Hooded Warbler Habitat (HOWA)

Plant Species of Conservation Concern Habitat (PCC)

Rare Vegetation Community - Generalized

Snake Hibernacula (SH)

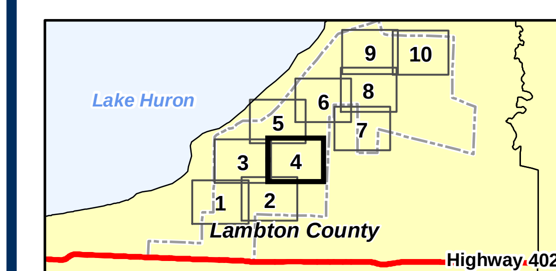
Wood Thrush Habitat (WOTH)

Wood Thrush Habitat- Generalized (WOTH)

Waterbody Status

REA Water Body

Not a REA Water Body



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160960709

Client/Project

Suncor Energy
Cedar Point Wind Power Project

Figure No.

3.4

Title

Significant Natural Features and Wildlife Habitat

W:\active\60960709\drawing\MXD\REA_Reports\Other_REA\160960709_Fig3xx_SignificantNaturalFeatures_Mapbook_20130403.mxd
Revised: 2013-04-03 By: dharvey

Legend

Proposed Project Components

- Project Boundary
- Zone of Investigation
- Proposed Turbine Location
- MET Tower
- Transformer
- Access Road
- Transmission Line
- Transmission Line Alternate Route
- Collector Line
- Access Road Constructible Area (40m)
- Transmission Line Constructible Area
- Substation/ Operation and Maintenance Building
- Turbine Constructible Area
- Collector Line Constructible Area (20m)
- HD Location

Other Infrastructure

- Transformer- NextEra Jericho
- Substation- NextEra Jericho

Existing Features

- Road
- Watercourse
- Constructed Drain
- Waterbody
- Municipal Boundary

Significant Natural Features

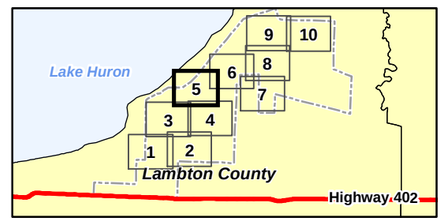
- Wetland
- Woodland

Significant Wildlife Habitats

- Amphibian Breeding-Woodland (ABW)
- Deer Wintering Area (DWA)
- Hooded Warbler Habitat (HOWA)
- Plant Species of Conservation Concern Habitat (PCC)
- Rare Vegetation Community - Generalized
- Snake Hibernacula (SH)
- Wood Thrush Habitat (WOTH)
- Wood Thrush Habitat- Generalized (WOTH)

Waterbody Status

- REA Water Body
- Not a REA Water Body



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Client/Project

Suncor Energy
Cedar Point Wind Power Project

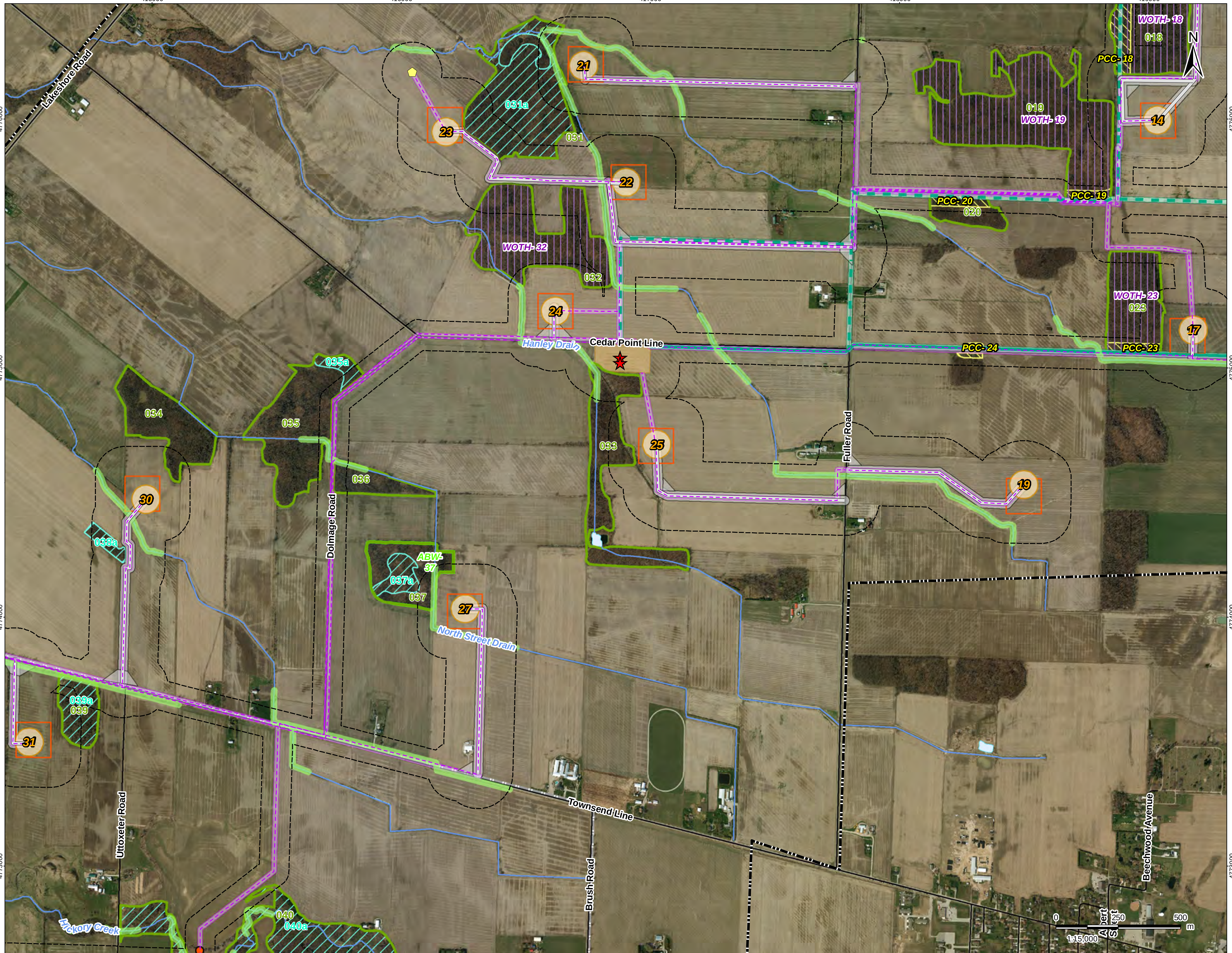
Figure No.

3.5

Title

Significant Natural Features and Wildlife Habitat

W:\active\60960709\drawing\MXD\REA_Reports\Other_REA\160960709_Fig3xx_SignificantNaturalFeatures_Mapbook_20130403.mxd
Revised: 2013-04-03 By: dharvey



Legend

Project Boundary
Zone of Investigation

Proposed Project Components

Proposed Turbine Location
MET Tower
Transformer
Access Road
Transmission Line
Transmission Line Alternate Route
Collector Line
Access Road Constructible Area (40m)
Transmission Line Constructible Area
Substation/ Operation and Maintenance Building
Turbine Constructible Area
Collector Line Constructible Area (20m)
HD Location

Other Infrastructure

Transformer- NextEra Jericho
Substation- NextEra Jericho

Existing Features

Road
Watercourse
Constructed Drain
Waterbody
Municipal Boundary

Significant Natural Features

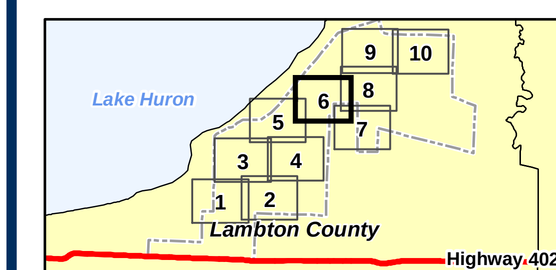
Wetland
Woodland

Significant Wildlife Habitats

Amphibian Breeding- Woodland (ABW)
Deer Wintering Area (DWA)
Hooded Warbler Habitat (HOWA)
Plant Species of Conservation Concern Habitat (PCC)
Rare Vegetation Community - Generalized
Snake Hibernacula (SH)
Wood Thrush Habitat (WOTH)
Wood Thrush Habitat- Generalized (WOTH)

Waterbody Status

REA Water Body
Not a REA Water Body



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Client/Project

Suncor Energy
Cedar Point Wind Power Project

Figure No.
3.6

Title

Significant Natural Features and Wildlife Habitat

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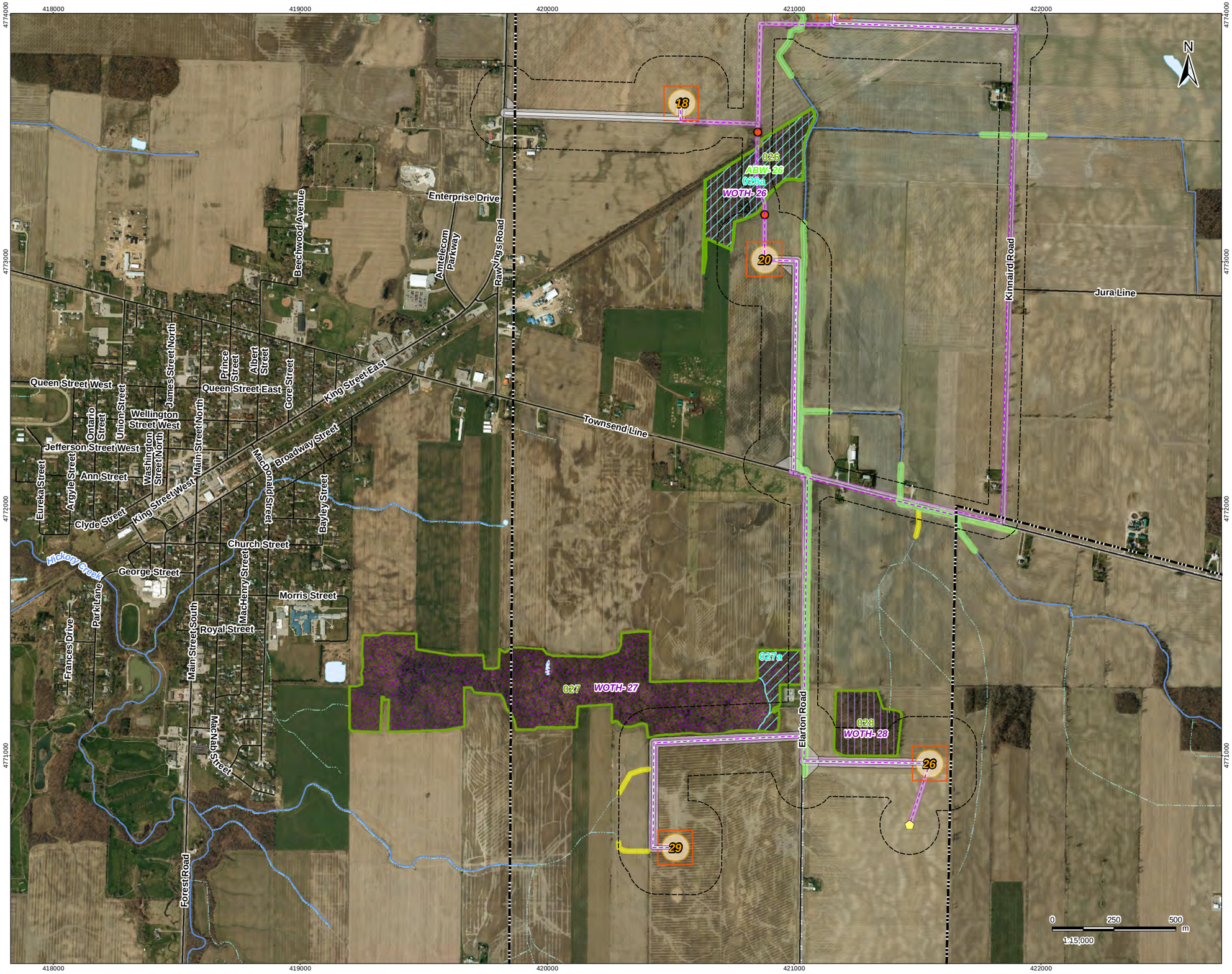
Revised: 2013-04-03 By: dharvey



Legend

- Project Boundary
- Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- MET Tower
- Transformer
- Access Road
- Transmission Line
- Transmission Line Alternate Route
- Collector Line
- Access Road Constructible Area (40m)
- Transmission Line Constructible Area
- Substation/ Operation and Maintenance Building
- Turbine Constructible Area
- Collector Line Constructible Area (20m)
- HD Location

Other Infrastructure

- Transformer- NextEra Jericho
- Substation- NextEra Jericho

Existing Features

- Road
- Watercourse
- Constructed Drain
- Waterbody
- Municipal Boundary

Significant Natural Features

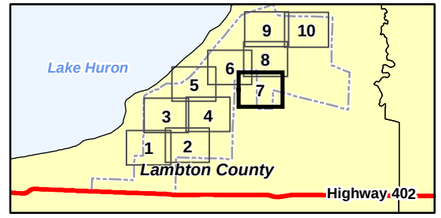
- Wetland
- Woodland

Significant Wildlife Habitats

- Amphibian Breeding-Woodland (ABW)
- Deer Wintering Area (DWA)
- Hooded Warbler Habitat (HOWA)
- Plant Species of Conservation Concern Habitat (PCC)
- Rare Vegetation Community - Generalized
- Snake Hibernacula (SH)
- Wood Thrush Habitat (WOTH)
- Wood Thrush Habitat- Generalized (WOTH)

Waterbody Status

- REA Water Body
- Not a REA Water Body



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Client/Project

Suncor Energy
Cedar Point Wind Power Project

Figure No.

3.7

Title

Significant Natural Features and Wildlife Habitat

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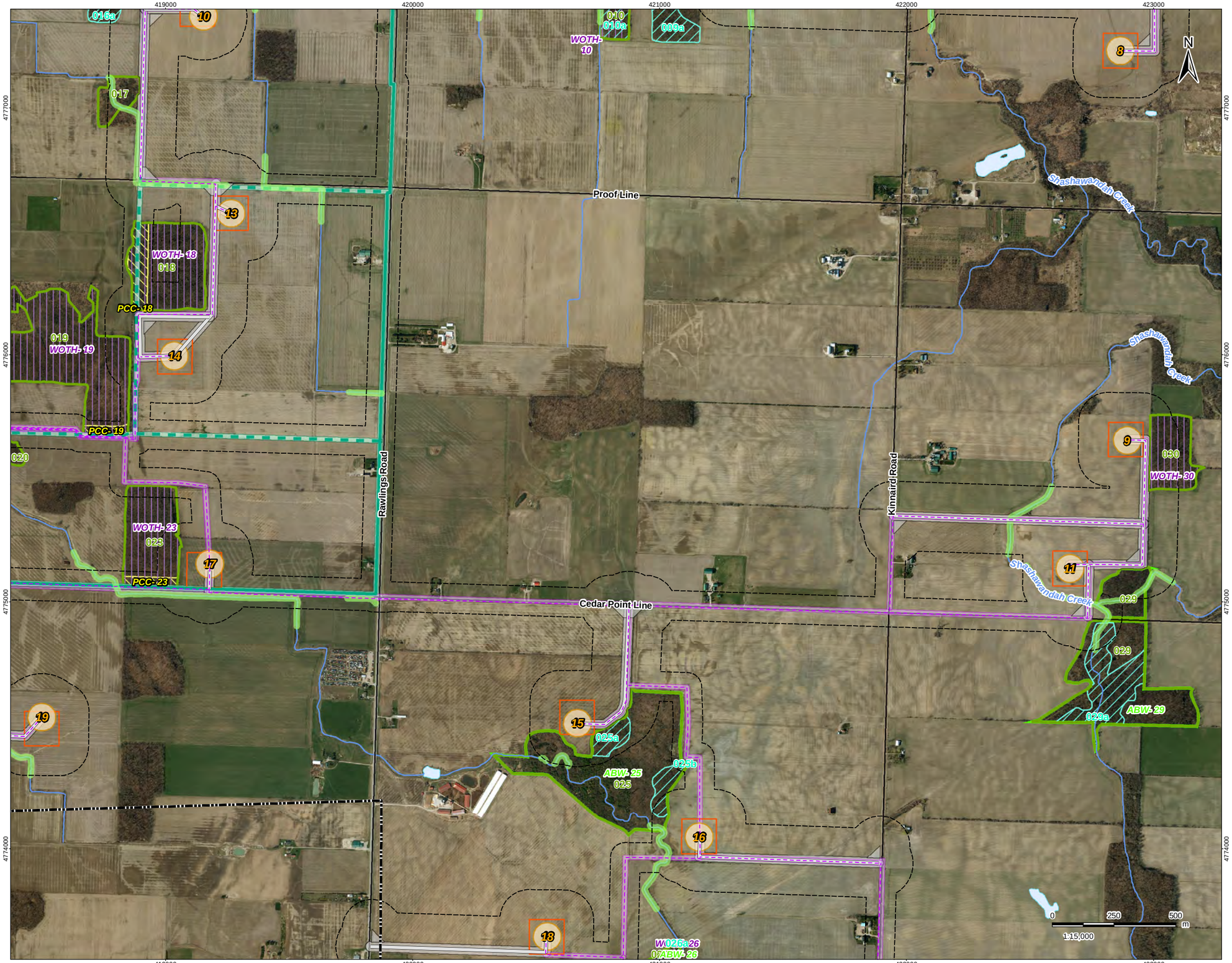
Revised: 2013-04-03 By: dharvey



Legend

- Project Boundary
- Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- MET Tower
- Transformer
- Access Road
- Transmission Line
- Transmission Line Alternate Route
- Collector Line
- Access Road Constructible Area (40m)
- Transmission Line Constructible Area
- Substation/ Operation and Maintenance Building
- Turbine Constructible Area
- Collector Line Constructible Area (20m)
- HD Location

Other Infrastructure

- Transformer- NextEra Jericho
- Substation- NextEra Jericho

Existing Features

- Road
- Watercourse
- Constructed Drain
- Waterbody
- Municipal Boundary

Significant Natural Features

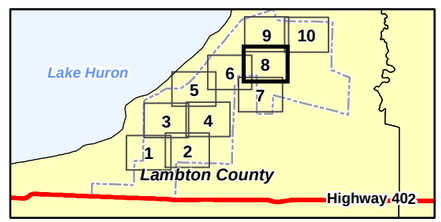
- Wetland
- Woodland

Significant Wildlife Habitats

- Amphibian Breeding-Woodland (ABW)
- Deer Wintering Area (DWA)
- Hooded Warbler Habitat (HOWA)
- Plant Species of Conservation Concern Habitat (PCC)
- Rare Vegetation Community - Generalized
- Snake Hibernacula (SH)
- Wood Thrush Habitat (WOTH)
- Wood Thrush Habitat- Generalized (WOTH)

Waterbody Status

- REA Water Body
- Not a REA Water Body



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Client/Project

Suncor Energy
Cedar Point Wind Power Project

Figure No.

3.8

Title

Significant Natural Features and Wildlife Habitat

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Revised: 2013-04-03 By: dharvey

Legend

- Project Boundary
- Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- MET Tower
- Transformer
- Access Road
- Transmission Line
- Transmission Line Alternate Route
- Collector Line
- Access Road Constructible Area (40m)
- Transmission Line Constructible Area
- Substation/ Operation and Maintenance Building
- Turbine Constructible Area
- Collector Line Constructible Area (20m)
- HD Location

Other Infrastructure

- Transformer- NextEra Jericho
- Substation- NextEra Jericho

Existing Features

- Road
- Watercourse
- Constructed Drain
- Waterbody
- Municipal Boundary

Significant Natural Features

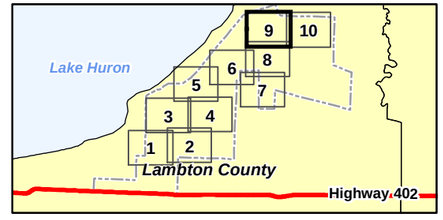
- Wetland
- Woodland

Significant Wildlife Habitats

- Amphibian Breeding-Woodland (ABW)
- Deer Wintering Area (DWA)
- Hooded Warbler Habitat (HOWA)
- Plant Species of Conservation Concern Habitat (PCC)
- Rare Vegetation Community - Generalized
- Snake Hibernacula (SH)
- Wood Thrush Habitat (WOTH)
- Wood Thrush Habitat- Generalized (WOTH)

Waterbody Status

- REA Water Body
- Not a REA Water Body



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Client/Project

Suncor Energy
Cedar Point Wind Power Project

Figure No.

3.9

Title

Significant Natural Features and Wildlife Habitat

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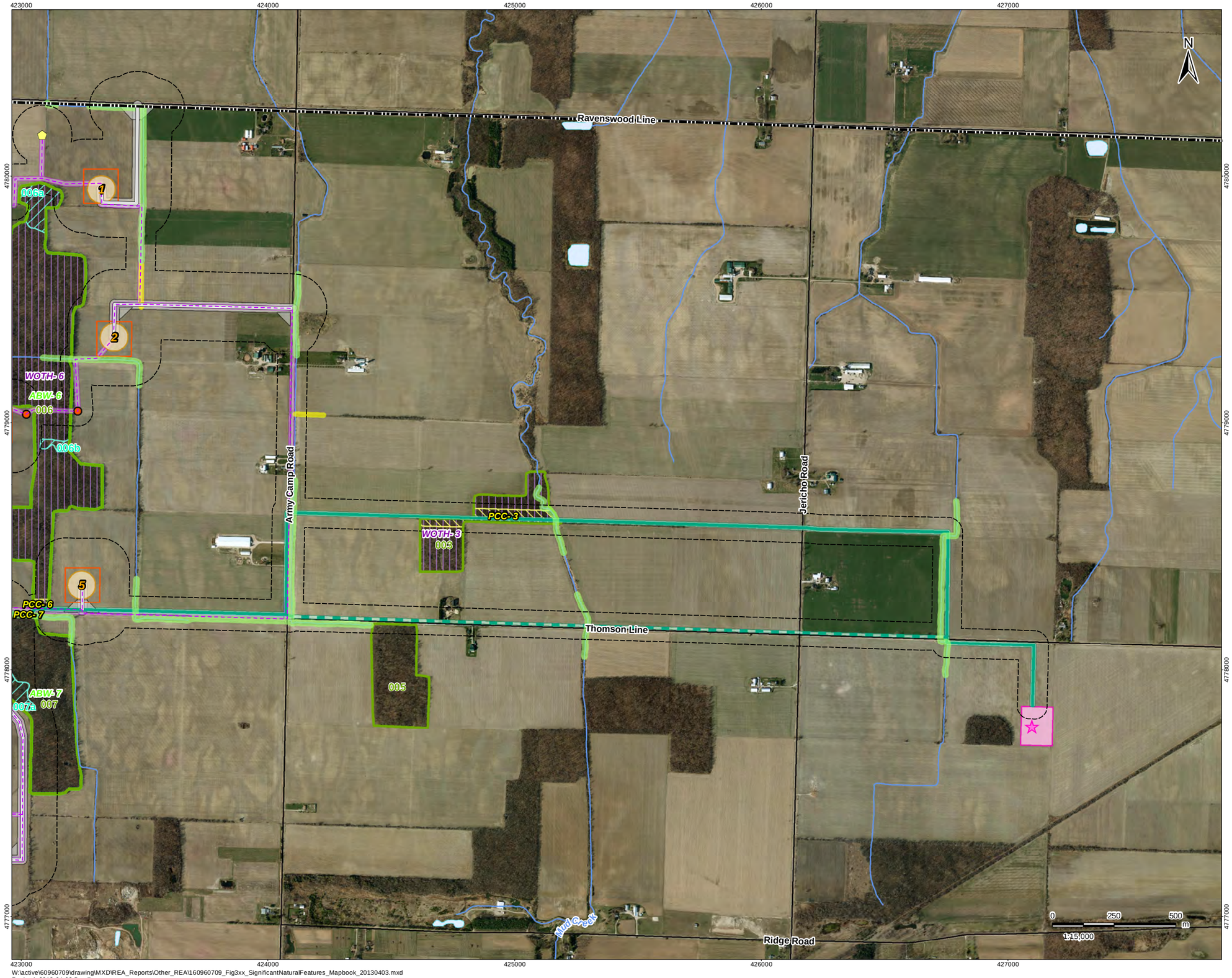
Revised: 2013-04-03 By: dharvey



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Revised: 2013-04-03 By: dharvey

Legend

- Project Boundary
- Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- MET Tower
- Transformer
- Access Road
- Transmission Line
- Transmission Line Alternate Route
- Collector Line
- Access Road Constructible Area (40m)
- Transmission Line Constructible Area
- Substation/ Operation and Maintenance Building
- Turbine Constructible Area
- Collector Line Constructible Area (20m)
- HD Location

Other Infrastructure

- Transformer- NextEra Jericho
- Substation- NextEra Jericho

Existing Features

- Road
- Watercourse
- Constructed Drain
- Waterbody
- Municipal Boundary

Significant Natural Features

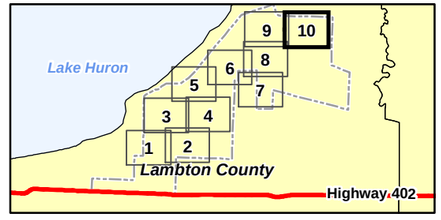
- Wetland
- Woodland

Significant Wildlife Habitats

- Amphibian Breeding-Woodland (ABW)
- Deer Wintering Area (DWA)
- Hooded Warbler Habitat (HOWA)
- Plant Species of Conservation Concern Habitat (PCC)
- Rare Vegetation Community - Generalized
- Snake Hibernacula (SH)
- Wood Thrush Habitat (WOTH)
- Wood Thrush Habitat- Generalized (WOTH)

Waterbody Status

- REA Water Body
- Not a REA Water Body



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160960709

Client/Project

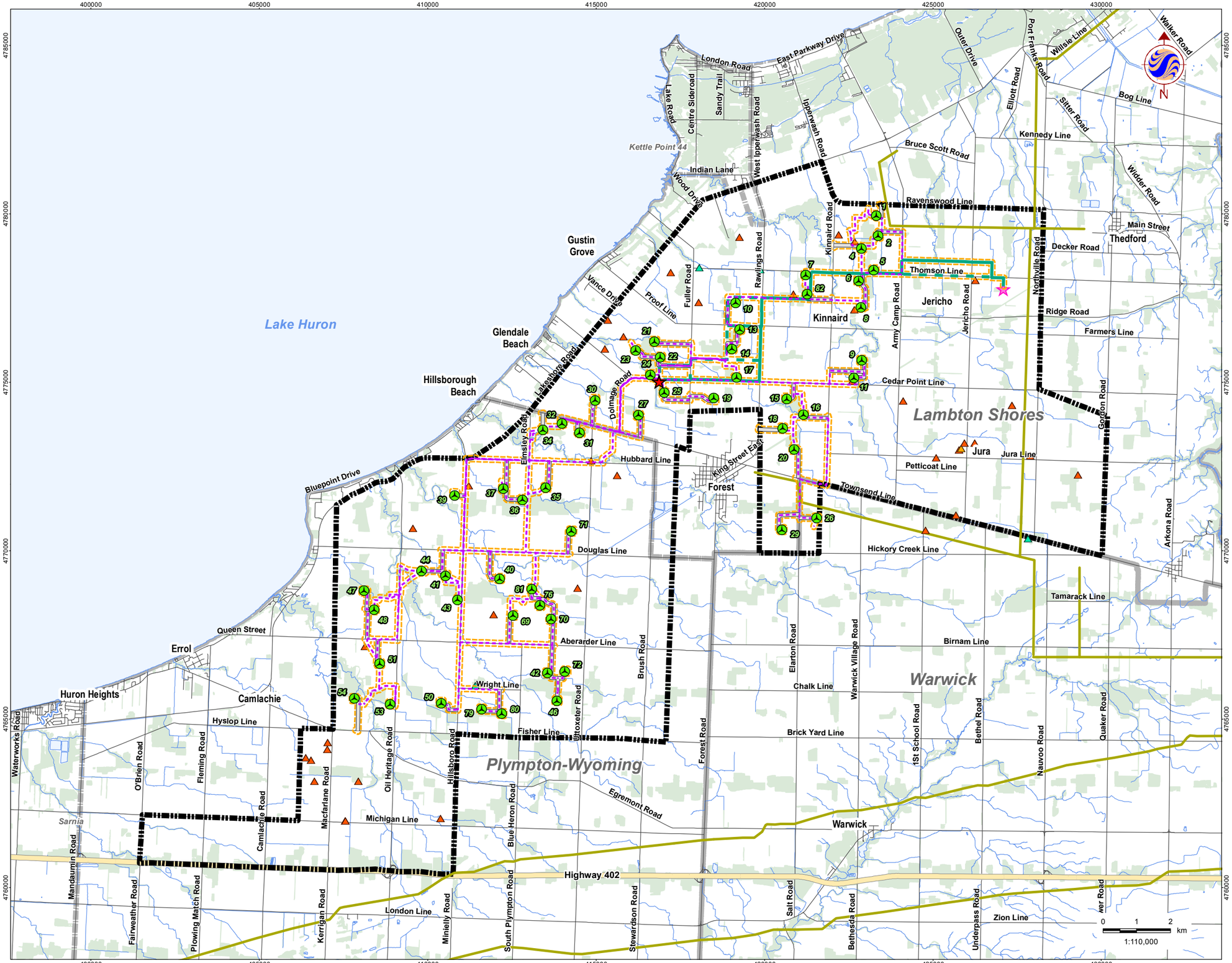
Suncor Energy
Cedar Point Wind Power Project

Figure No.

3.10

Title

Significant Natural Features and Wildlife Habitat



Legend

- Study Area
- 75m Zone of Investigation

Proposed Project Components

- Turbine
- Substation
- Access Road
- Collector Line
- Transmission Line
- Transmission Line Alternate Route

Other Infrastructure

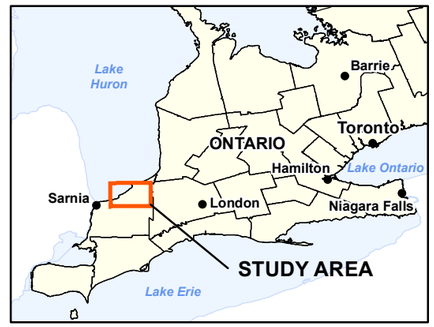
- Substation- NextEra Jericho

Existing Features

- Expressway / Highway
- Road
- Wooded Area
- Watercourse
- Waterbody
- Municipal Boundary

Petroleum Wells

- Abandoned
- Suspended
- Status Unknown
- Pipeline



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January, 2013
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Client/Project
Suncor Energy
Cedar Point Wind Power Project

Figure No.
4.0

Title
Petroleum Resources

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Revised: 2013-01-24 By: dharvey

Appendix B

Legal Parcel Descriptions

SUNCOR ENERGY CEDAR POINT WIND POWER PROJECT
LEGAL PARCEL DESCRIPTIONS - PARTICIPATING PROPERTIES

PIN	Legal Description
430920030	CTY LAMBTON TWP PLYMPTON Con 9 Part Lot 15
430910012	CTY PLYMPTON TWP PLYMWYOM Con 9 NE 1/4 Lot 23 Con 9 W 1/2 Lot 24 Con 10 E 1/2 Lot 23
430920032	CTY PLYMPTON TWP PLYM-WYOM Con 9 Part Lot 15
430920026	CTY PLYMPTON TWP PLYMWYOM Con 9 Part Lot 14
430910027	N 1/2 LT 20 CON 9 PLYMPTON; W 1/4 LT 21 CON 9 PLYMPTON; PLYMPTON-WYOMING
430830031	CTY LAMBTON TWP PLYMWYOM Con 15 Lot 24 East 3/4s
430880049	PT E 1/2 LT 22 CON 11 PLYMPTON AS IN L622548
430830026	CTY PLYMPTON TWP PLYMWYOM Con 15 Part Lot 22-24
430830060	CTY PLYMPTON TWP PLYMWYOM Con 14 Lot 21
430830078	CTY LAMBTON TWP PLYMWYOM Con 14 E 1/2 of E 1/2 Lot 20 and W 1/2 E 1/2 Lot 20
430880032	CTY PLYMPTON TWP PLYMWYOM Con 11 E 1/2 Lot 18
430880017	PT LT 22 CON 12 PLYMPTON PT 3,5,6 & 7, 25R459; PLYMPTON-WYOMING
430880012	CTY PLYMPTON TWP PLYMWYOM Con 12 Part Lot 20
430880006	CTY LAMBTON TWP PLYMWYOM Con 12 Part Lot 16 and 17
430830058	CTY PLYMPTON TWP PLYMWYOM Con 14 E 1/2 Lot 22
430830059	CTY PLYMPTON TWP PLYMWYOM Con 14 W 1/2 Lot 22
430880008	CTY PLYMPTON TWP PLYM-WYOM Con 12 Lot 18
430880007	CTY PLYMPTON TWP PLYM-WYOM Con 12 E 1/2 Lot 17
430870021	CTY PLYMPTON TWP PLYMWYOM Con 11 Part Lot 14 Con 12 Part Lot 14
430870025	CTY PLYMPTON TWP PLYM-WYOM Con 11 E 1/2 Lot 15
430870023	W 1/2 LOT 15 CON 11 PLYMPTON EXCEPT PT 10 PP976 & PT 1 25R5558
430870022	CTY LAMBTON TWP PLYMWYOM Con 11 E 1/2 Lot 14
430880004	CTY PLYMPTON TWP PLYMWYOM Con 12 S 1/2 W 1/2 Lot 16
430920034	Con 10 Part Lot 14 Plympton Wyoming
430920028	CTY PLYMPTON TWP PLYM-WYOM Con 10 Part Lot 15
430920024	CTY PLYMPTON TWP PLYMWYOM Con 9 Part Lot 13-14
430910015	PT LOT 24, CON 10 AS IN L748701
430910011	CTY PLYMPTON TWP PLYMWYOM Con 10 N 1/2 E 1/2 Lot 22 Con 10 W 1/2 Lot 23
430920047	CTY LAMBTON TWP PLYMWYOM Con 9 Part Lot18 Con 10 Part Lot18
430920027	CTY PLYMPTON TWP PLYMWYOM Con 9 Part Lot 14
430880003	CTY LAMBTON TWP PLYMWYOM Con 12 Part Lot 16
430830065	PT LOT 24, CON 13 PLYMPTON AS IN L474955, EXCEPT 25R6779
430880046	W1/2 LT 22 CON 11 PLYMPTON AS IN L512044 & L715035; EXCEPT PT 1, 25R4137; S/T EASEMENT IN GROSS AS IN LA99183; PLYMPTON-WYOMING
430880051	PT LT 23 CON 11 PLYMPTON AS IN L768098; S/T L768098;
430830024	CTY LAMBTON TWP PLYMWYOM Con 15 W 1/2 Lot 22
430830033	CTY LAMBSHOR TWP BOSANQUE Con 15 Lot Except Parts 1 and 2
430880044	PT LOT 21, CON 11 PLYMPTON AS IN L776607
430880045	PT LOT 21 CON 11 PLYMPTON AS IN L39655;
430310069	CTY LAMBSHOR TWP BOSANQUE Con East Lake Road N 1/2 Lot 75
430310093	CTY LAMBSHOR TWP BOSANQUE Con South BDY W 1/2 Lot 44
430330070	CTY LAMBSHOR TWP BOSANQUE Con 14 Lot 11-12 Con 14 Part Lot 10

SUNCOR ENERGY CEDAR POINT WIND POWER PROJECT
LEGAL PARCEL DESCRIPTIONS - PARTICIPATING PROPERTIES

PIN	Legal Description
430330071	CTY LAMBSHOR TWP BOSANQUE Con 14 S 1/2 Lot 10
430330072	CTY LAMBSHOR TWP BOSANQUE Con 14 N 1/2 Lot 9
430330073	S 1/2 LT 9 CON 14 BOSANQUET EXCEPT L507270; LAMBTON SHORES
430310083	CTY LAMBSHOR TWP BOSANQUE Con 16 Lot 9
430420066	LT 10 CON 11 BOSANQUET; LAMBTON SHORES
430420067	CTY LAMBSHOR TWP BOSANQUE Con 11, Lot 9;
430320063	CTY LAMBSHOR TWP BOSANQUE Con 13 N 1/2 Lot 8
430310088	CTY LAMBSHOR TWP BOSANQUE Con 16 N 1/2 Lot 7 and Con 16 S 1/2 Lot 8
430420053	CTY LAMBTON TWP BOSANQUE Con 11 N 1/2 Lot 15 Con 11 Part Lot 16
430330059	CTY LAMBSHOR TWP BOSANQUE Con 15 N 1/2 Lot 10
430310082	CTY LAMBSHOR TWP BOSANQUE Con 16 Lot 10
430330060	CTY LAMBSHOR TWP BOSANQUE Con 15 S 1/2 Lot 10
430330077	CTY LAMBTON TWP BOSANQUE Con 13 Lot 15
430330064	CTY LAMBTON TWP BOSANQUE Con 14 Lot 15
430330065	CTY LAMBTON TWP BOSANQUE Con 14 Lot 14
430330067	CTY LAMBSHOR TWP BOSANQUE Con 14 W 1/2 Lot 13
430310087	CTY LAMBSHOR TWP BOSANQUE Con 16 N 1/2 Lot 8
430320064	CTY LAMBSHOR TWP BOSANQUE Con 13 Lot 7 N 1/2, Con 13 Lot 8 S 1/2
430320073	LT 8 CON 12 BOSANQUET; LAMBTON SHORES
430320074	N 1/2 LT 7 CON 12 BOSANQUET; LAMBTON SHORES
430320054	N 1/2 LT 7 CON 15 BOSANQUET; LAMBTON SHORES
430320075	N 1/2 LT 6 CON 12 BOSANQUET; S 1/2 LT 7 CON 12 BOSANQUET; LAMBTON SHORES
430320067	N 1/2 LT 5 CON 13 BOSANQUET; LT 6 CON 13 BOSANQUET; S 1/2 LT 7 CON 13 BOSANQUET EXCEPT PP382, PP767; LAMBTON SHORES
430420055	PT LT 14-15 CON 11 BOSANQUET AS IN L754452; S/T L754452; LAMBTON SHORES
430330086	CTY LAMBSHOR TWP BOSANQUE Con 12 Lot 16
430330087	LT 15 CON 12 BOSANQUET; LAMBTON SHORES
430420056	PT LT 14 CON 11 BOSANQUET AS IN L754451; LAMBTON SHORES
430310064	CTY LAMBSHOR TWP BOSANQUE Con South BDY Part Lot 47
430310080	CTY LAMBSHOR TWP BOSANQUE Con 16 N 1/2 Lot 11 and S 1/2 Lot 12
430320072	PT LT 5 CON 13 BOSANQUET; PT LT 33 CON SOUTH BOUNDARY BOSANQUET AS IN L812165; LAMBTON SHORES
430860084	CTY LAMBTON TWP PLYMWYOM Con 14 South Part Lot 17 and Part Lot 18
430720234	W 1/2 LT 6 CON 7 NER WARWICK EXCEPT PT 1, 25R3012; LAMBTON SHORES
430720236	PT LT 6 CON 7 NER WARWICK AS IN L764815; S/T L477401; LAMBTON SHORES
430710100	PT LT 7 CON 7 NER WARWICK AS IN L730205; WARWICK
430340082	CTY LAMBSHOR TWP BOSANQUE Con 10 Lot 21 No Schedule F Scanned
430340085	CTY LAMBTON TWP BOSANQUE CONC 10 LOT 20
430340086	CTY LAMBTON TWP BOSANQUE CONC 10 LOT 19
430340088	CTY LAMBTON TWP BOSANQUE Con 10 Lot 17
430340093	CTY LAMBSHOR TWP BOSANQUE Con 11 Lot 19
430340091	CTY LAMBSHOR TWP BOSANQUE Con 11 Lot 18
430340089	LT 17 CON 11 BOSANQUET EXCEPT PT 1, 25R1021; LAMBTON SHORES

SUNCOR ENERGY CEDAR POINT WIND POWER PROJECT
LEGAL PARCEL DESCRIPTIONS - PARTICIPATING PROPERTIES

PIN	Legal Description
430340095	PT LT 20-21 CON 11 BOSANQUET AS IN L417949; LAMBTON SHORES
430350099	LT 17 CON 7 BOSANQUET; LAMBTON SHORES
430350065	PT LT 18 CON 9 BOSANQUET; PT LT 18 CON 8 BOSANQUET AS IN L326624; LAMBTON SHORES
430350098	LT 18 CON 7 BOSANQUET; LAMBTON SHORES
430410053	LT 16 CON 7 BOSANQUET; LAMBTON SHORES