SOLRAY

July 2012

WATER REPORTS

Marsh Hill Solar Farm

DILLON CONSULTING

EXECUTIVE SUMMARY

Solray Energy Corporation (Solray) proposes to develop a solar facility with a maximum name plate capacity of approximately 10 megawatts (MW) located in the Township of Scugog and Regional Municipality of Durham, Ontario. The renewable energy facility will be known as the Marsh Hill Solar Farm (hereinafter referred to as the "project") and will be rated as a Class 3 Solar Facility. The project will require approval under *Ontario Regulation 359/09 – Renewable Energy Approval* (REA) under Part V.0.1 of the *Ontario Environmental Protection Act*.

This report is intended to fulfill the requirements for the *Water Assessment Report* according to Sections 30 and 31 of *Ontario Regulation 359/09*. Various local, provincial and federal records were reviewed to assess the current understanding of water bodies within 120 metres of the project location. Following this, a site investigation was undertaken to verify the accuracy of the records review and to amend any discrepancies that may have been observed.

The Marsh Hill Solar Farm is located within the Lake Simcoe Watershed which drains into Lake Simcoe. As outlined in the *Records Review*, within the project location, one watercourse (Stream 1) was mapped on Lake Simcoe Region Conservation Authority (LSRCA) Regulation mapping within the eastern portion of the project location extending into the 120 metre setback area north of the project location. Site investigations revealed this stream does not exists within the project location, and this was confirmed by LSRCA staff. Due to land restrictions, the extent of Stream 1, beyond what could be seen from the project location and within the 120 and 300 metre setback areas could not be assessed.

Within 120 metres of the project location, a mapped stream (Stream 2) located to the west of the project location that was identified during the *Records Review* was determined to be an intermittent stream through site investigation and therefore meets the definition of a water body under *Ontario Regulation 359/09.* This stream conveys flow from a cattail marsh west of the project location to a headwater channel of Beaver River within the northern setback. Two crossings were observed along Stream 2 for agricultural use. Several obstructions and low to no flow conditions throughout the year prevent this stream from containing fish habitat.

Three open water areas were identified within the setback areas through site investigation. Within 120 metres of the project location, Open Water 1 was identified northeast of the project location. The surrounding vegetation community consists of Fresh – Moist White Cedar – Hardwood Mixed Woodland which prevented visual observation during site investigations. Within 300 metres of the project location, Open Water 2 and Open Water 3 were identified west and south of the project location. These features are located outside of the 120 metre setback of the project location and therefore do not require further study under *Ontario Regulation 359/09.*

The potential negative effects to water bodies within 120 metres of the project location may include:

- increased sedimentation and turbidity after site clearing;
- changes in natural drainage, including increased or decreased surface runoff, and increased or decreased stream flow;
- changes in benthic composition, fish habitat and spawning areas downstream within Beaver River as a result of soil mobilization during construction activities;
- potential loss of aquatic habitat and/or species; and,
- contamination of soil and/or surface water runoff due to accidental spills.

To minimize the potential for impairment of the quality of receiving waters, an erosion and sediment control plan will be implemented during construction. The plan will consist of the following:

- straw bale barriers and/or filter cloth barriers will be installed along the perimeter of the construction area (i.e., project location) to intercept suspended solids carried by overland flow and to prevent the runoff from directly entering existing watercourses;
- disturbed areas will be re-vegetated using native grassland species;
- changes to land contours will be minimized by designing alterations with outcomes consistent with pre-existing drainage patterns;
- a detailed stormwater management plan will be created (if required) to address control of quality and quantity of stormwater;
- all construction equipment and materials will be primarily stored in a delineated construction laydown area;
- all machinery equipment will be maintained in good working order;
- a Spills Response Plan will be developed prior to construction and operation;
- any topsoil, stripped during construction would be stockpiled for use in site restoration activities more than 30 metres from a water body; and,
- appropriate grading techniques will be used to prevent increased run-off potential and maintain positive drainage.

SOLRAY

July 2012

WATER ASSESSMENT REPORT

Marsh Hill Solar Farm

DILLON CONSULTING

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1.0 INTRODUCTION

Solray Energy Corporation (Solray) proposes to develop a solar facility with a maximum name plate capacity of 10 MW, located near Uxbridge in the Township of Scugog and Regional Municipality of Durham, Ontario. The renewable energy facility will be known as the Marsh Hill Solar Farm, (hereinafter referred to as the "project") and will be rated as a Class 3 Solar Facility. Solray has received a contract from the Ontario Power Authority (OPA) for the sale of electricity generated by this renewable facility through the province's Feed-in-Tariff (FIT) program (enabled by the *Green Energy and Green Economy Act, 2009*). The project will require a Renewable Energy Approval (REA) as per *Ontario Regulation 359/09* under Part V.0.1 of the *Ontario Environmental Protection Act*.

This *Water Assessment* is being submitted to the Ontario Ministry of the Environment (MOE) as per *Ontario Regulation 359/09* as part of a complete REA application. This report was made available in draft form for public review and comments prior to this final REA submission. Other reports included in the REA submission package include:

- *Project Description Report*
- *Construction Plan Report*
- *Design and Operations Report*
- *Decommissioning Plan Report*
- *Noise Study Report*
- *Natural Heritage Assessment (4 reports)*
- *Archaeological Assessments*
- *Water Body Report*
- *Cultural Heritage Screening/Self Assessment*
- *Consultation Report*
- *Supporting Documents*

Ontario Regulation 359/09 requires that all renewable energy projects conduct a records review and site investigation for all water bodies that fall within the project location or the prescribed setback area (REA Section 26). This *Water Assessment Report* was completed in partial fulfillment of the regulatory requirements for the REA process. Additional details regarding the potential impacts and mitigation measures required to protect these features will be provided in a separate *Water Body Report*, as required. These reports will be submitted to the Ministry of the Environment (MOE) for review and

comment, as required in *Ontario Regulation 359/09* and will provide for the protection of water bodies within and adjacent to the project location.

2.0 THE PROPONENT

Solray is a developer of utility-scale solar energy projects in Ontario, with two projects moving towards construction and nine projects in early-stage development. Solray endeavours to work closely with all interested stakeholders in their projects including landowners, Aboriginal communities, the general public, municipalities, government agencies and ministries. Solray's main objective is to design, construct and operate projects that are both environmentally beneficial and financially viable.

Contact information for the proponent is as follows:

Full Name of Company:	*Solray Energy Corporation*	
Prime Contacts:	*Andy Keith,* *President*	*Michael Jordan Halbert,* *Chairman and CEO*
Address:	*2788 Bathurst St., Suite 305* *Toronto, Ontario, M6B 3A3*	*2788 Bathurst St., Suite 305* *Toronto, Ontario, M6B 3A3*
Telephone:	*(416) 910-6580*	*(416) 780-8000*
Fax:	*(416) 780-8001*	*(416) 780-8001*
Email:	*andy@solray.ca*	*mjh@solray.ca*

Dillon Consulting Limited (Dillon) is the consultant responsible for the preparation of REA-related reports and for consultation activities for the Marsh Hill Solar Farm. The contacts at Dillon are:

Full Name of Company:	*Dillon Consulting Limited*	
Prime Contact:	*Mario Buszynski,* *Project Manager*	*Katharine Myrans,* *REA Project Coordinator*
Address:	*235 Yorkland Blvd., Suite 800* *Toronto, Ontario, M2J 4Y8*	*235 Yorkland Blvd., Suite 800* *Toronto, Ontario, M2J 4Y8*
Telephone:	*(416) 229-4646 ext. 2365*	*(416) 229-4646 ext. 2381*
Fax:	*(416) 229-4692*	*(416) 229-4692*
Email:	*MBuszynski@Dillon.ca*	*KMyrans@Dillon.ca*

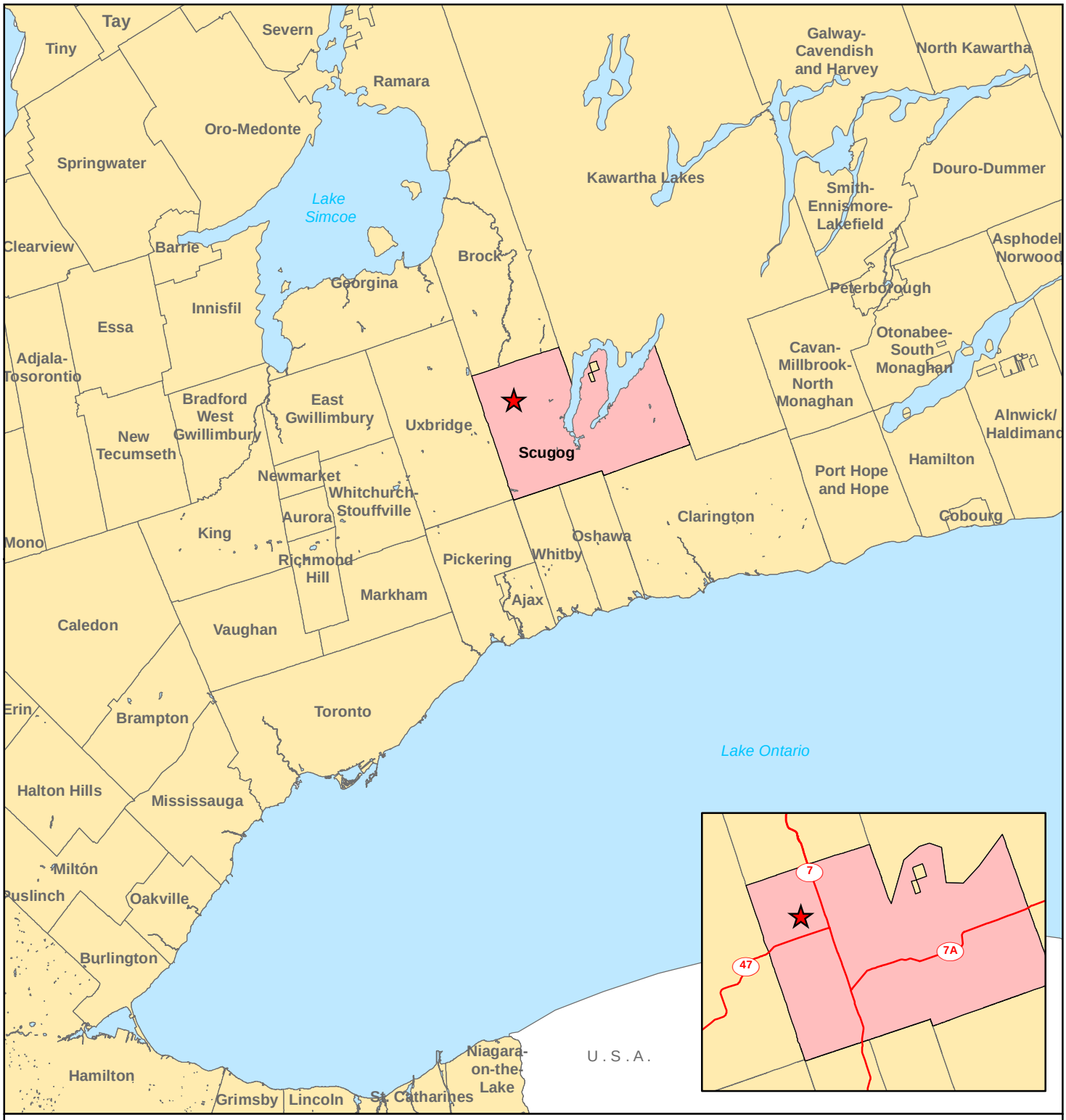
3.0 PROJECT LOCATION

The proposed Class 3 solar facility is located at 725 Cragg Road, Uxbridge, Ontario between Marsh Hill Road and Highway 7 within the Township of Scugog. **Figure 1** shows the general location of the project in Southern Ontario. The project location covers part of Lot 8, Concession 11, and consists of approximately 36.1 hectares of privately owned land, with geographic coordinates (centroids) as follows:

- Latitude: 44° 8' 59.78" N
- Longitude: 79° 2' 58.05" W

"Project Location" is defined in *Ontario Regulation 359/09* to be "a part of land and all or part of any building or structure in, on or over which a person is engaging in or proposes to engage in the project". Thus, **Figure 2** shows the project location, as defined in *Ontario Regulation 359/09*, to be the outer boundary (as identified by the perimeter fence and access road) within which all project components are located. The figure identifies these components as well as lands within 120 metres and 300 metres of the project location.

The planned solar facility will occur entirely within lands currently zoned as 'Rural' by the Township of Scugog (Township of Scugog, 2010; see **Appendix A**) and designated as 'Agricultural' by the Region of Durham (Municipality of Durham, 2005; see **Appendix A**). In addition, the project location falls entirely within the Greenbelt Area Protected Countryside and almost entirely within the Lake Simcoe Protection Plan Area (MOE 2009; Greenbelt Plan 2005; see **Appendix A**).



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Marsh Hill Solar Farm

Figure 1: General Location of the Marsh Hill Solar Farm in Southern Ontario

Legend

- Project Location
- Highway
- Township of Scugog
- Municipalities

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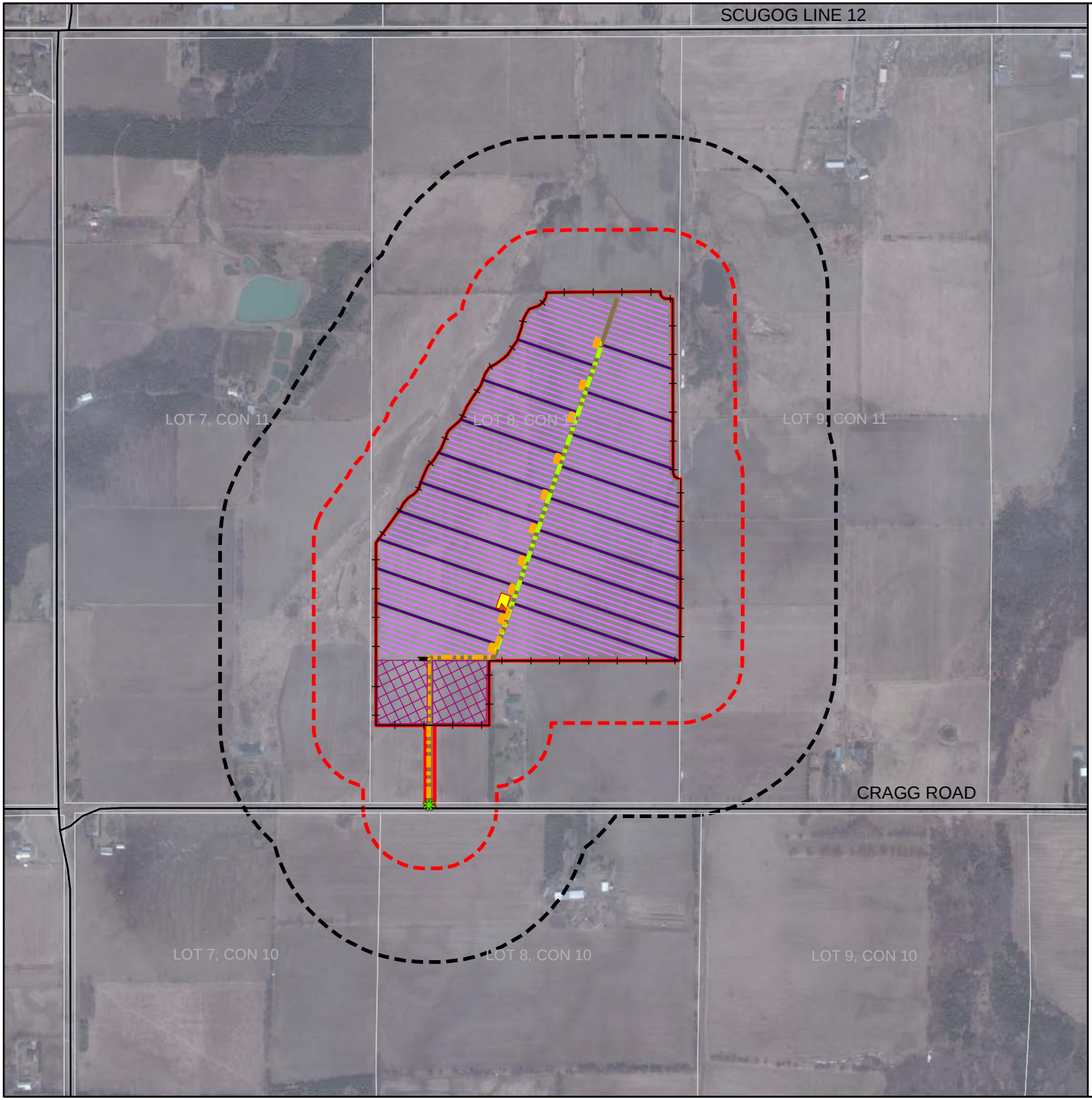

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Marsh Hill Solar Farm

Figure 2: Project Location

Legend

- Communication Tower
- Site Entrance
- Roads
- Fence
- Solar Panel
- 0.5 MW Boundaries Section
- Underground Cable
- Overhead Line
- Project Location
- 120 m Project Location Setback
- 300 m Project Location Setback
- Lots/Concessions
- Access Roads
- Laydown Area (Temporary)
- Inverter
- Substation
- Permanent Parking

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4.0 RECORDS REVIEW PURPOSE

A *Records Review* was completed, consistent with Section 30 of *Ontario Regulation 359/09*, for the project location (see **Figure 2**) using secondary source information.

Section 30 of *Ontario Regulation 359/09* states a *Natural Heritage Assessment* for a renewable energy facility includes a *Records Review* to search for and determine whether the project location is:

1. In a water body;
2. Within 120 metres of the average annual high water mark of a lake, other than a Lake Trout lake that is at or above development capacity;
3. Within 300 metres of the average annual high water mark of a Lake Trout lake that is at or above development capacity;
4. Within 120 metres of the average annual high water mark of a permanent or intermittent stream; or,
5. Within 120 metres of a seepage area.

Under *Ontario Regulation 359/09*, the definition of a water body includes lakes, permanent and intermittent streams and seepage areas, but does not include:

a) Grassed waterways;
b) Temporary channels for surface drainage, such as furrows or shallow channels that can be tilled and driven through;
c) Rock chutes and spillways;
d) Roadside ditches that do not contain a permanent or intermittent stream;
e) Temporary ponded areas that are normally farmed;
f) Dugout ponds; or,
g) Artificial bodies of water intended for the storage, treatment or recirculation of runoff from farm animal yards, manure storage facilities and site and outdoor confinement areas.

Table 1 outlines the secondary sources of information used to conduct the natural heritage features records review.

Table 1: Records and Resources Searched and Analyzed During Records Review

Record Source		Records Requested and/or Reviewed
Ministry of Natural Resources		
District Office: Aurora		Contact: Jackie Burkart, District Planner, via email ▪ Records relating to natural features, fisheries and wildlife species
Date of Request: Sept. 12, 2011	Date of Data Receipt: Sept. 14, 2011	
Manuals/Guidelines		Natural Heritage Reference Manual, Second Edition, March 2010
		Significant Wildlife Habitat Technical Guide, Appendices and Decision Support Tool
Land Information Ontario, data requested/accessed August 2011		▪ Interactive Online Mapping Tool ▪ Warehouse Data (see **Appendix B** for data layers obtained)
Ontario Crown Land Use Policy Atlas, online data accessed August 2011		▪ Crown Land areas
Natural Heritage Information Centre (NHIC)		▪ Biodiversity Explorer • Rare species
Conservation Authority		
Lake Simcoe Region Conservation Authority		Contact: Charles Burgess, Senior Planning Coordinator; Beverley Booth, Manager, Planning; and Sara Brockman, Environmental Planning – Customer Service Representative, via email ▪ Records relating to natural features, water bodies, aquatic and wildlife species ▪ Relevant studies undertaken in area of project location
Date of Request: Sept. 7, 2011	Date of Data Receipt: Sept. 20, 2011, Sept. 22, 2011 and Jan. 12, 2012	
Municipality		
Upper-Tier Municipality: Regional Municipality of Durham		▪ Official Plan and mapping Schedules reviewed ▪ Request for any applicable studies done to date in area of project location
Lower-Tier Municipality: Township of Scugog		▪ Official Plan and mapping Schedules reviewed ▪ Zoning By-law 75-80 reviewed ▪ Request for any applicable studies done to date in area of project location
Planning Authorities and Local Boards		
Municipal Planning Authority		See Above
Local Planning Board		Not applicable in project location
Local Roads Board		Not applicable in project location
Local Services Board		Not applicable in project location
Other Resources		
Distribution of Fish and Mussel Species at Risk Mapping for LSRCA		Fisheries and Oceans Canada (2011) mapping of occurrences of federally listed *Endangered*, *Threatened* and *Special Concern* fish and mussel species

Record Source	Records Requested and/or Reviewed
Great Lakes Conservation Blueprint for Aquatic Biodiversity. Volume 2: Tertiary Watershed Summaries	Phair et al. 2005. Produced by the Nature Conservancy of Canada ▪ Summary of statistics and land use relating to water bodies in each watershed
Provincial Plan Area Records	
Niagara Escarpment Commission	Project location does not fall within the Niagara Escarpment Plan Area
Oak Ridges Conservation Plan Area	Project location does not fall within Oak Ridges Moraine Plan Area
Greenbelt Plan Area	Project location falls within the Greenbelt Plan Area Protected Countryside
Lake Simcoe Protection Plan	Project location falls within the Lake Simcoe Protection Plan area

5.0 RECORDS REVIEW RESULTS

As stated in **Section 3.0**, the project location is located southeast of the community of Marsh Hill. The project location falls within Ecodistrict 6E-8 (Peterborough) and was summarized as part of the Great Lakes Conservation Blueprint for Aquatic Biodiversity (Phair et al., 2005). The project location falls within the Black River – Lake Simcoe Tertiary Watershed 2EC, which drains into Georgian Bay on Lake Huron and includes the Severn River and Talbot River. This watershed is densely developed and includes large communities; however, less developed portions of the watershed are dominated by mixed, deciduous, and coniferous forests. The southern portion of the watershed is dominated by agricultural and urban development. Approximately 71% of the watershed is made up of stream systems and 17% is comprised of lake systems (Phair *et al.,* 2005).

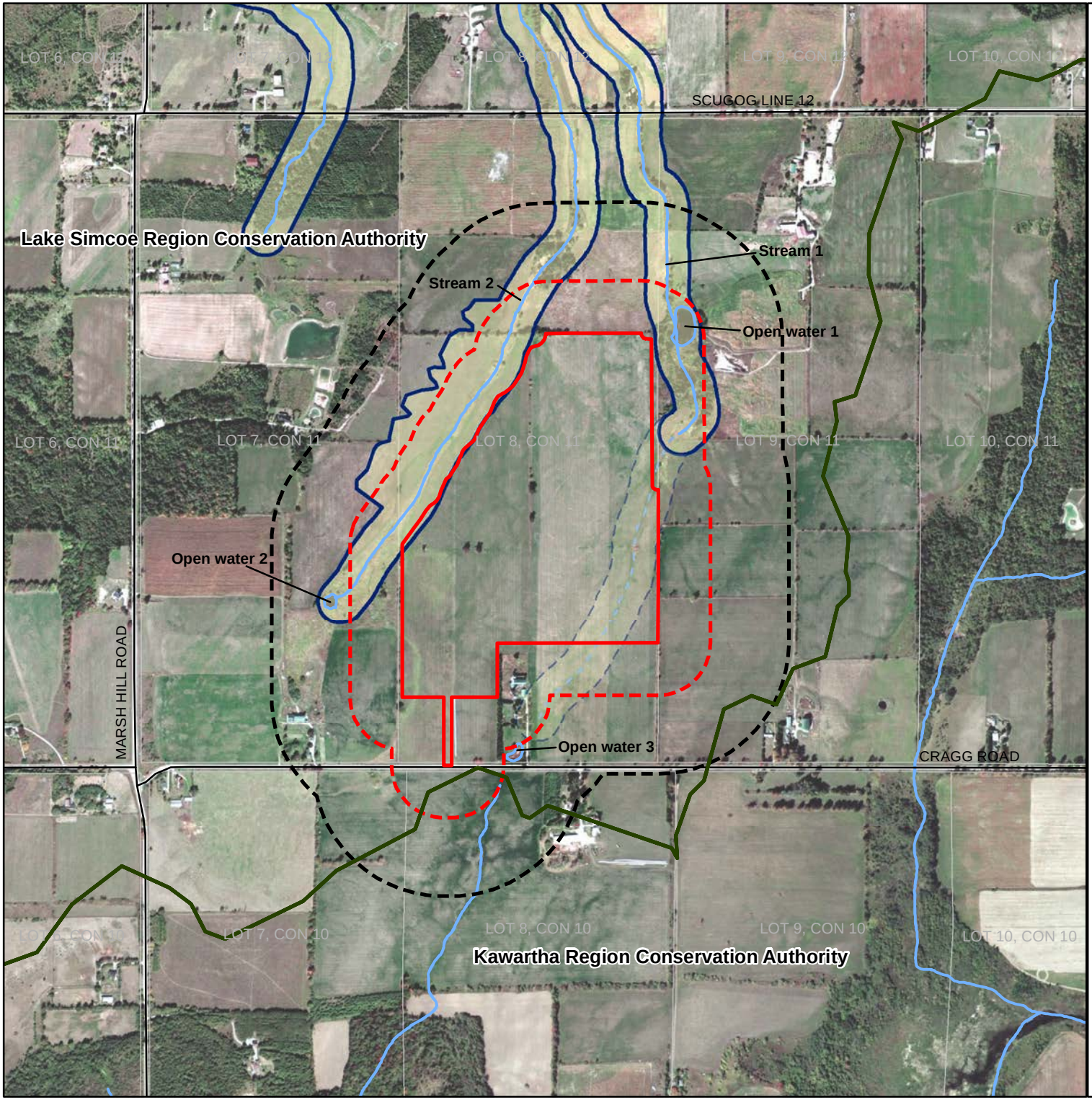
Most of the project location falls within the Beaver River Subwatershed, regulated by the Lake Simcoe Region Conservation Authority (LSRCA). A small portion of the southern project location and setback areas falls within the Nonquon Subwatershed, regulated by the Kawaratha Region Conservation Authority (KRCA).

5.1 Water Bodies

Based on our review and analysis of the records and resources outlined in **Table 1**, and in accordance with *Ontario Regulation 359/09*, determinations were made whether the project location is in a water body or within 120 metres of the average annual high water mark of a water body (see **Figure 3**). All mapping used for the records review is based on agency data (see **Appendix B**) and is not necessarily reflective of site conditions. In consideration of potential Lake Trout lakes and to meet the requirements of the *Construction Plan Report*, water bodies within 300 metres are also noted. This report will be included as part of the *REA* Application.

5.1.1 Average Annual High Water Mark Determinations

For the purposes of this *REA* reporting, the average annual high water mark for streams is characterized by the usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing waters, this refers to the "active channel/ bankfull level" which is often the one-to two-year flood flow return level (MOE 2011).



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Marsh Hill Solar Farm

Figure 3:
Water Assessment Records Review

Legend

- Roads
- Watercourse
- Removed Watercourse Confirmed by LSRCA
- Conservation Authority Boundary Line
- Project Location
- 120 m Project Location Setback
- 300 m Project Location Setback
- Lots/Concessions
- LSRCA Regulation Boundary
- Removed LSRCA Regulation Boundary Confirmed by LSRCA

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5.1.2 Lakes

A search and analysis of the records and resources outlined in **Table 1** did not identify any named lakes, as defined by *Ontario Regulation 359/09*, in the project location or within the surrounding 300 metres.

Three open water areas were identified through LSRCA Regulation mapping and aerial imagery in the project location setbacks (**Figure 3**).

Open Water 1

This feature falls within the northeast 120 metre setback and falls within LSRCA jurisdiction.

Open Water 2

This feature is located within the western 300 metre setback area in connection to the western watercourse mapped within the 120 metre setback. This open water area falls within LSRCA jurisdiction. This feature is located outside of 120 metre setback of the project location therefore it does not require further study under *Ontario Regulation 359/09*.

Open Water 3

This feature is located within the southern 300 metre setback within KRCA jurisdiction. This open water area is a man-made pond and does not appear to be connected to an online stream system. This feature is located outside of 120 metre setback of the project location therefore it does not require further study under *Ontario Regulation 359/09*.

5.1.3 Lake Trout Lakes

As discussed above, a search and analysis of the records and resources outlined in **Table 1** did not identify any Lake Trout lakes under management by the MNR, in the project location or within the surrounding 300 metres.

5.1.4 Permanent and/or Intermittent Streams

A search and analysis of the records and resources outlined in **Table 1** identified one stream (Stream 1) within the eastern project location and 120 metre setback area (**Figure 3**). An additional stream (Stream 2) has been mapped within the northwest 120 metre setback area.

Both of these streams fall within the Beaver River Subwatershed and extend north of the project location towards Lake Simcoe. According to the LSRCA, these streams have been classified as coldwater (Sara Brockman, Environmental Planning – Customer Service Representative; *Personal Communication*).

5.1.5 Seepage Areas

A search and analysis of the records and resources outlined in **Table 1** did not identify any seepage areas, as defined by *Ontario Regulation 359/09*, in the project location or within the surrounding 300 metres.

5.2 Aquatic Species at Risk

Species at Risk listed under the federal *Species at Risk Act* and provincial *Endangered Species Act, 2007*, with the potential to reside in water bodies adjacent to the project location, are being considered in consultation with the appropriate agency. Reporting related to the protection of Species at Risk will be provided to the appropriate agency under separate cover as required. This reporting format meets the requirements as set out in *Ontario Regulation 359/09*, and is consistent with the direction provided by the MNR and the MOE.

5.3 Provincial Plan Areas

Under *Ontario Regulation 359/09*, if any part of the project location falls within a provincial plan area the project may be subject to different criterion to evaluate the applicable water bodies. In addition, should development occur within the prescribed setback area of a water body, it may be subject to a different set of prohibitions under *Ontario Regulation 359/09*. **Table 2** outlines the provincial plan areas that should be considered when planning a renewable energy project and identifies which, if any, are applicable to the project location.

Table 2: Summary of Provincial Plan Areas and Applicability to the Project Location

Provincial Plan Area	Applicability to Project
Oak Ridges Moraine Conservation Plan Area	None
Niagara Escarpment Plan Area	None
Greenbelt – Natural Heritage System	None
Greenbelt – Protected Countryside	Entire project location falls within Greenbelt Protected Countryside
Lake Simcoe Protection Plan	Most of project location falls within Lake Simcoe Protection Plan

5.4 Regulated Area

Under the *Conservation Authorities Act*, LSRCA is responsible for the application and enforcement of the *Regulation of Development, Interference with Wetlands and Alterations to Shoreline and Watercourses* that was approved and then filed on May 4, 2006 (*Ontario Regulation 153/06*). Regulated Areas are

lands in proximity to hazardous lands, wetlands and areas susceptible to flooding. Development within these Regulated Areas may require a permit.

Based on consultation with LSRCA, Regulated Areas within the project location and 120 metre setback are associated with the streams discussed in **Section 5.1.4** and shown on **Figure 3**. Project location lands also fall within an Intake Protection Zone and Significant Recharge Area for Lake Simcoe Source Water Protection (Sara Brockman, Environmental Planning – Customer Service Representative; *Personal Communication*).

5.5 Summary of Records Review

This report is intended to fulfill the requirements for the *Water Assessment* records review under *Ontario Regulation 359/09*. **Table 3** summarizes the determinations made during this records review. All mapped water bodies within the project location and surrounding 300 metres are outlined on **Figure 3**.

Table 3: Summary of the Water Assessment Records Review

Water Body ID	Source of Information*	Distance Relative to Project Location
Lakes		
Open Water Area 1	ESRI Satellite Imagery	46.6 metres
Open Water Area 2	ESRI Satellite Imagery	150.8 metres
Open Water Area 3	ESRI Satellite Imagery	120.0 metres
Lake Trout Lakes		
None identified within the project location or adjacent lands within 300 metres		
Permanent and/or Intermittent Streams		
Stream 1	MNR Data Layers and ESRI Satellite Imagery	Within project location
Stream 2	MNR Data Layers and ESRI Satellite Imagery	33.5 metres
Seepage Areas		
None identified within the project location or adjacent lands within 300 metres		
Provincial Plan Areas		
Greenbelt Protected Countryside	Plan of the Boundary of The Protected Countryside	Within project location
Lake Simcoe Protection Plan	Lake Simcoe Protection Act Watershed Boundary	Within project location
Regulated Areas		
LSRCA Regulation Boundary	LSRCA Public Mapping Tool	Within project location and 120 metre setback area

*see **Table 1** and **Appendix B**

6.0 SITE INVESTIGATION PURPOSE

This *Site Investigation Report* was completed to analyze the accuracy of the determinations made in the *Records Review*. It is consistent with Section 31 of *Ontario Regulation 359/09*, which states that a person who proposes to engage in a renewable energy project shall ensure that a physical investigation of the land and water within 120 metres of the project location is conducted for the purpose of determining:

- Whether the results of the analysis summarized in the [*Records Review*] report are correct or require correction, and identifying any required corrections;
- Whether any additional water bodies exist, other than those identified in the *Records Review*;
- The boundaries, located within 120 metres of the project location, of any water body that was identified in the *Records Review* or the *Site Investigation*; and,
- The distance from the project location to the boundaries of the water body.

7.0 SITE INVESTIGATION METHODOLOGY

Based on the determinations made during the records review, all water bodies that were mapped within 120 metres of the project location were the subject of a site investigation of the project location. The project location was visited by site investigators in order to document the water bodies within the project location. Documentation of applicable and accessible water bodies included a record of qualitative and quantitative observations including type of water body, average annual high water mark, and habitat types, surrounding riparian composition and taking of representative photographs. Efforts were co-ordinated with the team of site investigators conducting the *Natural Heritage Assessment* of the project location to locate any potential water bodies not identified during the records review.

7.1 Names and Qualifications of Site Investigators

The names and qualifications of all site investigators are outlined in **Table 4** below. The site investigators listed below have been involved with the project since it began and are involved in numerous renewable energy projects that are currently seeking approval under *Ontario Regulation 359/09*.

Table 4: Names and Qualification of Site Investigators

Name	Degrees and Professional Designations	Years of Experience	Project Role	Certifications
Allen Benson	- Hons. B.Sc. (Biology/Zoology)	5	- Incidental Wildlife	- Ecological Land Classification for Southern Ontario - LEED AP
Christie Cestra	- M.Sc. (Biology) - Hons. B.Sc. (Biology)	1	- ELC - Incidental Wildlife	- Ecological Land Classification for Southern Ontario
Lindsay Knezevich	- B.Sc. (Biology) - Ecosystem Survey-Field Skills Certificate	3	- Water Assessment - Incidental Wildlife	- Ontario Stream Assessment Protocol - Class 2 Electrofishing Crew Leader Certification Course

7.2 Site Investigation Dates, Time, Duration and Weather Conditions

As outlined in **Table 5**, numerous site investigations of the project location were undertaken over a period of 5 months. The details of each site investigation completed in accordance with REA Section 31(3) are provided in **Table 5** and should be read concurrently with **Table 4**.

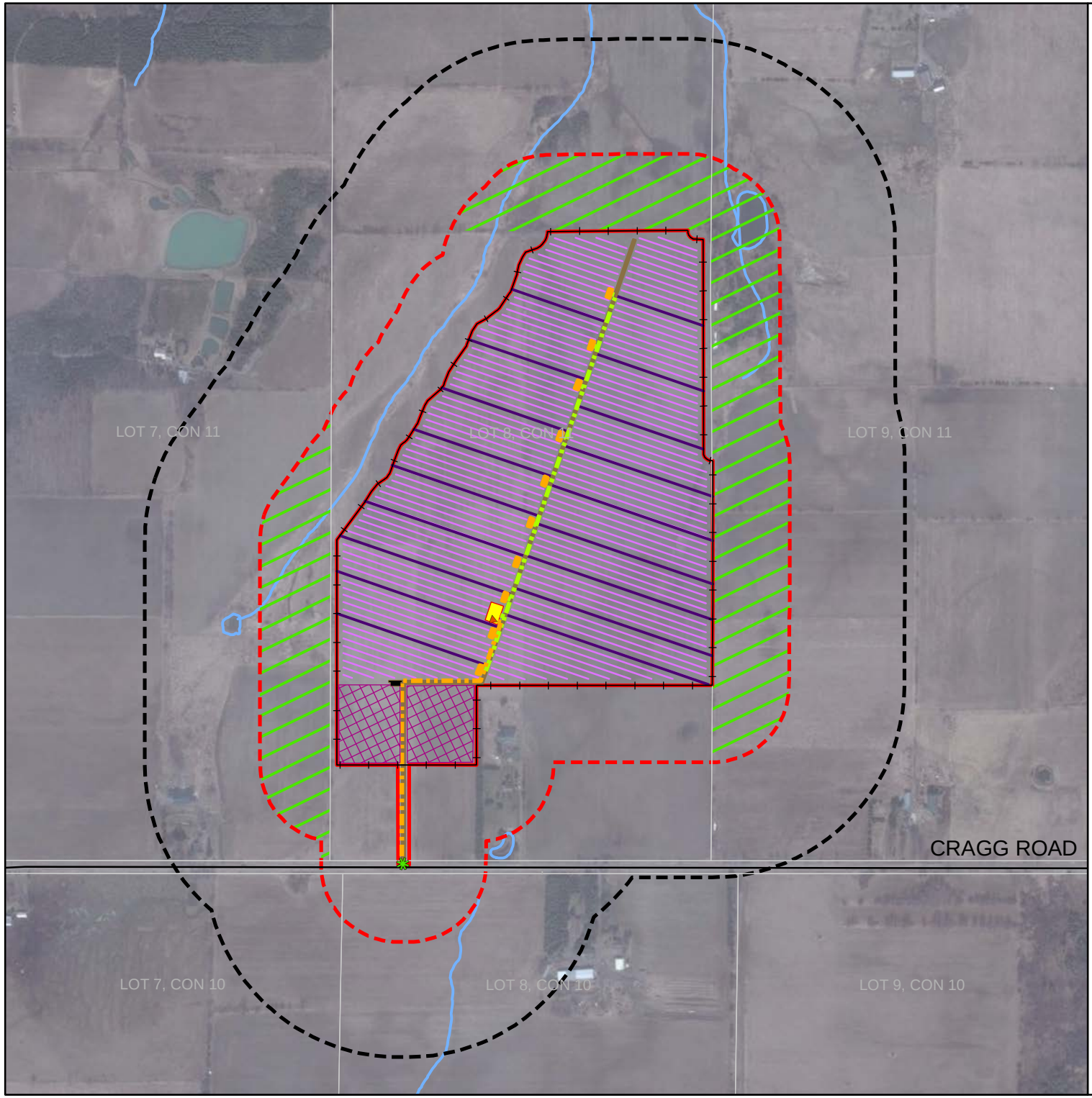
Table 5: Site Investigation Dates, Times, Duration and Weather Conditions

Date (2011)	Survey Type	Site Investigator	Time	Duration (hours)	Weather Conditions (Field Observations)			Weather Conditions (EC* Station)		
					Air Temp. (°C)	Wind (Beaufort Scale)	Cloud Cover (%)	Air Temp. (°C)	Wind (Speed/Direction)	Precipitation (mm)
August 23, 2011	-Site Walkabout -Incidental Wildlife	ADB	13:00	2	24	1	10	8.5 – 26.5	n/a	0
October 7, 2011	-Incidental Wildlife -ELC -Water Assessment	CNC, LK	08:30	4.5	20	1	0	6.0 – 24.5	n/a	0
Total Duration of Field Work				11 hours						

*Closest Environment Canada (EC) Weather Station is Udora, Ontario. All EC Data refers to daily values; n/a indicates the information was not available from an Environment Canada weather station from the date/time of field work.

7.3 Access to Adjacent Lands

As outlined in *Ontario Regulation 359/09*, all lands within 120 metres of a project component are required to be assessed for water bodies. In the case of the Marsh Hill Solar Farm, access to all of the natural features located within 120 metres of the project location was not granted by the landowners of these properties (see **Figure 4**). Water bodies located on adjacent lands where access was not available were assessed from property lines and road rights-of-way, where applicable. This alternative site investigation was conducted in accordance with the amendments made to *Ontario Regulation 359/09* on January 1, 2011.



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Marsh Hill Solar Farm

Figure 4:
Access to Adjacent Lands

Legend

- Communication Tower
- Site Entrance
- Roads
- Watercourse
- Fence
- Solar Panel
- 0.5 MW Boundaries Section
- Underground Cable
- Overhead Line
- Project Location
- 120 m Project Location Setback
- 300 m Project Location Setback
- Area of Alternative Site Investigation
- Lots/Concessions
- Access Roads
- Laydown Area (Temporary)
- Inverter
- Substation
- Permanent Parking

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8.0 SITE INVESTIGATION RESULTS

Based on the site investigation, the occurrence of water bodies within or within 120 metres of the project location is documented below. In addition to assessing if the results of the records review were correct or required corrections and/or amendments, information relating to each water body, if any, within the project location and surrounding 120 metres was collected. This included the type of water body, plant and animal composition and the ecosystem of the land and water investigation. Ecological Land Classification, undertaken as part of the *Natural Heritage Assessment* (NHA), has been employed to describe lands within 30 metres of a water body. A detailed explanation of the methodology and results can be found in the NHA *Site Investigation Report* for this project. In consideration of potential Lake Trout lakes and to meet the requirements of the *Construction Plan Report*, water bodies within 300 metres were also noted. The *Construction Plan Report* will be included as part of the *REA* Application.

8.1 Lakes

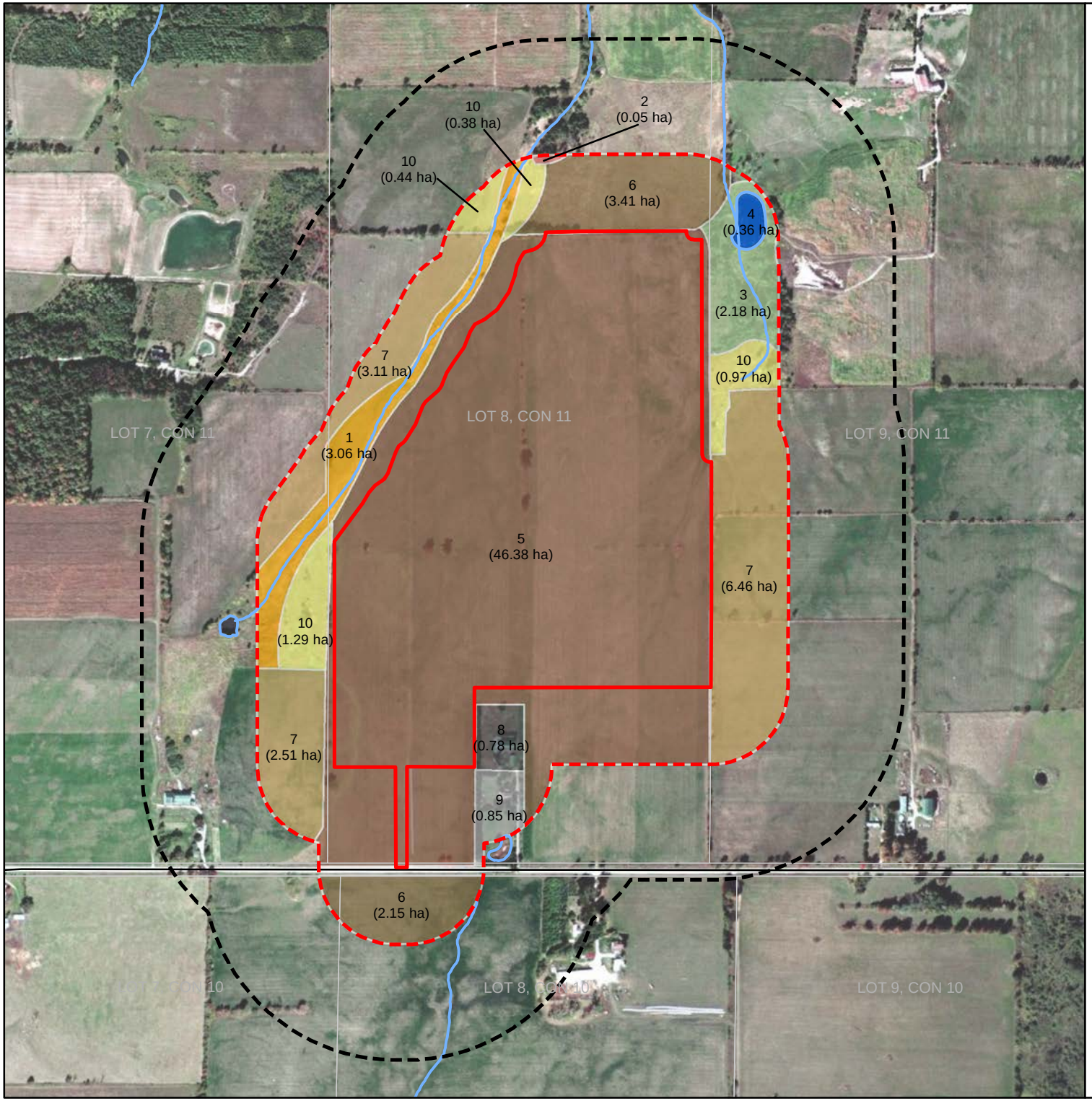
As outlined in **Table 3**, a search and analysis of the records and resources did not identify any lakes in the project location or within the surrounding 300 metres. The results of the site investigation confirmed this determination for lands within 300 metres of the project location.

Open Water 1

This 0.36 ha open water area is located within the northeast 120 metre setback of the project location. The surrounding vegetation community consists of WOMM4-1: Fresh – Moist White Cedar – Hardwood Mixed Woodland Type (**Figure 5**) which prevented visual observation during site investigations. As discussed above in **Section 7.3** and shown on **Figure 4**, access to this area was restricted therefore a detailed assessment could not be completed. This feature has been identified as Candidate Amphibian Breeding Habitat.

Lake Trout Lakes

As outlined in **Table 1**, a search and analysis of the records and resources did not identify any lakes that had potential to support a managed population of Lake Trout in the project location or within the surrounding 120 metres. The results of the site investigation confirmed this determination for lands within 300 metres of the project location.



SOLRAY

Marsh Hill Solar Farm

Figure 5:
Ecological Land Classification

Legend

- Roads
- Watercourse
- Project Location
- 120 m Project Location Setback
- 300 m Project Location Setback
- Lots/Concessions

Ecological Land Classification

1) MAMM1-3: Reed Canary Grass Graminoid Mineral Meadow Marsh Type
2) SWM: Mixed Swamp
3) WOMM4-1: Fresh - Moist White Cedar - Hardwood Mixed Woodland Type
4) Open Aquatic
5) Ploughed Field
6) OAGM1: Annual Row Crops
7) OAGM2: Perennial Cover Crops
8) IAGM1: Agricultural Buildings
9) CVR_4: Rural Property
10) MEFM4: Fresh-Moist Forb Meadow Ecosite

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File Path: I:\GIS\114838 - Solray Park Property\Mapping\Water Assessment Report\Figure 5 Ecological Land Classification.mxd

DILLON CONSULTING

8.2 Permanent and/or Intermittent Streams

Stream 1

Site investigations revealed this stream no longer exists within the project location (See **Photo 3, Appendix D**). This observation was supported by contour mapping and aerial photographs. Approval was obtained from the LSRCA to remove this stream from our mapping along with the regulation areas associated with this feature (Beverley Booth; Manager, Planning, Regulations and Enforcement; *Personal Communication*). Due to land access restrictions, the extent of Stream 1, beyond what could be seen from the project location and within the 120 metre setback area could not be assessed. The surrounding vegetation community consists of WOMM4-1: Fresh – Moist White Cedar – Hardwood Mixed Woodland Type and Annual Row Crops (**Figure 5**).

Stream 2

This stream conveys flow from a cattail marsh west of the project location to a headwater channel of Beaver River within the northern setback. No flow was observed during site investigations in August, 2011. Flow was minimal at the time of a detailed stream assessment in October 2011. Details of Stream 2 at low flow conditions are provided below.

Stream 2 is encompassed by the surrounding vegetation community MAMM1-3: Reed Canary Grass Graminoid Mineral Meadow Marsh (**Figure 5** and **Photo 4, Appendix D**). Within the northern setback, this stream has a defined channel with an average width of 0.44 metres and an average depth of 0.06 metres. Substrate was characterized by scattered boulders, cobble, sand, detritus and muck (**Photo 5, Appendix D**). Overhanging macrophytes, boulders, cobble, woody debris and organic debris comprise in-stream cover (10%, 5%, 10%, 5% and 5% respectively). No in-stream vegetation was observed. Within the western setback, Stream 2 displays uniform habitat characterized by a narrow channel with thick overhanging vegetation within marsh habitat (See **Photo 6** and **7**, **Appendix D**). Average width of this narrow channel was 0.20 metres with a depth of 0.04 metres. Substrate was characterized by muck and detritus with in-stream cover dominated by overhanging and in-stream vascular macrophytes (50% - 100%) with minimal organic debris (0 – 15%). No evidence of groundwater seepage was observed.

Two crossings were observed along Stream 2 for agricultural use. At the time of site investigations in October 2011, depressed tire tracks have formed pools of water with minimal flow (**Photo 8, Appendix D**). Another crossing with depressed tire tracks and minimal flow along Stream 2 was observed further

upstream (**Photo 9, Appendix D**). During field investigations in August 2011, this same crossing was observed to be dry and highly vegetated as shown in **Photo 10, Appendix D**. Ploughing activities along the edge of riparian habitat have created pooled water and overland drainage within depressed tire tracks throughout the project location setback (**Photo 11, Appendix D**).

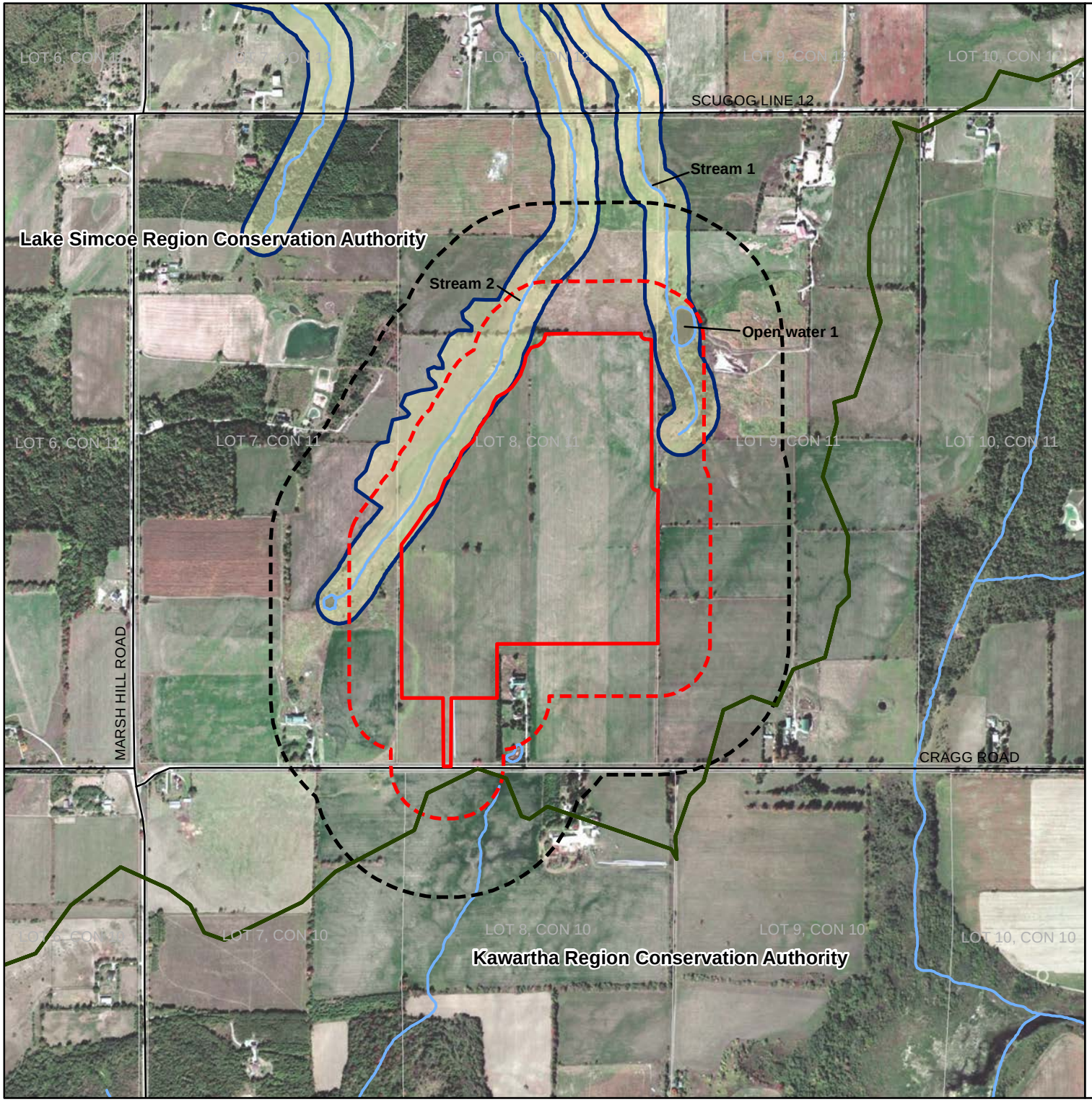
Several obstructions and low to no flow conditions throughout the year prevent this stream from containing fish habitat. This stream meets the definition of an intermittent stream under *Ontario Regulation 359/09*. Appropriate mitigation measures will be outlined in the *Construction Plan Report*.

8.3 Seepage Areas

As indicated in **Table 1**, a search and analysis of applicable records and resources of the project location did not identify any seepage areas, as defined by *Ontario Regulation 359/09*, in the project location or within the surrounding 300 metres. The results of the site investigation verified this determination.

9.0 SUMMARY OF AMENDMENTS TO THE RECORDS REVIEW

Based on the results of the site investigations, no previously unidentified water bodies were identified within 120 metres of the project location. The extent of Stream 1 mapped within the eastern project location does meet the definition of a water body under *Ontario Regulation 359/09* (i.e., is not a permanent or intermittent stream) therefore mapping has been refined for this feature and the regulation area associated with it has been removed from LSRCA Regulation Mapping (**Figure 6**).



SOLRAY

Marsh Hill Solar Farm

Figure 6: Water Assessment Site Investigation

Legend

- Roads
- Watercourse
- Conservation Authority Boundary Line
- Project Location
- 120 m Project Location Setback
- 300 m Project Location Setback
- Lots/Concessions
- LSRCA Regulation Boundary

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File Path: I:\GIS\114838 - Solray Park Property\Mapping\Water Assessment Report\Figure 6 Water Assessment Site Investigation.mxd

DILLON CONSULTING

10.0 CONCLUSIONS

This report is intended to fulfill the requirements for the *Water Assessment Report* under *Ontario Regulation 359/09*. Based on the results of the site investigations one intermittent stream is located within 120 metres of the project location. Additionally, a stream and open water area are located in the northeast 120 metre setback. Due to land access restrictions a detailed assessment of these features could not be completed. Based on this, an Environmental Impact Study as outlined under *REA* Sections 39 and 40 is required for this project.

Table 6 summarizes the results of the site investigation in the context of the proposed project.

Table 6: Summary of the Water Assessment Site Investigation

Water Body ID	Does the project location overlap a water body?	Is the project location within 120 m of the water body?	Distance to nearest project components	Project Components within 120 m of the water body	Potential Effects Evaluation required?
Lakes					
Open Water 1	No	Yes	46.6 metres	Fence, Solar Panels and Racks	Yes
Lake Trout Lakes					
None identified within the project location or adjacent lands within 120 metres					
Permanent and/or Intermittent Streams					
Stream 1	No	Yes	58.0 metres	Fence, Solar Panels and Racks	Yes
Stream 2	No	Yes	33.5 metres	Fence, Solar Panels and Racks	Yes
Seepage Areas					
None identified within the project location or adjacent lands within 120 metres					

11.0 REFERENCES

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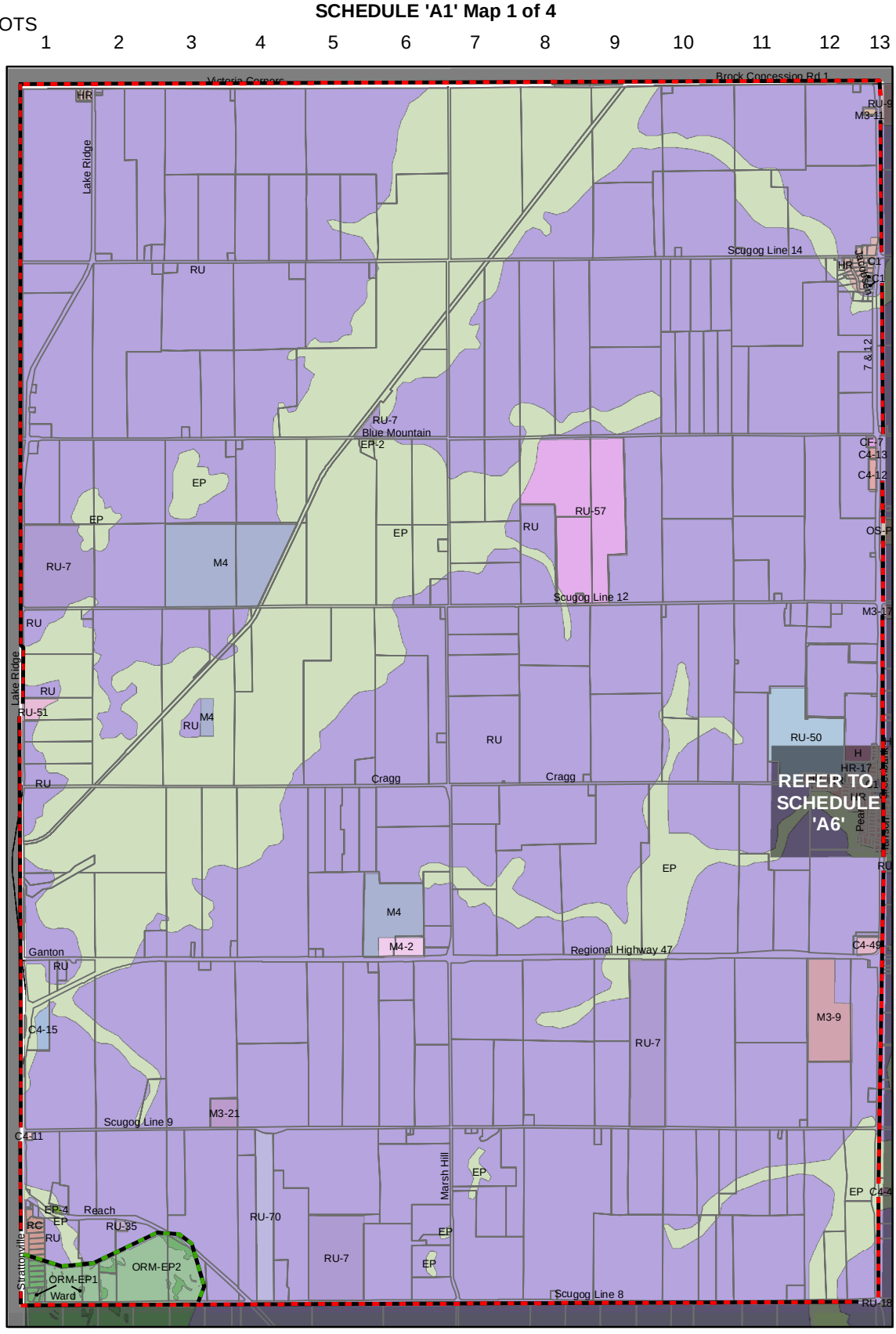
Township of Scugog. 2010. Zoning By-law 75-80.

APPENDIX A

Supplementary Information

TOWNSHIP OF SCUGOG
ZONING BY-LAW 75-80
SCHEDULE 'A1' Map 1 of 4

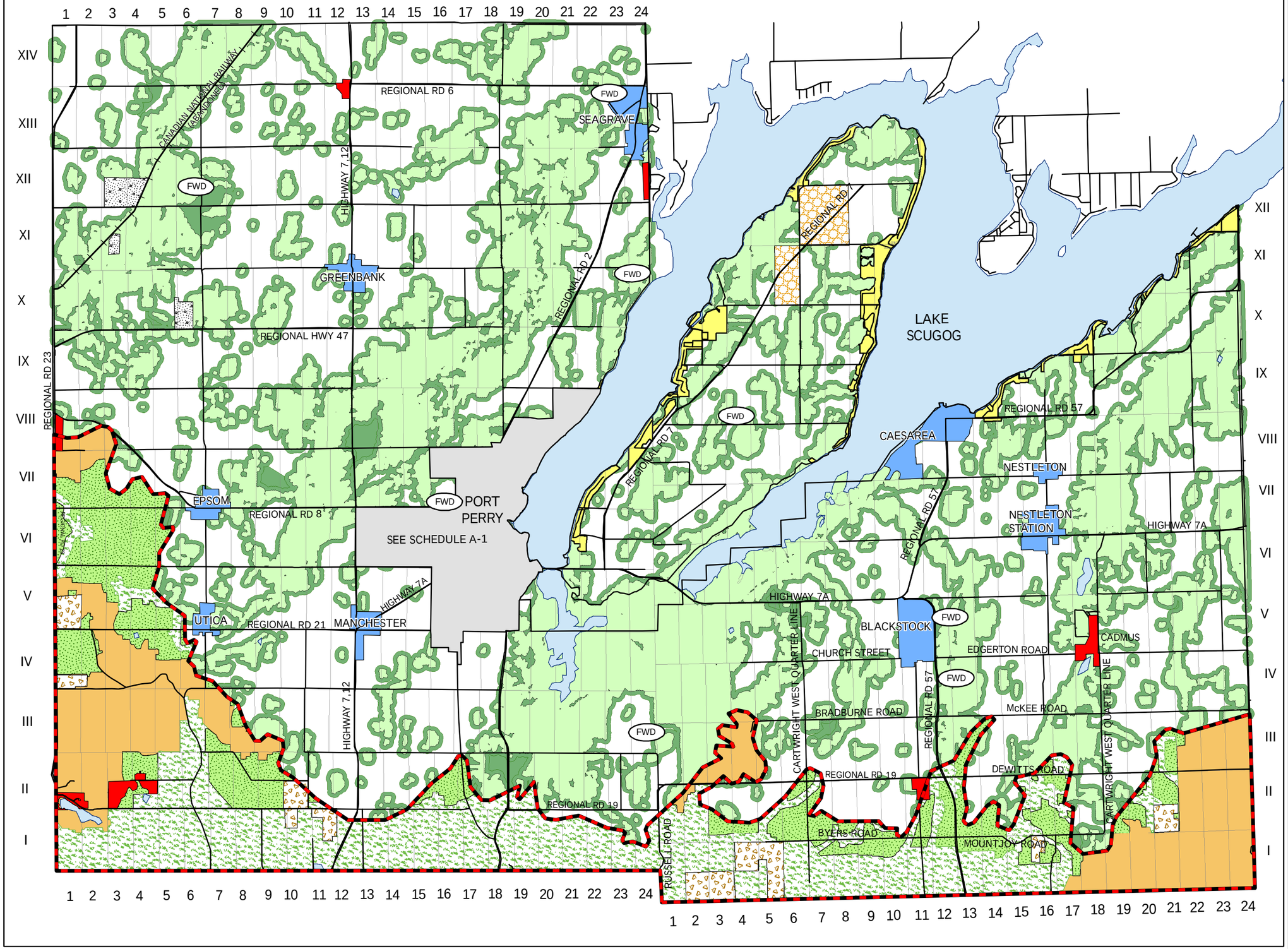


NOTE:
THE SCHEDULE 'A1' Map 1 HAS BEEN PREPARED FOR OFFICE CONSOLIDATION PURPOSES ONLY. IT INCORPORATES THOSE AMENDMENTS TO SCHEDULE 'A1' Map 1 AS OF JUNE 2010. FOR ACCURATE REFERENCE, THE ORIGINAL BY-LAW SHOULD BE CONSULTED. PROVISIONS AFFECTING THE USE OF LANDS ZONED WITHIN A ZONE CATEGORY ARE SPECIFIED UNDER SECTION 4- ZONE PROVISIONS.

TOWNSHIP OF Scugog

JUNE, 2010

TOWNSHIP OF SCUGOG
OFFICIAL PLAN
SCHEDULE A
RURAL AREA LAND USE



LEGEND

RURAL SYSTEM

- AGRICULTURAL
- HAMLET
- SHORELINE
- RESIDENTIAL CLUSTERS
- MINERAL AGGREGATE EXTRACTION

GREENLANDS SYSTEM

- NATURAL CORE AREA
- NATURAL LINKAGE AREA
- ORM AGGREGATE AREA
- ORM COUNTRYSIDE AREA
- ORM NATURAL CORE AREA
- ORM NATURAL LINKAGE AREA
- OAK RIDGES MORAINE BOUNDARY

- RAILWAY
- FIRST NATION LANDS
- PORT PERRY URBAN AREA
- FWD — FORMER WASTE DISPOSAL SITE

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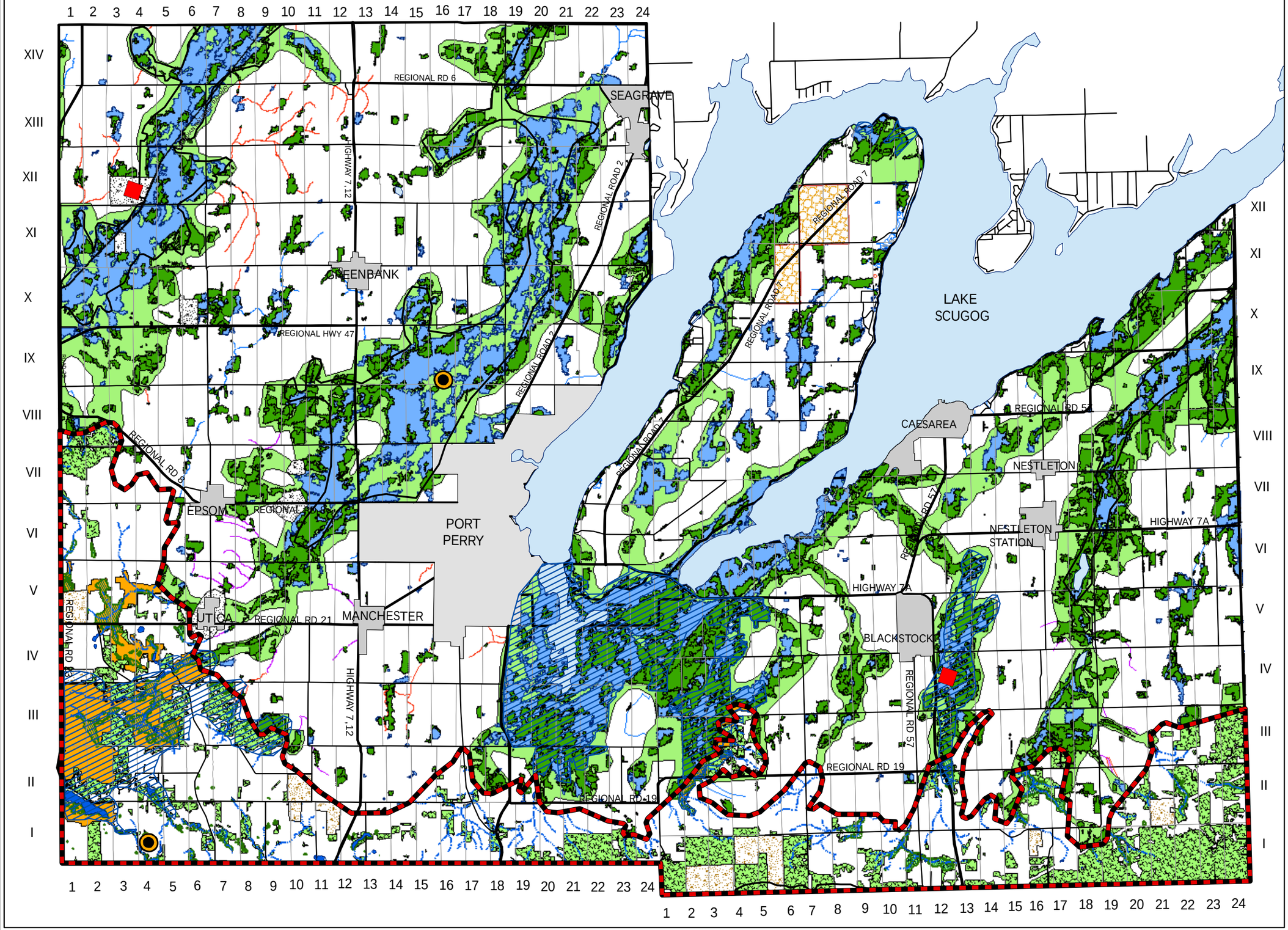
Kilometers

MERIDIAN PLANNING CONSULTANTS INC.

JUNE 30, 2009



TOWNSHIP OF SCUGOG OFFICIAL PLAN

SCHEDULE E
ENVIRONMENTAL FEATURES

LEGEND

- EARTH SCIENCE ANSI
- LIFE SCIENCE ANSI
- ENVIRONMENTALLY SIGNIFICANT AREAS
- SIGNIFICANT WETLAND AREAS
- SIGNIFICANT FOREST AREAS
- GREENBELT NATURAL HERITAGE SYSTEM
- PRIMARY AGGREGATE AREAS
- FIRST NATION LANDS
- COLD STREAMS
- WARM STREAMS
- WATERBODIES/UNCLASSIFIED STREAMS
- RAILWAY
- ORM ENVIRONMENTALLY SENSITIVE AREA
- ORM WETLAND
- ORM WOODLAND
- ORM AGGREGATE REGION
- ORM KETTLE LAKE
- ORM ANSI
- ORM FISH HABITAT RIVERS
- OAK RIDGES MORAINE POLICY AREA

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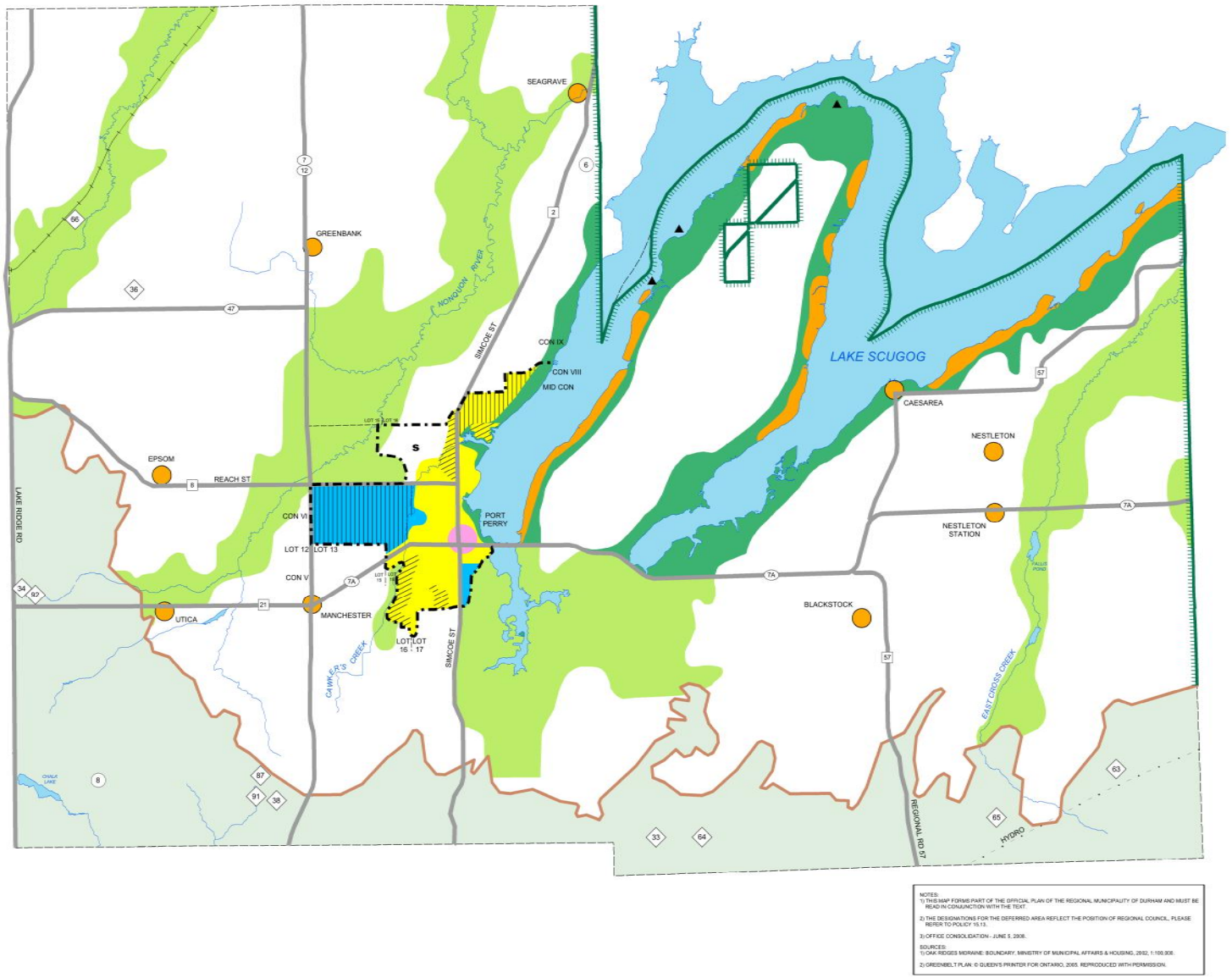
MERIDIAN PLANNING CONSULTANTS INC.

JUNE 18, 2009

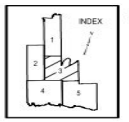
OFFICIAL PLAN OF THE REGIONAL MUNICIPALITY OF DURHAM



NOTES:
1) THIS MAP FORMS PART OF THE OFFICIAL PLAN OF THE REGIONAL MUNICIPALITY OF DURHAM AND MUST BE READ IN CONJUNCTION WITH THE TEXT.
2) THE DESIGNATIONS FOR THE DEFERRED AREA REFLECT THE POSITION OF REGIONAL COUNCIL. PLEASE REFER TO POLICY 15.13.
3) OFFICE CONSOLIDATION - JUNE 5, 2906.

SOURCES:
1) OAK RIDGES MORAINE BOUNDARY, MINISTRY OF MUNICIPAL AFFAIRS & HOUSING, 2002; 1:100,000.
2) GREENBELT PLAN. © QUEEN'S PRINTER FOR ONTARIO, 2005. REPRODUCED WITH PERMISSION.

SCHEDULE 'A' - MAP 'A3' REGIONAL STRUCTURE



LEGEND

URBAN SYSTEM

- URBAN AREA BOUNDARY
- URBAN AREA BOUNDARY DEFERRED
- REGIONAL CENTRE
- REGIONAL CORRIDOR
- LIVING AREAS
- EMPLOYMENT AREAS
- AREAS DEVELOPABLE ON FULL/PARTIAL MUNICIPAL SERVICES
- AREAS DEVELOPABLE ON MUNICIPAL WATER SYSTEMS & PRIVATE WASTE DISPOSAL SYSTEMS
- AREAS DEVELOPABLE ON PRIVATE WELLS & MUNICIPAL SEWER SYSTEMS
- AREAS DEVELOPABLE ON PRIVATE WELLS & PRIVATE WASTE DISPOSAL SYSTEMS
- S MUNICIPAL SERVICE

RURAL SYSTEM

- PRIME AGRICULTURAL AREAS

RURAL SETTLEMENTS :

- HAMLET
- 3 RURAL EMPLOYMENT AREA (SEE TABLE E3 FOR DESCRIPTION)
- 12 COUNTRY RESIDENTIAL SUBDIVISION (SEE TABLE E2 FOR DESCRIPTION)
- SHORELINE RESIDENTIAL
- B REGIONAL NODE (SEE SECTION 9C FOR DESCRIPTION)
- 12 AGGREGATE RESOURCE EXTRACTION AREA (SEE TABLE E1 FOR DESCRIPTION)

GREENLANDS SYSTEM

- MAJOR OPEN SPACE AREAS
- OAK RIDGES MORAINE AREAS
- WATERFRONT AREAS
- OAK RIDGES MORAINE BOUNDARY
- GREENBELT BOUNDARY
- RECREATIONAL /TOURIST ACTIVITY NODE
- WATERFRONT PLACE
- OPEN SPACE LINKAGE
- WATERFRONT LINKS

TRANSPORTATION SYSTEM

SEE SCHEDULE C FOR DESIGNATIONS

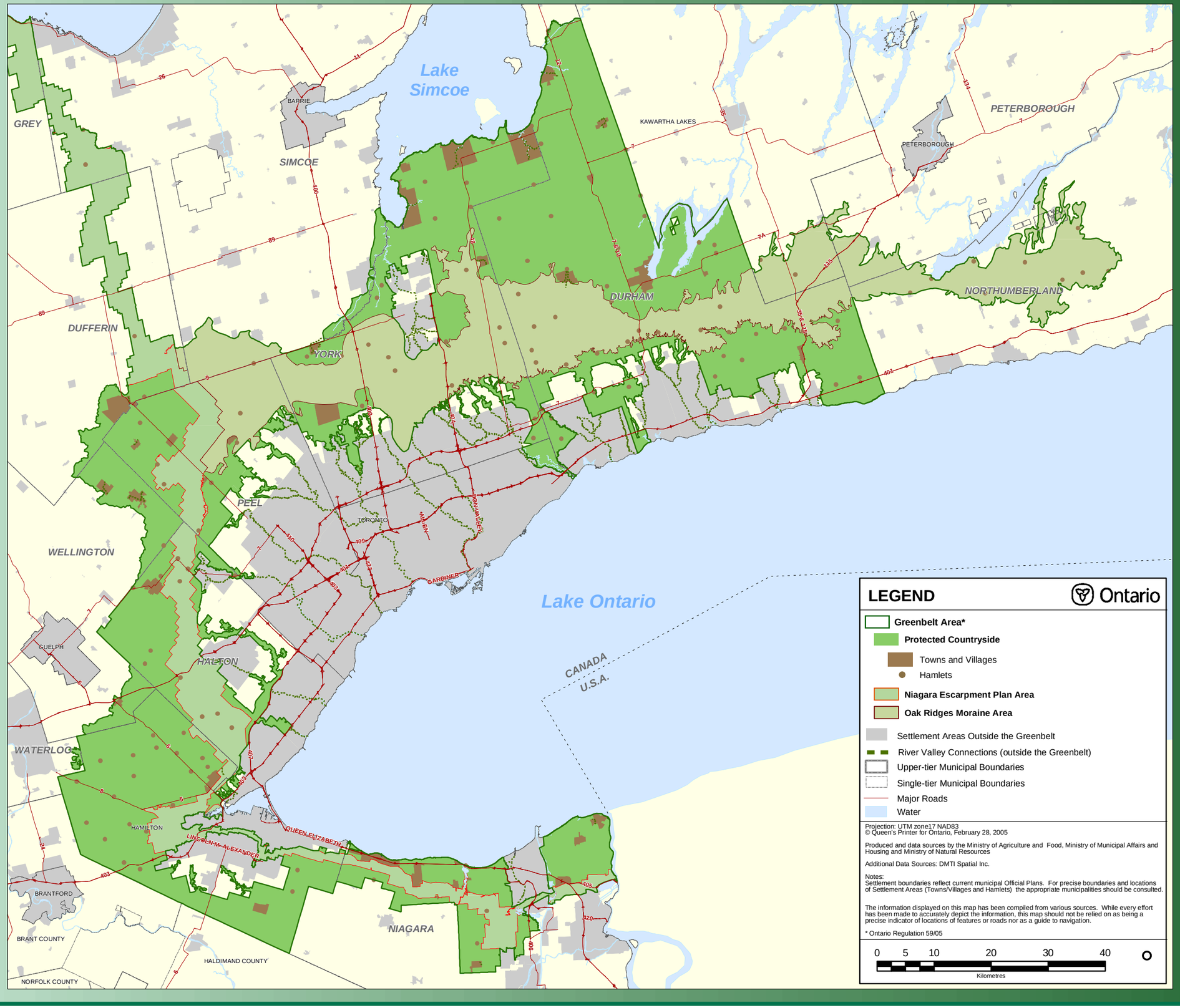
THE FOLLOWING IS SHOWN SELECTIVELY, FOR EASE OF INTERPRETATION OF OTHER DESIGNATIONS ONLY.

EXISTING		FUTURE
	ARTERIAL ROAD	
	FREEWAY	
	GO RAIL	
	GO STATION	

SPECIAL AREAS

- 2 SPECIAL STUDY AREA
- A SPECIFIC POLICY AREA
- D2 DEFERRED BY MINISTER OF MUNICIPAL AFFAIRS
- APPEALED TO O.M.B.

greenbelt PLAN 2005



LEGEND

Ontario

- Greenbelt Area*
- Protected Countryside
  - Towns and Villages
  - Hamlets
- Niagara Escarpment Plan Area
- Oak Ridges Moraine Area
- Settlement Areas Outside the Greenbelt
- River Valley Connections (outside the Greenbelt)
- Upper-tier Municipal Boundaries
- Single-tier Municipal Boundaries
- Major Roads
- Water

Projection: UTM zone17 NAD83

Produced and data sources by the Ministry of Agriculture and Food, Ministry of Municipal Affairs and Housing and Ministry of Natural Resources

Additional Data Sources: DMTI Spatial Inc.

Notes:
Settlement boundaries reflect current municipal Official Plans. For precise boundaries and locations of Settlement Areas (Towns/Villages and Hamlets) the appropriate municipalities should be consulted.

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations of features or roads nor as a guide to navigation.

* Ontario Regulation 59/05

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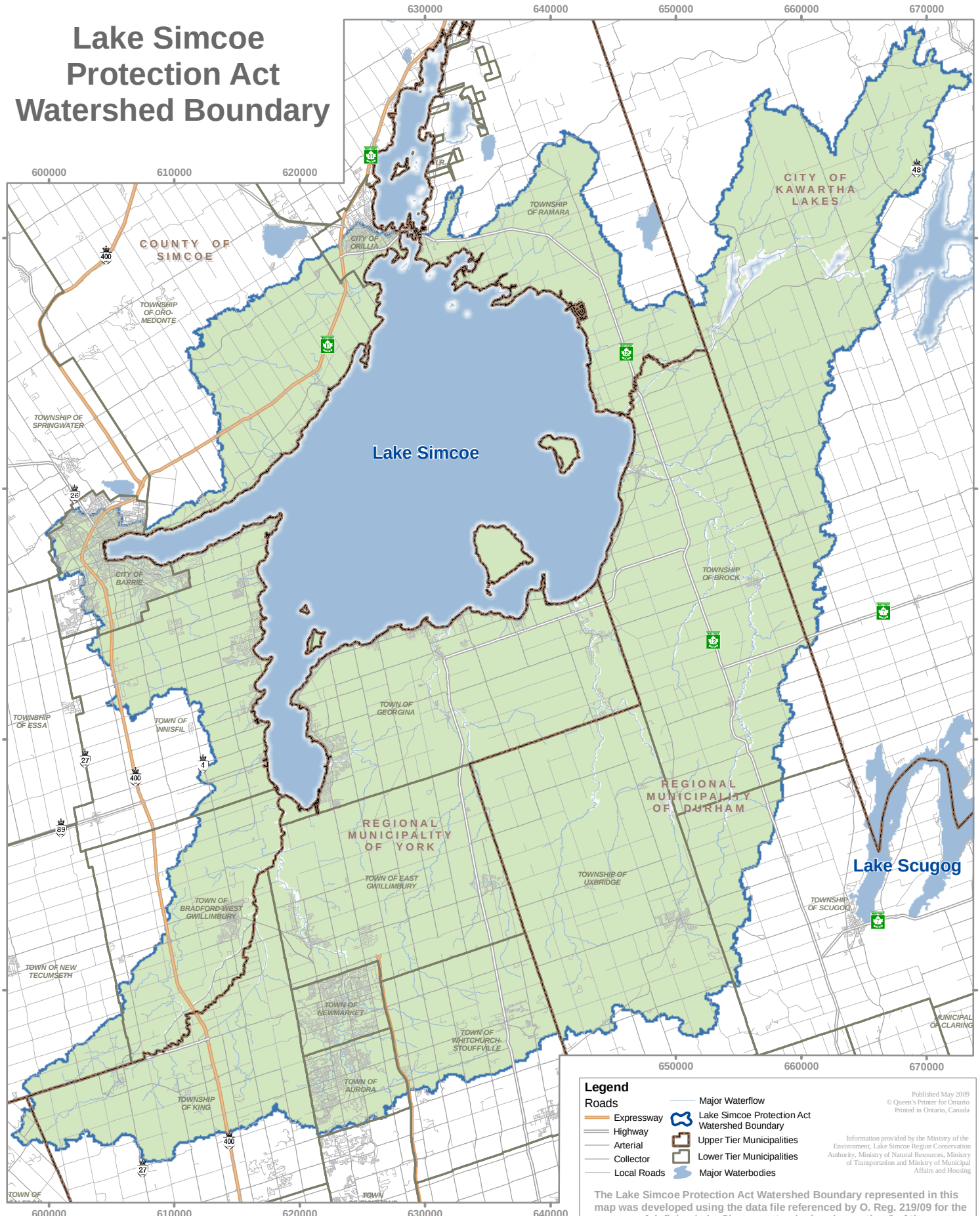
Schedule 1: Greenbelt Plan Area

Lake Simcoe Protection Act Watershed Boundary



Legend

Roads
- Expressway
- Highway
- Arterial
- Collector
- Local Roads

- Major Waterflow
- Lake Simcoe Protection Act Watershed Boundary
- Upper Tier Municipalities
- Lower Tier Municipalities
- Major Waterbodies

Published May 2009

Printed in Ontario, Canada

Information provided by the Ministry of the Environment, Lake Simcoe Region Conservation Authority, Ministry of Natural Resources, Ministry of Transportation and Ministry of Municipal Affairs and Housing

The Lake Simcoe Protection Act Watershed Boundary represented in this map was developed using the data file referenced by O. Reg. 219/09 for the purpose of defining Lake Simcoe watershed under section 2 of the Lake Simcoe Protection Act, 2008

Protecting our environment. Ontario

Projection:
Universal Transverse Mercator
Zone 17
False Easting: 500000m
False Northing: 0m
Central Meridian: -81
Scale Factor: 0.9996
Latitude of Origin: 0
1983 North American Datum

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APPENDIX B

Data Layer Information

Table B1: GIS Data Layer Information for the Marsh Hill Solar Farm

Title of Data Set	Data Layers	Vintage of Data or Date Info/Searched/Collected	Ownership of Information	Project Site
300mProjectLocation.shp	300 m Site Setback on project location	2011	Dillon	Solray Marsh Hill
120mProjectLocation.shp	120 m Site Setback on project location	2011	Dillon	Solray Marsh Hill
ProjectLocation.shp	Project Location	2011	Dillon	Solray Marsh Hill
120mNaturalFeatureSetback.shp	120 m Setback on Natural Features	2011	Dillon	Solray Marsh Hill
30 mNaturalFeatureSetback.shp	30 m Setback on Natural Features	2011	Dillon	Solray Marsh Hill
Roads.shp	Hwy/Local/Secondary/Primary Roads	2011	DMTI Spatial	Solray Marsh Hill
MajorCities.shp	Major Cities Within Ontario	2008	ESRI	Solray Marsh Hill
Province-Cut-out.shp	Province of Ontario Shapefile	2008	ESRI	Solray Marsh Hill
Basemap	Satellite Imagery of Project Location	2011	ESRI	Solray Marsh Hill
UnevaluatedWetland.shp	Wetlands that are not Provincially significant	2010	MNR	Solray Marsh Hill
5mContours.shp	5m Contour Intervals	2010	MNR	Solray Marsh Hill
waterbody.shp	Lakes	2010	MNR	Solray Marsh Hill
Lots_Concessions.shp	Lot and Concessions	2010	MNR	Solray Marsh Hill
woodland.shp	Woodlands	2010	MNR	Solray Marsh Hill
UtilityLine.shp	Ontario Utility lines (gas/transmission)	2010	MNR	Solray Marsh Hill
welandu.shp	Provincially Significant Wetlands/Other Wetlands	2011	MNR	Solray Marsh Hill
nesting.shp	Nesting Locations	2011	MNR	Solray Marsh Hill
Spawnare.shp	Spawning Areas	2011	MNR	Solray Marsh Hill
aggextra.shp	Aggregate Extraction Area	2011	MNR	Solray Marsh Hill
ansi.shp	Earth, Life Science ANSI's and Candidate ANSI's	2011	MNR	Solray Marsh Hill
wintering.shp	Deer Wintering Areas	2011	MNR	Solray Marsh Hill
agreefor.shp	Forest Coverage	2011	MNR	Solray Marsh Hill
Watercourse.shp	Watercourse Features	2011	MNR	Solray Marsh Hill

APPENDIX C

Agency Consultation

Thank you!
Christie

Christie Cestra, M.Sc.
Dillon Consulting Ltd
235 Yorkland Boulevard Suite 800
Toronto, Ontario, M2J 4Y8
T - 416.229.4646 ext. 2384
C - 647.962.6357
CCestra@dillon.ca
www.dillon.ca

Please consider the environment before printing this email

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Solray Project Location.pdf
2656K

Sara Brockman <S.Brockman@lsrca.on.ca> **Thu, Jan 12, 2012 at 3:37 PM**
To: "Cestra, Christie" <ccestra@dillon.ca>

Hi Christie,

Thanks for the map.

I have attached our current regulation information for 725 Cragg Rd. See responses as follows to your inquiries in green:

- watercourse/drain classifications and thermal stream classifications – Our Fisheries Biologist confirmed the watercourses are headwaters to the Beaver River and have a thermal classification of cold water.
- regulation limits – See attachments.
- fish and benthic community information – Our Fisheries Biologist confirms that we have not undertaken any studies here.
- natural environment studies in and/or adjacent to the study area – Unknown.
- natural areas inventory – Unknown.
- floodplain mapping/high water levels for streams/lakes in the area – According to our current regulation mapping, there is no floodplain on the property.
- ground water recharge/discharge areas – According to our information this area does not fall within an ESA Hydrological area. The area falls within an Intake Protection Zone and Significant Recharge Area for Source Water Protection. Please contact Shelly Cuddy, Hydrogeologist, of our office at ext.281 for more information.
- regionally or locally significant/rare flora, fauna, vegetation communities – Unknown – Please contact the Ministry of Natural Resources.
- any additional natural environment data you may have for the indicated area – n/a.

I would recommend that you also contact Kawartha Conservation at (705) 328-2271 as part of the property also falls within their jurisdication.

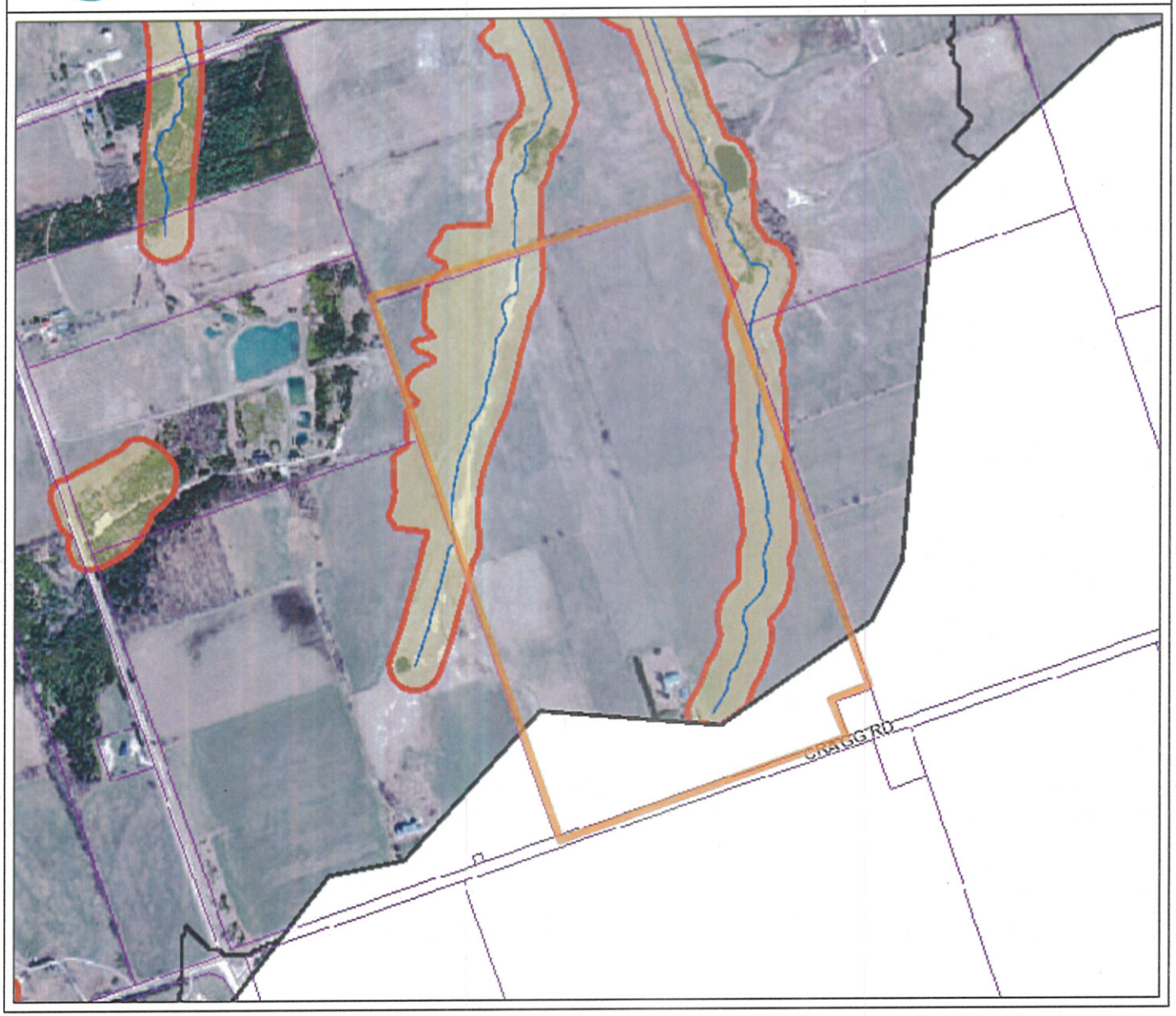
Should you have any questions regarding this e-mail, please do not hesitate to contact me.

Sara

Sara Brockman
Environmental Planning - Customer Service Representative
Lake Simcoe Region Conservation Authority
120 Bayview Parkway, Box 282, Newmarket, Ontario L3Y 4X1
905.895.1281 x229 |1.800.465.0437 | s.brockman@lsrca.on.ca | lsrca.on.ca

Lake Simcoe Region Conservation Authority

725 Cragg Rd, Scugog



Features

- Assessment Parcel
- LSRCA Political Watershed Mask
- Watercourse
- Regulation Boundary
- Regulation Area
- LSRCA Boundary
- Lake Couchiching
- Local Road

Printed On:
1/12/2012

Mapped By:

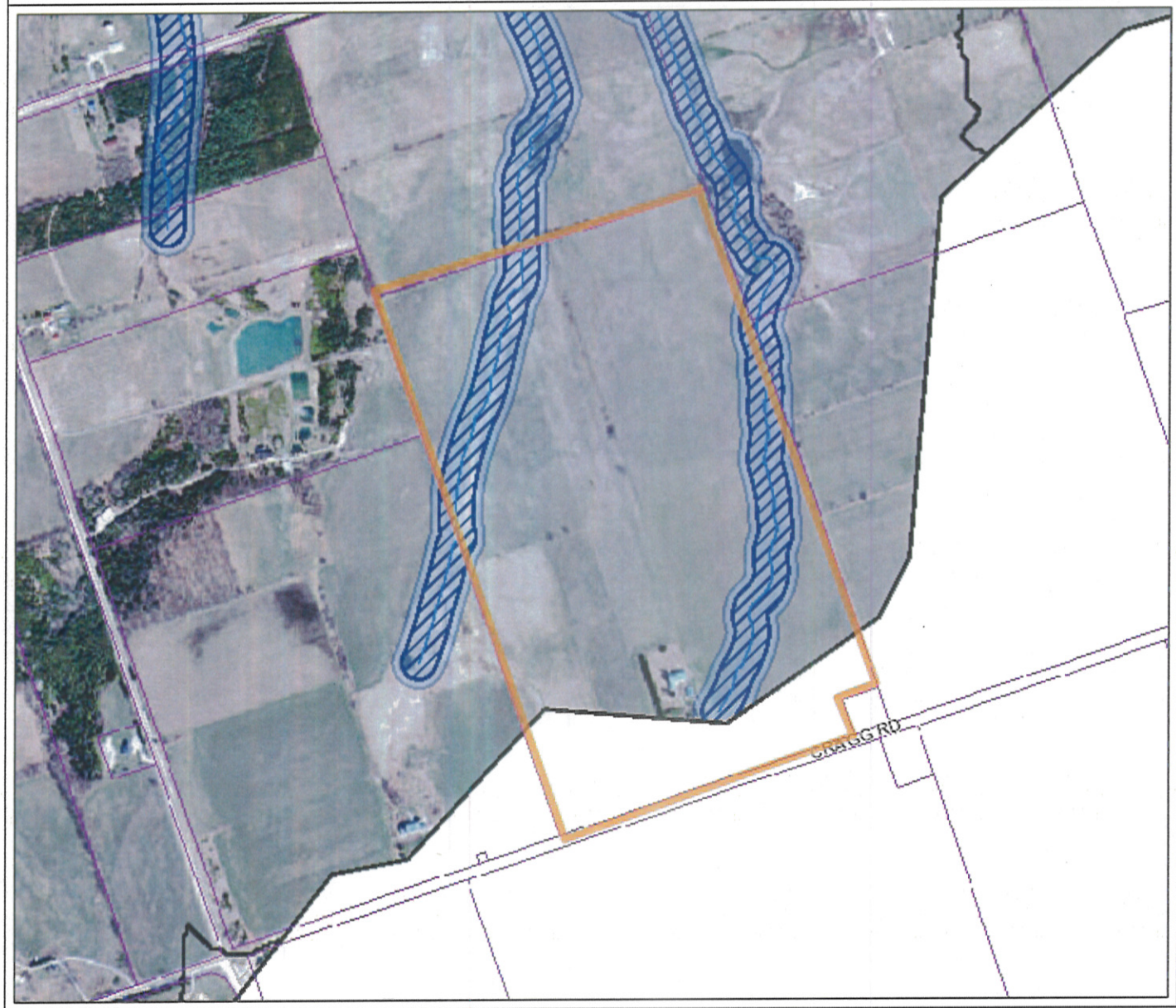
Scale 1: 10,319

Meters

524 0 262 524

Lake Simcoe Region Conservation Authority

725 Cragg Rd, Scugog



Scale 1: 10,319

524 0 262 524 Meters

Features

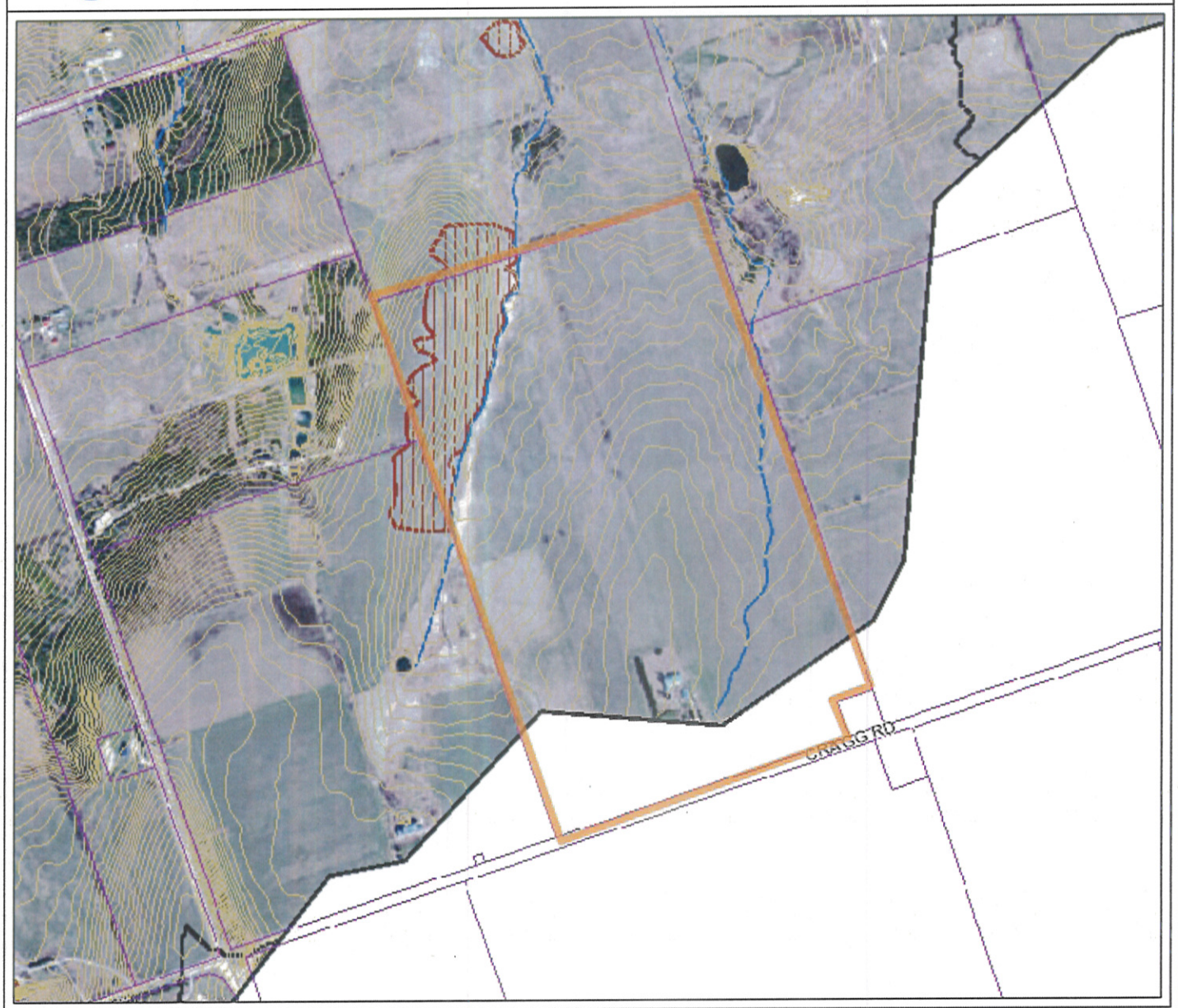
- Assessment Parcel
- LSRCA Political Watershed Mask
- Watercourse
- Meanderbelt
- Meanderbelt Setback
- LSRCA Boundary
- Lake Couchiching
- Local Road

Printed On:
1/12/2012

Mapped By:

Lake Simcoe Region Conservation Authority

725 Cragg Rd, Scugog



Features

- Assessment Parcel
- LSRCA Political Watershed Mask
- Current 1m Contours
- Watercourse
- Apparent Valleyland With Setback
- LSRCA Boundary
- Lake Couchiching
- Local Road

Printed On:
1/12/2012

Mapped By:

Scale 1: 10,319

Meters

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DILLON CONSULTING

Knezevich, Lindsay <lknezevich@dillon.ca>

Re: FW: Solray - No watercourse confirmation

1 message

Knezevich, Lindsay <lknezevich@dillon.ca> **Thu, Jan 26, 2012 at 2:43 PM**
To: Lindsay Knezevich <lknezevich@dillon.ca>

From: Beverley Booth [mailto:B.Booth@lsrca.on.ca]
Sent: Thursday, September 22, 2011 1:57 PM
To: Benson, Allen

Subject: RE: Solray - No watercourse confirmation

Allen:

In response to your e-mail, we have discovered instances when aerial photographs have indicated that watercourses existed in the past and are no longer there. Tilling practices appear to have removed this feature. Contour mapping, as well as the aerial photographs for the site support this.

The Regulation is text based – as a result, if the feature is not present (and I am satisfied based on the photographs which you have provided that there is no longer a watercourse along the eastern portion of the property) then the Regulation does not apply to that portion of the property.

Regards,

Bev

Error! Filename not specified.

Beverley G. Booth, MSc., MCIP, RPP
Manager, Planning, Regulations and Enforcement
Lake Simcoe Region Conservation Authority
120 Bayview Parkway, Box 282, Newmarket, Ontario L3Y 4X1
905.895.1281 x230 |1.800.465.0437 |b.booth@lsrca.on.ca| lsrca.on.ca

---

From: Benson, Allen [mailto:ABenson@dillon.ca]
Sent: Tuesday, September 20, 2011 2:43 PM
To: Beverley Booth
Cc: Charles Burgess
Subject: RE: Solray - No watercourse confirmation

Thanks Charles.

Hi Bev,

I would request that you please read through the email chain below and review the attachments and provide some feedback. I am generally free today if you have time to chat about this. Please feel free to call me at the office (if I'm not at my desk you can press "0" and have me paged).

Thank you,

Al Benson

Error! Filename not specified.

Allen Benson, B.Sc.(Hons), LEED AP
Biologist, Associate
Dillon Consulting Limited
T - 416.229.4647 ext. 2315
M - 416.843.5269
ABenson@dillon.ca
www.dillon.ca

From: Charles Burgess [mailto:C.Burgess@lsrca.on.ca]
Sent: Tuesday, September 20, 2011 2:38 PM
To: Benson, Allen
Cc: Beverley Booth
Subject: RE: Solray - No watercourse confirmation

H Al,

Bev is the contact for Scugog Twp. Here is her email address by copy of this email.

Error! Filename not specified.

Charles F. Burgess, MCIP, RPP
Senior Planning Coordinator
Lake Simcoe Region Conservation Authority
120 Bayview Parkway, Box 282, Newmarket, Ontario L3Y 4X1
905.895.1281 x299 |1.800.465.0437 | c.burgess@lsrca.on.ca | lsrca.on.ca

---

From: Benson, Allen [mailto:ABenson@dillon.ca]
Sent: Tuesday, September 20, 2011 10:55 AM
To: Charles Burgess
Subject: Solray - No watercourse confirmation

Hi Charles,

I was hoping that you could provide me with an update regarding my email below?

Thank you,

Al Benson

Error! Filename not specified.

Allen Benson, B.Sc.(Hons), LEED AP
Biologist, Associate
Dillon Consulting Limited
T - 416.229.4647 ext. 2315
M - 416.843.5269
ABenson@dillon.ca
www.dillon.ca

From: Benson, Allen
Sent: Monday, September 12, 2011 11:35 AM
To: 'c.burgess@lsrca.on.ca'
Cc: Myrans, Katharine
Subject: Solray - No watercourse confirmation

Hi Charles,

It was great to meet with you last week.

Further to my voicemail and our conversation, attached is the LSRCA regulation area mapping for the Park Property located at 725 Cragg Road (Part lot 8, Conc 7, Scugog township). I've also attached a Google Earth kmz file for quick reference. In addition, there are also site photos of the area where your mapping indicates a watercourse on the east side of the property which does not exist.

As we discussed, the watercourse indicated on the west side of the property is valid. However, there is no indication of any watercourse on the east side of the property. Please review the attached information and provide feedback. We are more than happy to facilitate a site meeting, if you wish. Please provide dates for a site meeting if needed.

If this is not your responsible area, please pass this email along to the appropriate person as you previously mentioned.

Thank you,

Al Benson

Error! Filename not specified.

Allen Benson, B.Sc.(Hons), LEED AP
Biologist, Associate
Dillon Consulting Limited
235 Yorkland Blvd, Suite 800
Toronto, Ontario, M2J 4Y8
T - 416.229.4647 ext. 2315
M - 416.843.5269
F - 416.229.4692
ABenson@dillon.ca
www.dillon.ca

APPENDIX D

Site Photographs

Photo 1 October 7, 2011 Cattail Marsh associated with MAMM1-3: Reed Canary Grass Graminoid Mineral Meadow Marsh in the western 300 m setback.	
Photo 2 October 7, 2011 Open aquatic within southern 300 m setback area associated with CVR_4: Rural Property.	

Photo 3 August 23, 2011 No evidence of Stream 1 channel or swale where mapping indicated within the eastern project location. Facing north.	
Photo 4 October 7, 2011 Reed Canary Grass Graminoid Mineral Meadow Marsh habitat encompassing Stream 2. Facing east.	

Photo 5 October 7, 2011 Stream 2 near northern extent of land parcel. Facing downstream.	
Photo 6 October 7, 2011 Small, heavily vegetated channel within Reed Canary Grass Graminoid Mineral Meadow Marsh characteristic of Stream 2. Facing upstream.	

Photo 7 October 7, 2011 Abundant vegetation consistent along Stream 2 within the project location setback. Facing upstream.	
Photo 8 October 7, 2011 Crossing along Stream 2 during high flow conditions. Facing west.	

Photo 9 August 23, 2011 Crossing along Stream 2 during dry conditions. Facing west.	
Photo 10 October 7, 2011 Standing water conveying low flow within depressed tire tracks along the northern extent of Stream 2 within the land parcel. Facing east.	

Photo 11 October 7, 2011 Annual row crops in the setback area. A mixed swamp community located beyond the project location and setback are to the north.	

APPENDIX E

Field Notes

DETAILED STREAM ASSESSMENT

DILLON CONSULTING

GENERAL INFORMATION

PROJECT #:	NAME OF PROJECT:	TIME STARTED:	TIME FINISHED:
11-4838	Solray Epsom	8:48am	9:11 am

COLLECTORS:	TRANSECT #:	DATE:
L. Knezevich	1	Oct. 7/11

WEATHER: Sun, no cloud ~1 BW

LOCATION

NAME OF WATERBODY:	GENERAL AREA OF PROJECT LOCATION:
Beaver River Trib	Epsom, Scugog Township

DISTANCE TO NEAREST PROJECT COMPONENT: N/A

GPS COORDINATES (UTM): 516

LAND USE AND POLLUTION

SURROUNDING LAND USE:	SOURCES OF POLLUTION:
Agriculture, meadow	agricultural runoff

EXISTING STRUCTURE TYPE (IF ANY)

Bridge ☐	Box Culvert ☐	Open Foot Culvert ☐	CSP ☐	N/A ☒

Other ☐ Describe:

Size (w x h) m^2

SECTION TYPE AND MORPHOLOGY

TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:
	☑	☑	☑	☐	☐	Pond downstream

HYDRAULIC HEAD (mm):

Run, Pool, Riffle, Flat?	Mean width wetted (m)	Mean width wetted (m)	Mean depth wetted (m)	Mean bankfull width (m)	Mean bankfull depth(m)	Substrate
Flat, Run	0.44m	—	0.06m	1.5m	0.5m	Bo, Co, Sa, D, Mu

Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D

BANK STABILITY

	Eroding Angle>45°, erodible soil, undercut or bare soil	Vulnerable Angle>45°, erodible soil, no sign of recent erosion	Protected Angle>45°, non-erodible material/soil	Deposition Zone Angle<45° (gradual slope), fine grained sediments
Left Upstream Bank	☐	☐	☒	☐
Right Upstream Bank	☐	☐	☒	☐

HABITAT

IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Woody Debris	Organic debris	Vascular Macrophytes	None
	—	5%	10%	5% Instream ↙ Overhanging —	5%	Instream — Overhanging 10%	65%

DETAILED STREAM ASSESSMENT

SHORE COVER (% stream shaded):	100 – 90 % ☐	90 – 60% ☐	60- 30% ☒	30 – 1% ☐	None ☐

VEGETATION TYPE (%):	Submergent	Floating	Emergent	None
Predominant Species	—	—	—	100%

MIGRATORY OBSTRUCTIONS:	None —	Seasonal/Temporary Lack of flow	Permanent Rock pile along fenceline -tire tracks u/s /crossing
POTENTIAL CRITICAL HABITAT LIMITING:	Spawning Lack of suitable substrate	Evidence of Groundwater None	Other —

RIPARIAN COMMUNITY

	Dominant Vegetation Type									
	Left Upstream Bank					Right Upstream Bank				
Riparian Zone	None	Cultivated	Meadow	Scrubland	Forest	None	Cultivated	Meadow	Scrubland	Forest
1.5-10 m	—	—	X	—	—	—	—	—	—	X
10-30 m	—	X	—	—	—	—	—	X	—	—
30+ m	—	X	—	—	—	—	—	X	—	—

PHOTOGRAPHIC RECORD:

UPSTREAM PHOTO #: 3014	LEFT UPSTREAM BANK PHOTO #: 3016
DOWNSTREAM PHOTO #: 3015	RIGHT UPSTREAM BANK PHOTO #: 3017
OTHER PHOTO #S: 3018-9 section overview	

COMMENTS, INCLUDING POTENTIAL ENHANCEMENT OPPORTUNITIES:

- tire tracks upstream would prevent any migration as well as large rock pile along the northern fenceline

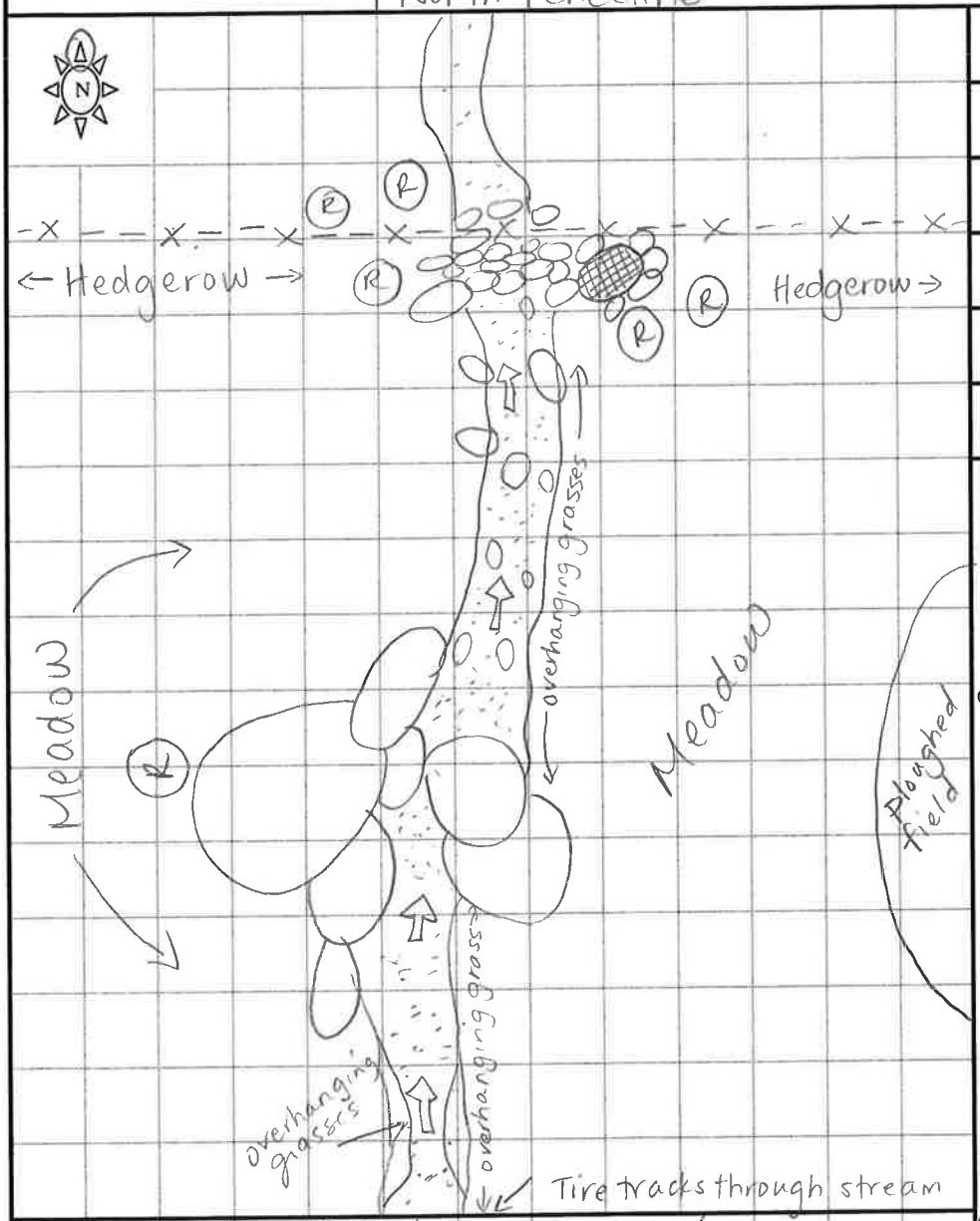
Additional Notes Appended? ☐ No ☒ Yes number of pages 1 DESCRIPTION Habitat map.

26.84 m spacing

HABITAT MAPPING

DILLON CONSULTING

TRANSECT #:	GENERAL TRANSECT LOCATION:	SCALE (cm / m):
1	North fenceline	1/0.4



PROJECT #:	11-4838
MAPPER:	L. Knezevich
NAME OF WATERBODY:	Beaver River Trib
TRANSECT #:	1
DATE: DD-MMM-YY	07-Oct-11
TIME STARTED/FINISHED:	8:50 / 9:11

LEGEND

10d depth (cm)
6w width

➡ Riffle
⇨ Run/Glide
⬭ Pool
▇ Island/Bar

▒ Fine Substrate
Gravel Substrate

oOooO Cobble /Boulder
*** * *** Debris

CT Cattail
SV/FV Submerg/Float Veg

EV Emergent Vegetation
W Watercress

Fe Iron Staining
/////// Eroded Bank

XXX Riprap / Other Stabilization

⊂⊃ Instream Log/Tree
^^^ Dam/Weir/Obstruction

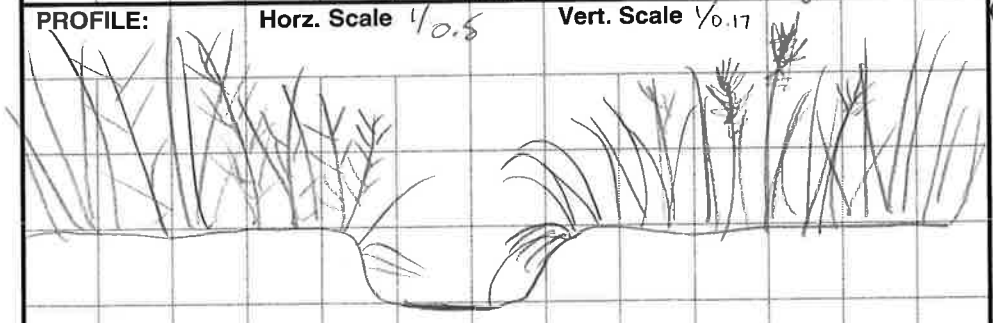
Ⓡ Riparian Tree

├► Seep/Spring
-------- Undercut Bank

— Barrier to Fish Movement
-S- Seasonal Barrier

-x--x- Fence line
└┘ Culvert

PROFILE: **Horz. Scale** 1/0.5 **Vert. Scale** 1/0.17



DETAILED STREAM ASSESSMENT

GENERAL INFORMATION

TRANSECT #:	TIME STARTED:	TIME FINISHED:
2	9:20 am	9:45 am

WEATHER: Sun, no cloud ~ 1 BW

LOCATION

GPS COORDINATES (UTM): 517 (side channel / wet area) 518 - flowing channel

SECTION TYPE AND MORPHOLOGY

TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:
	☒	☒	☐	☒	☐	Pond at dls end of trib

HYDRAULIC HEAD (mm): 0mm

Run, Pool, Riffle, Flat?	Mean width wetted (m)	Mean width wetted (m)	Mean depth wetted (m)	Mean bankfull width (m)	Mean bankfull depth(m)	Substrate
Run, Flat	0.20m	—	0.04m	0.70	0.30	Mu, D

Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D

BANK STABILITY

	Eroding Angle>45°, erodible soil, undercut or bare soil	Vulnerable Angle>45°, erodible soil, no sign of recent erosion	Protected Angle>45°, non-erodible material/soil	Deposition Zone Angle<45° (gradual slope), fine grained sediments
Left Upstream Bank	☐	☐	☒	☐
Right Upstream Bank	☐	☐	☒	☐

HABITAT

IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Woody Debris	Organic debris	Vascular Macrophytes	None
	—	—	—	Instream — Overhanging	15	Instream 20 Overhanging 30	35

SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60- 30%	30 – 1%	None
	☒	☐	☐	☐	☐

VEGETATION TYPE (%):	Submergent	Floating	Emergent	None
	—	—	100 %	—
Predominant Species	—	—	terrestrial grasses	

MIGRATORY OBSTRUCTIONS:	None	Seasonal/Temporary	Permanent
	—	Lack of flow	Lack of substrate

DETAILED STREAM ASSESSMENT

POTENTIAL CRITICAL HABITAT LIMITING:	Spawning - lack of substrate & flow	Evidence of Groundwater None	Other —

RIPARIAN COMMUNITY

	Dominant Vegetation Type									
	Left Upstream Bank					Right Upstream Bank				
Riparian Zone	None	Cultivated	Meadow	Scrubland	Forest	None	Cultivated	Meadow	Scrubland	Forest
1.5-10 m	—	—	—	—	X	—	—	X	—	—
10-30 m	—	X	—	—	—	—	—	X	—	—
30+ m	—	X	—	—	—	—	—	X	—	—

PHOTOGRAPHIC RECORD:

UPSTREAM PHOTO #: 3022	LEFT UPSTREAM BANK PHOTO #: 3024
DOWNSTREAM PHOTO #: 3023	RIGHT UPSTREAM BANK PHOTO #: 3025
OTHER PHOTO #S: 3021 - channel	

COMMENTS, INCLUDING POTENTIAL ENHANCEMENT OPPORTUNITIES:

- very thick vegetation / cover
- channel within wet - low lying area

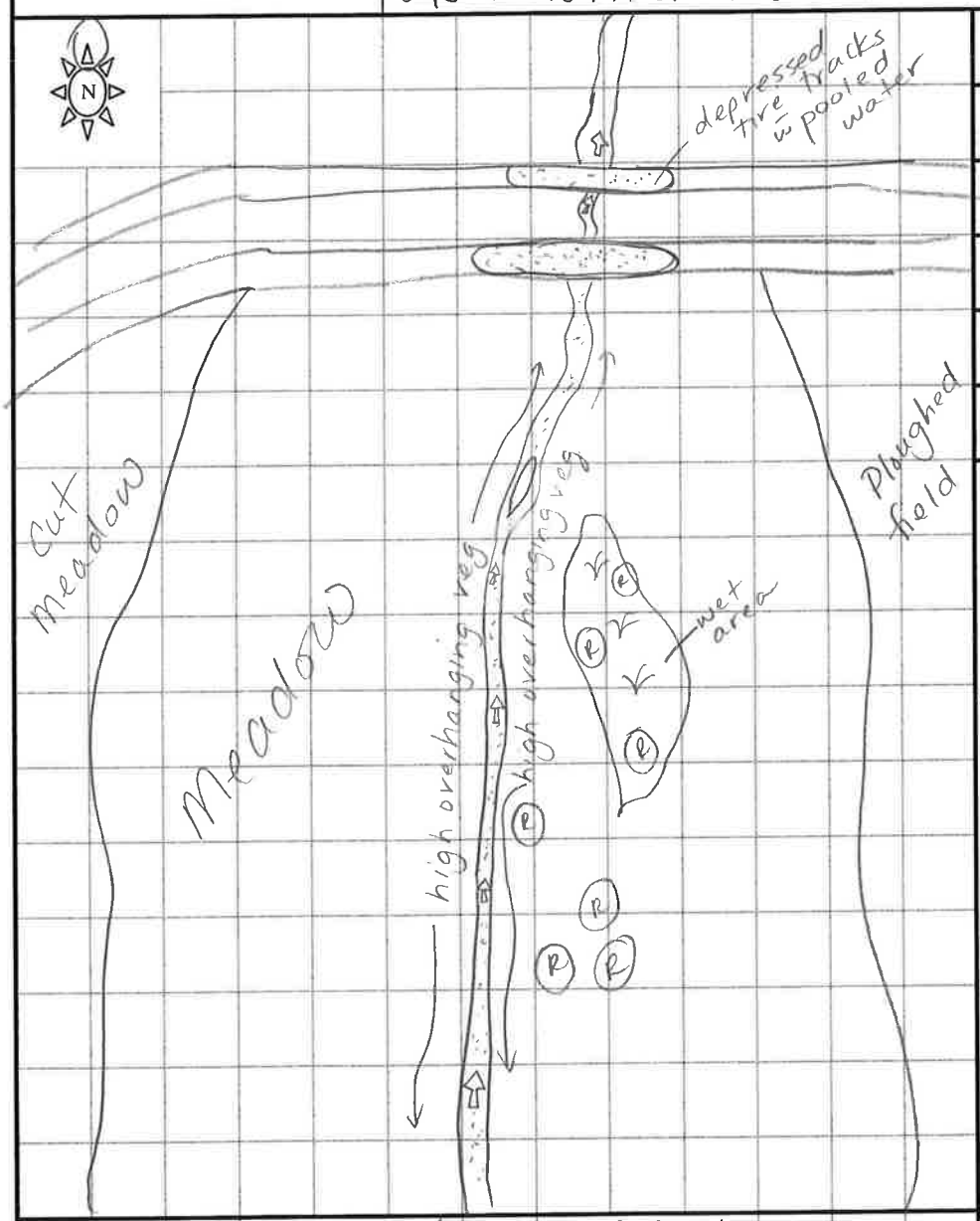
Additional Notes Appended? ☐ No ☒ Yes number 1 of pages habitat map

DESCRIPTION

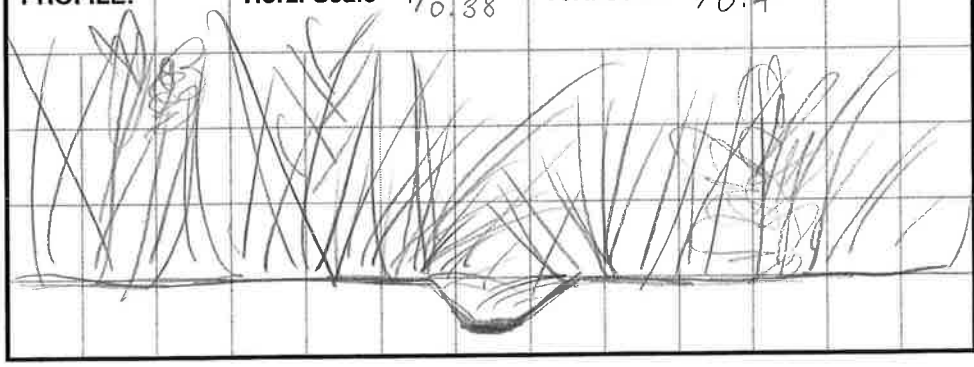
HABITAT MAPPING

DILLON CONSULTING

TRANSECT #:	GENERAL TRANSECT LOCATION:	SCALE (cm / m):
2	u/s 26.84m of Transect 1	1 / 1.2



PROFILE: Horz. Scale 1/0.38 Vert. Scale 1/0.4



PROJECT #:	11-4838
MAPPER:	L. Knezevich
NAME OF WATERBODY:	Beaver River Trib
TRANSECT #:	2
DATE: DD-MMM-YY	07-Oct-11
TIME STARTED/FINISHED:	9:20am / 9:45am

LEGEND

10d depth (cm)
6w width

➡ Riffle
⇨ Run/Glide
Pool
Island/Bar

Fine Substrate
Gravel Substrate

oOooO Cobble /Boulder
*** * *** Debris

CT Cattail
SV/FV Submerg/Float Veg

EV Emergent Vegetation
W Watercress

Fe Iron Staining
/////// Eroded Bank

XXX Riprap / Other Stabilization

Instream Log/Tree
^^^ Dam/Weir/Obstruction

® Riparian Tree

├► Seep/Spring
-------- Undercut Bank

— Barrier to Fish Movement
-S- Seasonal Barrier

-x--x- Fence line
Culvert

DETAILED STREAM ASSESSMENT

GENERAL INFORMATION

TRANSECT #:	TIME STARTED:	TIME FINISHED:
3	9.50 am	10.06 am

WEATHER: Sun, no cloud BW-1

LOCATION

GPS COORDINATES (UTM): 519

SECTION TYPE AND MORPHOLOGY

TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:
	☑	☒	☐	☒	☐	Within willow thicket/ Wetland

HYDRAULIC HEAD (mm): 0mm

Run, Pool, Riffle, Flat?	Mean width wetted (m)	Mean width wetted (m)	Mean depth wetted (m)	Mean bankfull width (m)	Mean bankfull depth(m)	Substrate
Flat, Run	0.5m	—	0.04m	12m	0.5m	Mu, D

Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D

BANK STABILITY

	Eroding Angle>45°, erodible soil, undercut or bare soil	Vulnerable Angle>45°, erodible soil, no sign of recent erosion	Protected Angle>45°, non-erodible material/soil	Deposition Zone Angle<45° (gradual slope), fine grained sediments
Left Upstream Bank	☐	☐	☒	☐
Right Upstream Bank	☐	☐	☒	☐

HABITAT

IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Woody Debris	Organic debris	Vascular Macrophytes	None
	—	—	—	Instream — Overhanging —	10	Instream 30 Overhanging 30	30

SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60- 30%	30 – 1%	None
	☐	☒	☐	☐	☐

VEGETATION TYPE (%):	Submergent	Floating	Emergent	None
	—	—	100	—
Predominant Species	—	—	Grasses, shrubs (Terrestrial)	

MIGRATORY OBSTRUCTIONS:	None	Seasonal/Temporary	Permanent
	—	Vegetation density	—

DETAILED STREAM ASSESSMENT

POTENTIAL CRITICAL HABITAT LIMITING:	Spawning: Lack of flow, lack of substrate	Evidence of Groundwater: None	Other: —

RIPARIAN COMMUNITY

	Dominant Vegetation Type									
	Left Upstream Bank					Right Upstream Bank				
Riparian Zone	None	Cultivated	Meadow	Scrubland	Forest	None	Cultivated	Meadow	Scrubland	Forest
1.5-10 m	—	—	—	—	X	—	—	X	—	—
10-30 m	—	X	—	—	—	—	—	X	—	—
30+ m	—	X	—	—	—	—	—	X	—	—

PHOTOGRAPHIC RECORD:

UPSTREAM PHOTO #: 3026	LEFT UPSTREAM BANK PHOTO #: 3028
DOWNSTREAM PHOTO #: 3027	RIGHT UPSTREAM BANK PHOTO #: 3029
OTHER PHOTO #S: 3030 - transect	

COMMENTS, INCLUDING POTENTIAL ENHANCEMENT OPPORTUNITIES:

- pooled area, low flow
- dense vegetation, channel formed within roots, willow thicket

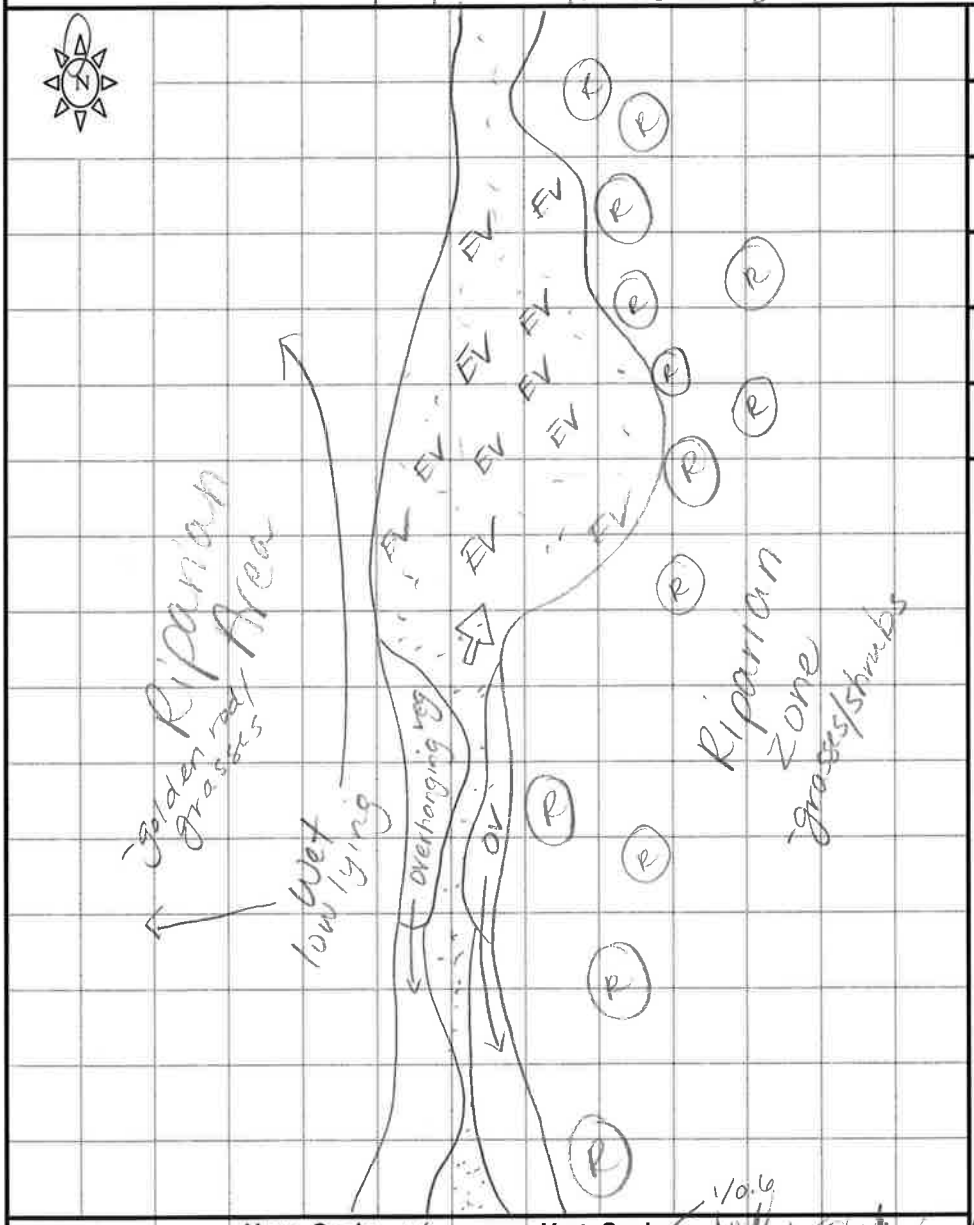
Additional Notes Appended? ☐ No ☑ Yes number / of pages —

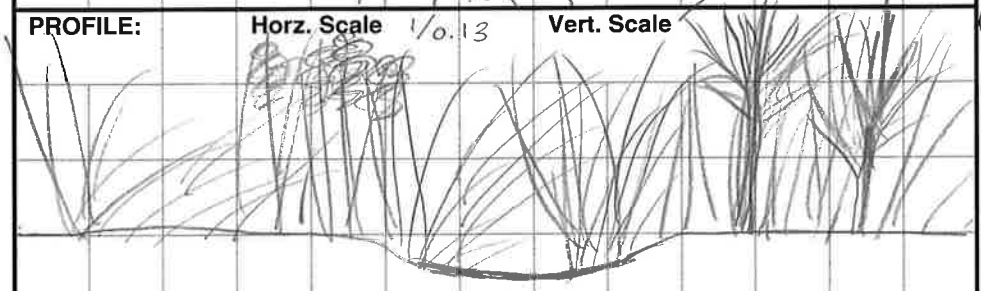
DESCRIPTION Habitat map

HABITAT MAPPING

DILLON CONSULTING

TRANSECT #:	GENERAL TRANSECT LOCATION:	SCALE (cm / m):
3	u/s of Transect 2	1 / 0.33





PROJECT #: 11-4838

MAPPER: L. Knezevich

NAME OF WATERBODY: Beaver River Trib.

TRANSECT #: 3

DATE: DD-MMM-YY 07-Oct-11

TIME STARTED/FINISHED: 9:50am / 10:06am

LEGEND

10d depth (cm)
6w width

➡ Riffle
⇨ Run/Glide
⬭ Pool
▮ Island/Bar

▒ Fine Substrate
Gravel Substrate

oOooO Cobble /Boulder
*** * *** Debris

CT Cattail
SV/FV Submerg/Float Veg

EV Emergent Vegetation
W Watercress

Fe Iron Staining
/////// Eroded Bank

XXX Riprap / Other Stabilization

⊂⊃ Instream Log/Tree
^^^ Dam/Weir/Obstruction

® Riparian Tree

├► Seep/Spring
-------- Undercut Bank

— Barrier to Fish Movement
-S- Seasonal Barrier

-x--x- Fence line
└┘ Culvert

DETAILED STREAM ASSESSMENT

GENERAL INFORMATION

TRANSECT #:	TIME STARTED:	TIME FINISHED:
4	10:15am	10:35am

WEATHER: Sun, no cloud BWm 1

LOCATION

GPS COORDINATES (UTM): 520

SECTION TYPE AND MORPHOLOGY

TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:
	☐	☒	☐	☒	☐	Cattail Marsh

HYDRAULIC HEAD (mm): 0mm

n 40m wide within wetland

Run, Pool, Riffle, Flat?	Mean width wetted (m)	Mean width wetted (m)	Mean depth wetted (m)	Mean bankfull width (m)	Mean bankfull depth(m)	Substrate
← No	distinct	single	channel	to measure		→

Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D

BANK STABILITY

	Eroding Angle>45°, erodible soil, undercut or bare soil	Vulnerable Angle>45°, erodible soil, no sign of recent erosion	Protected Angle>45°, non-erodible material/soil	Deposition Zone Angle<45° (gradual slope), fine grained sediments
Left Upstream Bank	☐	☐	☒	☐
Right Upstream Bank	☐	☐	☒	☐

HABITAT

IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Woody Debris	Organic debris	Vascular Macrophytes	None
	—			Instream / Overhanging: /	/	Instream 100 / Overhanging	-

SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60- 30%	30 – 1%	None
	☒	☐	☐	☐	☐

VEGETATION TYPE (%):	Submergent	Floating	Emergent	None
	/	/	100	/
Predominant Species			cattails, grasses	

MIGRATORY OBSTRUCTIONS:	None	Seasonal/Temporary	Permanent
	dense vegetation	flow	Lack of channel through wetland

DETAILED STREAM ASSESSMENT

POTENTIAL CRITICAL HABITAT LIMITING:	Spawning	Evidence of Groundwater	Other
	lack of channel, flow + substrate	None	—

RIPARIAN COMMUNITY

	Dominant Vegetation Type									
	Left Upstream Bank					Right Upstream Bank				
Riparian Zone	None	Cultivated	Meadow	Scrubland	Forest	None	Cultivated	Meadow	Scrubland	Forest
1.5-10 m	—	X	—	—	—	—	—	X	—	—
10-30 m	—	X	—	—	—	—	—	X	—	—
30+ m	—	X	—	—	—	—	—	X	—	—

PHOTOGRAPHIC RECORD:

UPSTREAM PHOTO #: /	LEFT UPSTREAM BANK PHOTO #:
DOWNSTREAM PHOTO #: /	RIGHT UPSTREAM BANK PHOTO #: /
OTHER PHOTO #S: 3031 - 3037, 3038 (from hill)	

COMMENTS, INCLUDING POTENTIAL ENHANCEMENT OPPORTUNITIES:

Cattail Marsh
- depressed channels within, few w water, and ones w water mainly stagnant

- riparian meadow/goldenrod
- very dense grass, hard to find channels
- low lying wet area all around

Additional Notes Appended? ☒ No ☐ Yes number of pages —
DESCRIPTION

SOLRAY

July 2012

WATER BODY REPORT

Marsh Hill Solar Farm

DILLON CONSULTING

TABLE OF CONTENTS

Page

LIST OF FIGURES

LIST OF TABLES

1.0 INTRODUCTION

Solray Energy Corporation (Solray) proposes to develop a solar facility with a maximum name plate capacity of 10 MW, located near Uxbridge in the Township of Scugog and Regional Municipality of Durham, Ontario. The renewable energy facility will be known as the Marsh Hill Solar Farm, (hereinafter referred to as the "project") and will be rated as a Class 3 Solar Facility. Solray has received a contract from the Ontario Power Authority (OPA) for the sale of electricity generated by this renewable facility through the province's Feed-in-Tariff (FIT) program (enabled by the *Green Energy and Green Economy Act, 2009*). The project will require a Renewable Energy Approval (REA) as per *Ontario Regulation 359/09* under Part V.0.1 of the *Ontario Environmental Protection Act*.

This *Water Body Report* is being is being submitted to the Ontario Ministry of the Environment (MOE) as per *Ontario Regulation 359/09* as part of a complete REA application. This report was made available in draft form for public review and comments prior to this final REA submission. Other reports included in the REA submission package include:

- *Project Description Report*
- *Construction Plan Report*
- *Design and Operations Report*
- *Decommissioning Plan Report*
- *Noise Study Report*
- *Natural Heritage Assessment (4 reports)*
- *Water Assessment (2 reports)*
- *Archaeological Assessments*
- *Cultural Heritage Screening/Self Assessment*
- *Consultation Report*
- *Supporting Documents*

Ontario Regulation 359/09 requires that all renewable energy projects prepare a report which addresses potential negative effects to water bodies that have been identified within 120 metres of the project location through the *Water Assessment Report* (REA Sections 39 and 40). This *Water Body Report* was completed to address these regulatory requirements for the REA process and is the second and final report in a two-part series that fulfills the requirements of the water body reporting required by *Ontario Regulation 359/09*. The reports (*Water Assessment Report* and *Water Body Report*) will be submitted to the Ontario MOE for review and comment as required in *Ontario Regulation 359/09*.

2.0 THE PROPONENT

Solray is a developer of utility-scale solar energy projects in Ontario, with two projects moving towards construction and nine projects in early-stage development. Solray endeavours to work closely with all interested stakeholders in their projects including landowners, Aboriginal communities, the general public, municipalities, government agencies and ministries. Solray's main objective is to design, construct and operate projects that are both environmentally beneficial and financially viable.

Contact information for the proponent is as follows:

Full Name of Company:	*Solray Energy Corporation*	
Prime Contacts:	*Andy Keith,* *President*	*Michael Jordan Halbert,* *Chairman and CEO*
Address:	*2788 Bathurst St., Suite 305* *Toronto, Ontario, M6B 3A3*	*2788 Bathurst St., Suite 305* *Toronto, Ontario, M6B 3A3*
Telephone:	*(416) 910-6580*	*(416) 780-8000*
Fax:	*(416) 780-8001*	*(416) 780-8001*
Email:	*andy@solray.ca*	*mjh@solray.ca*

Dillon Consulting Limited (Dillon) is the consultant responsible for the preparation of REA-related reports and for consultation activities for the Marsh Hill Solar Farm. The contacts at Dillon are:

Full Name of Company:	*Dillon Consulting Limited*	
Prime Contact:	*Mario Buszynski,* *Project Manager*	*Katharine Myrans,* *REA Project Coordinator*
Address:	*235 Yorkland Blvd., Suite 800* *Toronto, Ontario, M2J 4Y8*	*235 Yorkland Blvd., Suite 800* *Toronto, Ontario, M2J 4Y8*
Telephone:	*(416) 229-4646 ext. 2365*	*(416) 229-4646 ext. 2381*
Fax:	*(416) 229-4692*	*(416) 229-4692*
Email:	*MBuszynski@Dillon.ca*	*KMyrans@Dillon.ca*

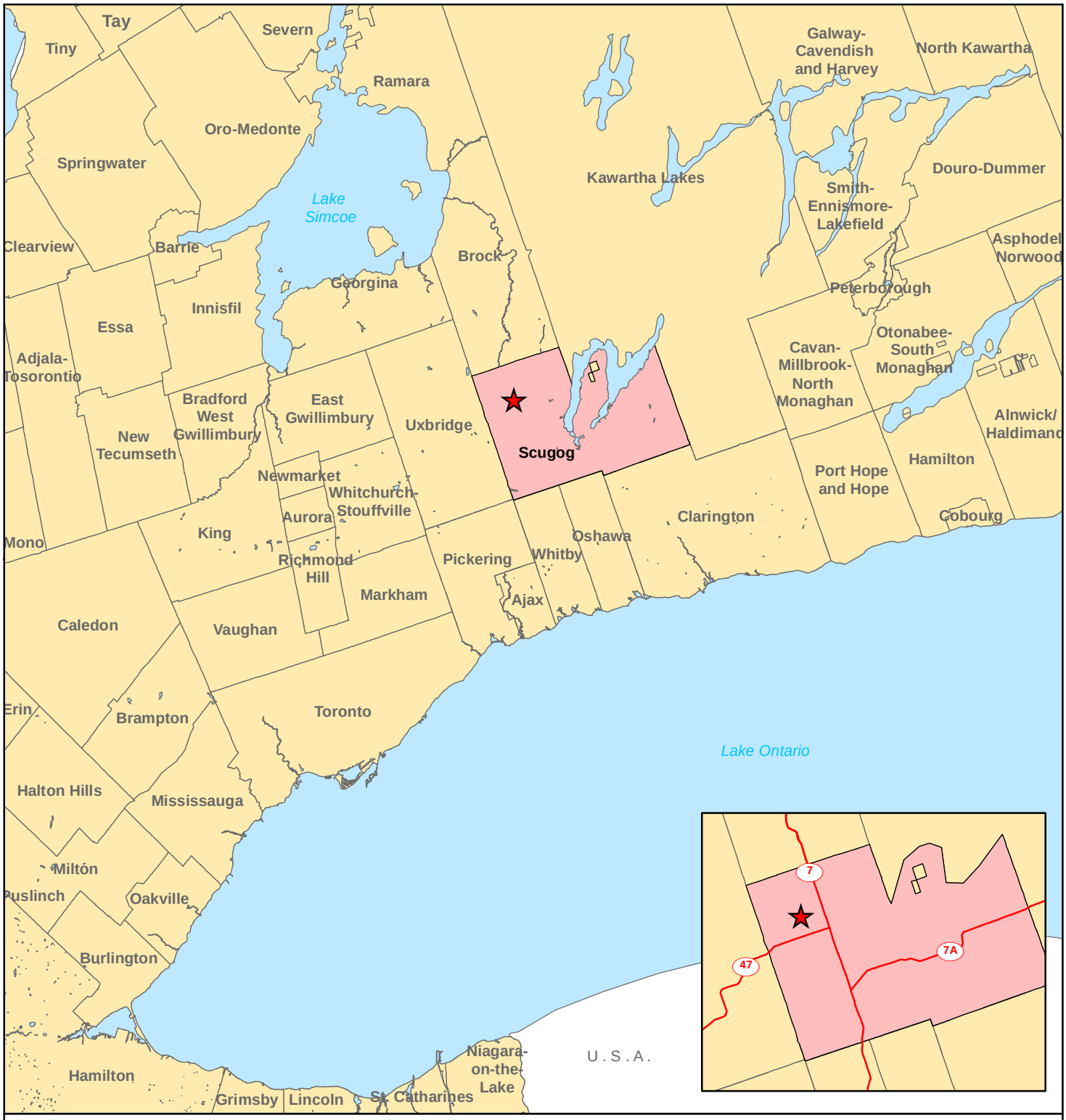
3.0 PROJECT LOCATION

The proposed Class 3 Solar Facility is located at 725 Cragg Road, Uxbridge, Ontario between Marsh Hill Road and Highway 7 within the Township of Scugog. **Figure 1** shows the general location of the project in Southern Ontario. The project location covers part of Lot 8, Concession 11, and consists of approximately 36.1 hectares of privately owned land (leased by the proponent), with geographic coordinates (centroids) as follows:

- Latitude: 44° 8' 59.78" N
- Longitude: 79° 2' 58.05" W

"Project Location" is defined in *Ontario Regulation 359/09* to be "a part of land and all or part of any building or structure in, on or over which a person is engaging in or proposes to engage in the project". Thus, **Figure 2** shows the project location, as defined in *Ontario Regulation 359/09*, to be the outer boundary (as identified by the perimeter fence and access road) within which all project components are located. The figure identifies these components as well as lands within 120 metres and 300 metres of the project location. **Figure 3** is a summary of the results of the analysis and determinations made in the *Water Assessment Report*.

The planned solar facility will occur entirely within lands currently zoned as 'Rural' by the Township of Scugog and designated as 'Agricultural' by the Region of Durham. In addition, the project location falls entirely within the Greenbelt Area Protected Countryside and almost entirely within the Lake Simcoe Protection Plan Area.



SOLRAY

Marsh Hill Solar Farm

Figure 1: General Location of the Marsh Hill Solar Farm in Southern Ontario

Legend

- Project Location
- Highway
- Township of Scugog
- Municipalities

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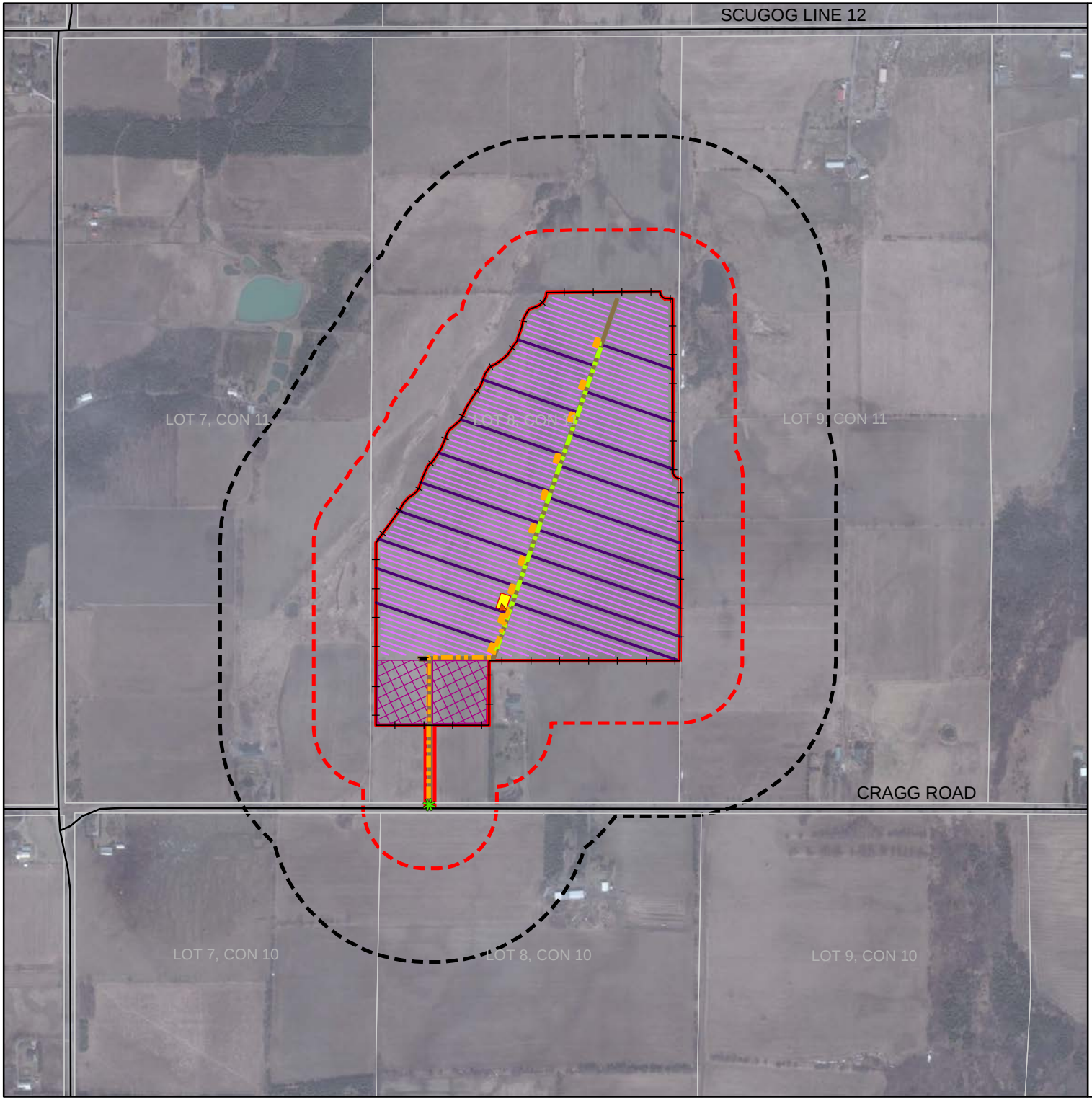

SOLRAY

Marsh Hill Solar Farm

Figure 2: Project Location

Legend

- Communication Tower
- Site Entrance
- Roads
- Fence
- Solar Panel
- 0.5 MW Boundaries Section
- Underground Cable
- Overhead Line
- Project Location
- 120 m Project Location Setback
- 300 m Project Location Setback
- Lots/Concessions
- Access Roads
- Laydown Area (Temporary)
- Inverter
- Substation
- Permanent Parking

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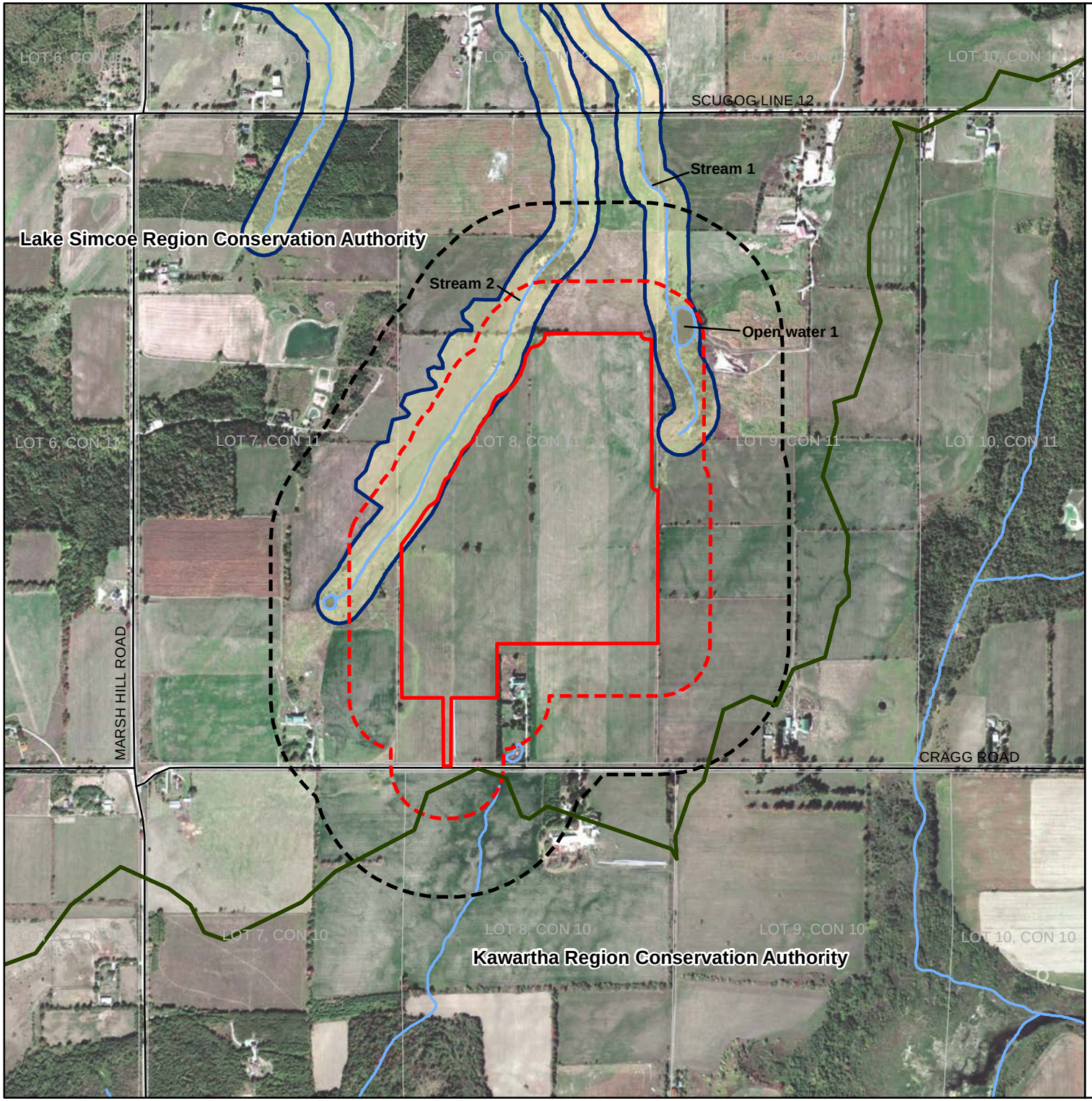

SOLRAY

Marsh Hill Solar Farm

Figure 3: Water Assessment

Legend

- Roads
- Watercourse
- Conservation Authority Boundary Line
- Project Location
- 120 m Project Location Setback
- 300 m Project Location Setback
- Lots/Concessions
- LSRCA Regulation Boundary

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4.0 PROJECT SUMMARY

A site investigation was completed according to Section 31 of *Ontario Regulation 359/09*, the results of which are shown on **Figure 3**. This work was preceded by a records review as per Section 30 of *Ontario Regulation 359/09*. A summary of the water bodies within 120 metres of the project location, detailed in the previous *Water Assessment Report*, is outlined in **Table 1.**

Table 1: Summary of the Water Assessment

Water Body ID	Does the project location overlap a water body?	Is the project location within 120 m of the water body?	Distance to nearest project components	Project Components within 120 m of the water body	Potential Effects Evaluation required?
Lakes					
Open Water 1	No	Yes	46.6 m	Fence, Solar Panels and Racks	Yes
Lake Trout Lakes					
None identified within the project location or adjacent lands within 120 metres					
Permanent and/or Intermittent Streams					
Stream 1	No	Yes	58.0 m	Fence, Solar Panels and Racks	Yes
Stream 2	No	Yes	33.5 m	Fence, Solar Panels and Racks	Yes
Seepage Areas					
None identified within the project location or adjacent lands within 120 metres					

5.0 ENVIRONMENTAL IMPACT STUDY PURPOSE

This *Water Body Report* was completed in accordance with Section 40 (*Ontario Regulation 359/09*) and MOE guidelines so that project components may be constructed and installed within 120 metres of the [average] high water mark of a water body. This report is consistent with Section 40 of *Ontario Regulation 359/09*, which details that a *Water Body Report* must include the following:

- Identification and assessment of any potential negative environmental effects of the project on a water body and on land within 30 metres of the water body;
- Identification of mitigation measures in respect of any potential negative environmental effects;
- Description of how the environmental effects mitigation and monitoring plan in the *Design and Operations Report* addresses any potential negative environmental effects; and
- Description of how the *Construction Plan Report* addresses any potential negative environmental effects.

The focus of this *Water Body Report* is to fulfill the requirements of Section 40 for the water body reporting identified in **Table 1** that meets the definition of "water body" under *Ontario Regulation 359/09* and are within 120 metres of the project location.

6.0 RATIONALE FOR DEVELOPMENT WITHIN A WATER BODY OR SETBACK

The location of the Marsh Hill Solar Farm has been subject of field investigations and a thorough review of constraints to development was undertaken prior to delineating the project location. Based on the water bodies information collected, the project location was refined to avoid impacts to water bodies, where possible. Although the project location extends into the 120 metre setback of water bodies, the layout of the solar project has been developed to minimize its footprint and prioritized the protection of water bodies. The project has been developed to retain the ecological form and function of all water bodies identified and mitigates any potential effects that may occur. The layout of the project as shown on **Figure 2** will allow for the persistence of water bodies after this project is constructed and operational.

7.0 ACCESS TO ADJACENT LANDS

As outlined in *Ontario Regulation 359/09*, all lands within 120 metres of a project component are required to be assessed for water bodies. In the case of the Marsh Hill Solar Farm, access to all of the natural features located within 120 metres of the project location was not granted by the landowners of these properties (records are provided in the *Natural Heritage Assessment* package). Water bodies located on adjacent lands where access was not available were assessed from property lines and road rights-of-way, where applicable. This alternative site investigation was conducted in accordance with the amendments made to *Ontario Regulation 359/09* on January 1, 2011.

8.0 PROJECT ACTIVITIES

The following subsections outline the project activities during the construction, operation and decommissioning phases. **Table 2** outlines the construction schedule and expected operational date for this project based on Solray's FIT contract with the OPA.

Table 2: Project Construction Schedule

Construction Activity	Approximate Timeline (2012-2013)	Anticipated Duration
Survey and staking of project location	April 29, 2013- May 12, 2013	2 weeks
Installation of perimeter fence and security lighting	May 13, 2013- May 26, 2013	2 weeks
Drainage and erosion control	May 13, 2013- May 26, 2013	2 weeks
Clearing, ground leveling, compacting and grading	May 13, 2013- May 26, 2013	2 weeks
Power and communications	May 13, 2013- June 9, 2013	4 weeks
Construction of access roads	May 13, 2013 – May 19, 2013	1 week
Laydown/construction staging areas and temporary facilities	May 27, 2013- June 23, 2013	4 weeks
Preparation of substation and inverter unit foundations	June 17, 2013- July 28, 2013	6 weeks
Installation of support foundations, racks and solar PV modules	June 17, 2013- September 22, 2013	14 weeks
Installation of electrical collection system, wiring, substation and components	July 29, 2013- October 6, 2013	10 weeks
Connection to the provincial grid	September 2, 2013- September 22, 2013	3 weeks
Remediation and clean-up of work areas	September 23, 2013- October 6, 2013	2 weeks
Site landscaping and vegetation	September 23, 2013- October 20, 2013	4 weeks
Facility Testing	November 1, 2013	1-2 days
Facility Operation	February 25, 2014	ongoing

8.1 Construction Activities

The following activities associated with construction of the solar facility will take between 5 to 8 months and are scheduled to begin in the spring of 2013. They will occur in the relative order in which they are presented in **Table 3**. Pre-construction activities that are currently underway on the ground at the project location include: topographic surveys, geotechnical studies, archaeological and cultural heritage assessments, natural heritage studies, grading and stormwater studies and a phase one environmental site assessment.

Table 3: Construction Activities

Activity	Description
Survey and staking of project location	At the beginning of the construction phase, the site will be surveyed and staked to delineate the perimeter and areas for fencing, access roads, excavations and foundation locations. Areas to be avoided will be fenced and/or flagged and evaded.
Installation of perimeter fence and security lighting	Perimeter fences will be installed to delineate the construction area, protect the public during construction activities, and prevent theft or vandalism. A steel chain link fence of approximately 2.7 metre height with 3-strand barbed wire on top will be installed around the perimeter of the project location with a gate either at the access road entrance on Cragg Road or where the access road intersects the temporary construction laydown area. The fence posts will typically be spaced 2.5 metres apart. The installation will require the use of skid steer and auger. For security and maintenance purposes, shielded and/or motion-sensored, task-specific lighting will be installed at the construction staging areas, substation and possibly on or near each inverter unit.
Drainage and erosion control	Before any vegetation removal, clearing or grading occurs, appropriate sediment and erosion control measures will be installed. This could include the use of hay bales and silt fence barriers. The control measures will remain installed throughout the construction period and will be routinely inspected by the contractor. Ditches and swales will be shaped and re-vegetated as necessary for storm water management and erosion and sediment control. Specific details regarding surface drainage and any construction requirements will be established as part of an overall Stormwater Management and Drainage Plan.

Activity	Description
Clearing, ground leveling, compacting and grading	The project location will be minimally graded to facilitate construction activities as per the Grading Plan and will maintain the general drainage patters of the site as much as possible. Graders, bulldozers, scrapers, soil compactors, dump trucks, wheel loaders and backhoes may be used to prepare the site. Negligible clearing of vegetation will be required based on the results of the *Natural Heritage Assessment*. Major excavation works or fill placement are not anticipated for the project. The primary excavation work will be limited to soil removal for foundations, access roads and digging trenches to run underground electrical cables. Topsoil removed from the permanent access road will be feathered out on lands adjacent to the access road. Any excess topsoil will be spread evenly over graded land. Stockpiled topsoil will be covered in order to minimize erosion from wind and precipitation.
Construction of access roads	A main access road will be needed for construction vehicles and equipment transport. It will also provide long term access to the site for on-going maintenance requirements. This access road will be off of Cragg Road, which is a local municipal road. Culverts will be installed across the ditch to the public roadway if necessary. The main access road will be about 10.0 metres wide (5 metre road with 2.5 metre shoulders), with filter fabric beneath a granular 'B' base and finished surface of granular 'A' material. The total recommended thickness is 500 to 600 mm. The subgrade will be free of depressions and sloped (at a minimum grade of 2%) to provide effective drainage. The subgrade will be proofrolled with heavy rollers to locate any loose or disturbed areas. Should weak areas or other incompatible material be detected during proofrolling, further excavation and subsequent backfill with approved native deposits (moisture content within 3 percent of optimum moisture content) may be required. The replacement granular materials will be compacted to at least 95 percent SPMDD. No materials will be removed from the site. In addition to the main access road, several internal roads will be developed to provide access for construction and maintenance purposes. Row to row rack spacing will be large enough such that service vehicles can access modules and wiring for maintenance. The location of any internal access roads and their nature may change but it is expected that the majority will remain as permanent roads to provide access for maintenance during operation. Where roads are deemed necessary only for construction, the area will be rehabilitated prior to facility operation. It is expected that these roads will be packed dirt during construction and vegetated during operations.

Activity	Description
	In addition to constructing roads, a small gravel area (approximately 122.9 square metres) will be constructed north of the temporary construction area and east of the main access road. It will be used during operations for to permanent parking of maintenance vehicles and for storage of maintenance materials during the operational phase of the facility. Water will be trucked in and sprayed as necessary for dust control during construction. The use of gravel will reduce water use for dust control during construction.
Power and communications	During the construction period, any electricity required to power heavy equipment will be provided from portable diesel generators supplied by the Contractor. Electricity required for temporary construction offices, lighting and other purposes will be arranged for and obtained from the local electricity provider. Communications will be primarily through the use of cellular phones and wireless connections; therefore, no telephone or internet cable line installation will be required.
Laydown/construction staging areas and temporary facilities	A temporary laydown and construction staging area, totalling 2.42 hectares, will be created in the southwest corner of the project location as shown on **Figure 2**. This area will be used for construction office trailers, portable washrooms, first aid stations, vehicle parking, construction equipment parking, storage sheds, truck unloading/loading, waste disposal pick-up areas, and equipment and material lay-down. After site grading (discussed above), filter fabric will first be put down followed by a layer of granular material which will provide an adequate base for construction vehicles, heavy equipment and material laydown. This area will be decommissioned, rehabilitated and returned to the landowner when the construction period is finished.
Preparation of substation and inverter unit foundations	The substation area (20 metres x 30 metres) will be prepared for the transformer foundations and the oil containment area. Based on geotechnical studies it is not anticipated that blasting and/or rock ripping will be required to prepare the substation area. The inverter units may also require excavation for foundations, or they may be installed using piled foundations. Foundations for the substation and inverter units will consist of concrete or driven or helical screw piles (see below for installation method).

Activity	Description
Installation of support foundations, racks and solar PV modules	The entire project will have approximately 40,000 to 50,000 solar PV modules which will be mounted on steel and/or aluminum racking structures. It is estimated that between 1800 and 3000 racks will be required for the project and will be arranged in rows spaced about 5 to 7 metres apart. The racks will be supported by steel uprights that will be mounted on either steel driven or helical screw piles. These would be installed using a mechanical, hydraulic or vibratory pile hammer equipment mounted on a specialized rig, excavator or boom truck. The hydraulic drive motor would rotate the screw pile into the ground. Alternatively, if driven piles are to be used, they would be installed in a similar fashion, but would be driven rather than rotated or screwed into the ground. In order to support the racking system and modules it is anticipated that the piles would be driven to a design depth of up to 2.7 metres below grade. A total of between 3600 and 6000 piles would be used.
Installation of electrical collection system, wiring, substation and components	The electricity generated by the PV panels will be in the form of direct current (DC). Inverters will be required to convert the DC output of the PV cells into alternative current (AC) suitable for supplying the electrical grid. It is anticipated that the solar modules will be electrically divided into twenty sections of 0.5MW each. DC wiring mounted to the back side of the racks is connected to a combiner box at the end of each row of racks. From the combiner box buried electrical collection cables will connect the combiner boxes in each 0.5MW section to an inverter unit. The project will have ten inverter units located along the main access road, each containing a 1 MW AC inverter and associated step-up transformer. Each inverter unit will service two 0.5MW sections. From the inverters, underground cables will direct the electricity to the substation. The cables will be installed at a depth of at least 1 metre by a cable trenching machine or dropped in trenches created by an excavator. The material removed from the trench will be used as backfill in the trench. Topsoil and subsoil will be excavated and stored separately. A layer of sand will be located and levelled on the bottom of the excavation and covering the conduits or cables. Equipment used in cable installation may include a backhoe or track mounted excavator, and trenching/boring equipment. The substation yard will occupy an area measuring approximately 20 metres x 30 metres and the transformer will be installed in a pre-fabricated building measuring approximately 5 metres x 6.5 metres. Substation components to be installed include the main power transformer, switchgear cells, metering, and service transformer. Disconnect switches will also be installed in the substation area. A

Activity	Description
	communications tower will be erected in the substation yard. After all major construction activities are complete the components will be tested. If any problems or issues arise, remedial corrections and calibration of equipment will be made prior to start-up.
Connection to the Provincial Grid	From the main substation transformer an overhead 44 kV distribution line will extend along the access road and will tie into Hydro One's distribution line located on Cragg Road (point of common coupling). The line will be mounted on wooden poles equipped with dead end structures (insulators and connectors). From the point of common coupling onwards Hydro One will be responsible for building, owning, and maintaining the 44kV line. They will also be responsible for any permits associated with this distribution line. Given that the distribution line is located within the existing right-of-way along Cragg Road, it is not expected that any natural features would be removed.
Remediation and clean-up of work areas	After all major construction activities are complete, work areas will be remediated and, with the exception of permanent structures, returned to their pre-construction condition or vegetated (see below). All debris and excess materials on-site will be removed. Trucks will be used to remove all non-permanent equipment from the project location, along with any debris. The truck(s) will access the site via the permanent access road located off Cragg Road.
Site landscaping and vegetation	Once construction and site clean-up are complete the project location will be seeded, where possible, with low-growing, native and non-invasive vegetation. Native vegetation species could be planted that provide foraging and breeding habitat for various wildlife species. The selected vegetation would be maintained at low heights to prevent shading effects on the solar panels. Seeding would be completed in a seasonally appropriate time period to maximize the success of the plantings. Landscaping is the final construction activity for the project. It is expected that no heavy machinery or equipment will be required for the planting.

All construction activities will be conducted by licensed contractors in accordance with required standards and codes and all activities will abide by local laws and requirements. All construction-related activities will be conducted within the project location boundary outlined on **Figure 2**. During construction, no hazardous materials, including fuel, oils or grease will be stored on-site, although equipment may require their use. Decisions on waste disposal or recycling during, and immediately after, construction will be made by the on-site contractor who will refer to the *Environmental Protection Act.*

8.2 Operations and Maintenance

The following activities are associated with the operation and maintenance of the solar facility (**Table 4**). These activities will take place over the lifetime of the facility which is expected to be twenty years.

The facility will operate year round and generate electricity during daylight hours only and the amount of daily power generated will depend on weather conditions. The proposed solar energy facility will be monitored and managed remotely; therefore, minimal on-site activity is required for its daily operation and there will be no permanent on-site employees. Security and minor maintenance will be the only regular activities anticipated on-site.

Table 4: Operations and Maintenance Activities

Activity	Description
Monitoring and metre calibrations	The facility will be managed twenty-four hours a day off-site through remote monitoring (via internet) to ensure proper power output and to alert the operations staff to potential issues. Most issues can be remotely diagnosed so that the correct individual(s) can be dispatched to the facility to correct any problems.
Routine periodic maintenance and inspection of project components	Site visits by the operations manager will occur approximately every month to visually inspect the solar farm and project location and ensure that the facility is in proper working order. Activities that will occur during these visits may include data collection, regular maintenance (as described below) and any necessary minor repairs. Security visits may also occur periodically.
Transformers	Transformers will be visually inspected approximately once a month. The inspection will include the following : ▪ Checking the containment system to ensure the liner is attached and shows no signs of perforation or other damage; ▪ Checking of the concrete walls for cracks or signs of frost heaving;

Activity	Description
	▪ Checking of the sump for evidence of water or oil. There should be no oily sheen on the water in the oil separator sump; and ▪ Inspection of the transformer for signs of leaks. If noted, they will be immediately assessed and repaired as necessary.
Lighting	For security and maintenance purposes, shielded, task-specific lighting will be installed at the temporary construction offices, construction staging areas, substation and possibly on or near each inverter unit. These lights will be turned on either by a local switch or by motion sensors that will be triggered by movement during maintenance or emergency activities. No lights are currently planned around the project perimeter to minimize the project's visual impact on surrounding development and roads. All exterior lights will be shielded to minimize their impact to the night sky and neighbours. Periodically, light bulbs may require replacement should they become inoperable.
Cleaning of panels	Cleaning of panels and equipment will take place approximately 3 times annually. It is anticipated that two crews will take approximately 4 to 5 days to wash the panels in the facility for each maintenance period. It is expected that between 15,000 and 35,000 litres of water will be required for each maintenance period. No water-taking will occur. All water required for panel washing will be trucked to the project location. Only water is used for cleaning. No cleaning solutions of any type will be used to wash the panels. Runoff from washing of panels will managed in the same way as stormwater. Snow removal will occur as needed.
Major maintenance	Unforeseen, large repairs are not anticipated but could potentially include broken modules, electrical equipment breakdowns or other component or systems failures. Should major maintenance be required it will be performed using existing roads and site access.
Periodic landscape maintenance	Short native vegetation will be planted, where possible, once construction activities are complete. It will be necessary to maintain the land in such a way that vegetation does not shade or in other ways impact the solar panels; however, it is anticipated that the site will be planted with mostly low-growth native plant species, which will not only limit the need for regular maintenance, but will also maintain the nutrient quality of the soil. Regular maintenance may include mowing of grass to ensure cleanliness and prevent shading of panels. Local farmers will be hired to maintain the cover vegetation and Solray will rely on their knowledge of best practices for week control.

Activity	Description
Inspections and testing	Activities will be carried out as required by the local utility and other governing bodies.
Traffic	Limited deliveries may be necessary for maintenance during operation of the facility. Traffic will not be significant on a daily basis.
Drainage and erosion control	Stormwater runoff at the project location will be managed as per the Stormwater Management Plan. It is anticipated that the proposed site drainage will consist of: overland runoff on vegetated areas; existing and constructed shallow triangular shaped grassed swales, if required; and, constructed ditches in the form of flat-bottomed vegetated swales situated along the access roads and, if required, around the perimeter of the sites to intercept and convey external drainage to maintain riparian drainage conditions.
Waste	The operation of the system does not produce waste of any kind. All debris, as a result of maintenance or cleaning, will be removed from the site immediately by the contractor.

During the operation phase, no hazardous materials will be stored on-site with the exception of oil for transformers, which will be adequately contained and accompanied by a Spills Response Plan. No fuel consumption will be required for the operation of the facility; however, if maintenance is required, fuel will be used by trucks and other vehicles that may be required on-site. Mitigation measures will be the same as those for construction.

8.3 Decommissioning Activities

It is anticipated that the decommissioning process will begin upon termination of the lease with the landowner and/or the end of the power purchase agreement with the OPA (or legal successor) or another green energy power purchaser. The decommissioning plan is based on current procedures and experience. These procedures may be subject to revision based on new experiences and requirements over time. Soil erosion and sedimentation control measures, as well as other mitigation measures used during construction will be re-implemented during the decommissioning phase and until the site is stabilized. Decommissioning and site restoration activities will be undertaken with the input of the landowner.

8.3.1 Equipment Dismantling and Removal

After the facility has been disconnected from the grid and all electrical components have been disconnected within the facility, components will be dismantled and removed as outlined in **Table 5**.

Table 5: Equipment Dismantling and Removal

Component	Description
Above-ground Structures	
PV modules and associated equipment	▪ Disconnect all aboveground wirings, cables and electrical interconnections. ▪ Remove PV modules from racks, temporarily store on-site in delineated area before removal. ▪ Dismantle and remove all racks and support structures, including extraction of in-ground support structures (see below); temporarily store on-site before removal.
Inverter units and transformers	▪ Remove inverter units from bases. ▪ Remove oil from substation transformer prior to unbolting transformer and removing from foundation with a crane. If concrete foundation have been used for inverter units or the substation they will be removed (see below).
Access roads	▪ Consult with landowner to determine if any portion of the main access road should be left in place for continued use. ▪ If one or more access roads are removed after consultation with the landowner, the aggregate materials will be excavated with a backhoe/front-end loader, along with underlying geotextile fabric. ▪ All compacted areas will be tilled in a manner adequate to restore the sub-grade material to the proper density and depth consistent with the surrounding fields. Clean, compatible sub-grade material, followed by topsoil will be applied as necessary.
Other Components	▪ Above ground lines and poles that are not owned by Hydro One will be removed, along with associated equipment (isolation switches, fuses, metering) and holes will be filled with clean fill. ▪ The communication tower will be dismantled and components removed. ▪ Fences and gates will be removed.
Below-ground Structures	
Underground cables	▪ Underground electrical lines running between inverters and the substation will be removed in their entirety by pulling and/or trenching.
Equipment foundations	▪ The substation, inverter units and steel racking for the solar modules will have foundations that require removal. These

Component	Description
	foundations will likely consist of steel piles but may also include concrete. Other underground infrastructure requiring removal may include concrete protective electrical structures. It is anticipated that structures will be fully removed from the ground and that the affected area will be backfilled as necessary with native soil. ▪ In the event that a structure breaks during excavation, any portion below 1.2 metre in depth will remain in place; the portion above 1.2 metre will be removed, with the exception of concrete foundations for inverter units and the substation transformer, which will be entirely removed.

8.3.2 Site Restoration

Once the on-site solar equipment is removed, it is expected that the project location lands will be restored to a state similar to its former condition (agricultural) or to a condition suitable to the future intended land use. All project components will be removed with the possible exception of some underground infrastructure (discussed in **Table 5**) which will not impact the environment, including future agricultural activities and the health of the soils.

Some minor site grading may be required to restore terrain profiles (as much as possible). Top soil will be replaced as required throughout the project location. This material may come from stockpiles, or nearby soils. The soils will then be re-vegetated and seeded as required.

Within the project location there are no water bodies as defined by *Ontario Regulation 359/09.* The operation of the solar facility does not release emissions which could pollute the air and water. Thus, decommissioning activities would not include the restoration of any water bodies. The site will be restored so that the post decommissioning drainage patterns and the quality/quantity of stormwater will be similar to pre-construction conditions. It is not expected that the lands surrounding the facility will require any special remediation since any hazardous materials used on the site will be contained with adequate spill protection.

Prior to abandonment of the site, a land survey will be conducted to ensure that conditions satisfy those set out in *Ontario Regulation 359/09* and in any agreements with agencies (e.g., conservation authority, MOE), the municipality and/or landowner.

8.3.3 Managing Excess Materials and Waste

During the decommissioning phase a variety of excess materials and wastes will be generated. Most of the materials used in a solar facility are reusable or recyclable and some equipment may have manufacturer take-back and recycling requirements. Any remaining materials will be removed and disposed of off-site at an appropriate facility. Solray will maximize recycling and reuse and will work with manufacturers, local subcontractors and waste firms to segregate material to be recycled, reused and/or disposed of at approved facilities. .

Solray will be responsible for arranging for the collection and recycling of the PV modules and for minimizing the potential for modules to be discarded in the municipal waste stream. If there is no possibility for reuse, between 40,000 and 50,000 panels will either be returned to the manufacturer for appropriate recycling/disposal or will be transported to a recycling facility where the glass, metal and semiconductor materials will be separated and recycled. Panels will be managed as per best management practices that may be in effect at the time of decommissioning.

9.0 EXISTING CONDITIONS OF RELEVANT WATER BODIES

Stream 2 meets the definition of a water body under *Ontario Regulation 359/09* and lies within the northwest 120 metre setback of the project location. The following notes and observations regarding the water body were made:

- This intermittent stream flows northerly towards Lake Simcoe within the Beaver River Subwatershed (**Figure 3**). At the time of field investigations (August and October 2011), this stream displayed no to low flow conditions within Reed Canary Grass Graminoid Mineral Meadow Marsh habitat. A small defined channel was observed throughout most of the stream's reach averaging 0.20 to 0.44 metres in width and 0.04 to 0.06 metres in depth. In-stream and overhanging vascular macrophytes were dominant throughout. Substrate was characterized by muck and detritus except for a small section near the northern fence line where boulders, cobble and sand were also observed.

Two additional features that meet the definition of a water body under *Ontario Regulation 359/09* and lie within 120 metres of the project location were located on lands where access was not permitted by the landowner (see **Section 7.0**). However, from a review of aerial imagery, the following notes and observations regarding the open water area and the permanent stream were made:

- Open water area (Open water 1) is adjacent to Stream 1. No obvious outflow connection was observed using aerial imagery and LSRCA regulation mapping suggesting it is an offline feature. Adjacent lands to the east appear to have been used to pasture cattle. It is not clear whether the fence line separates the pond from the pasture or whether cattle may have had access. The pond is approximately 87 metres long and 49 metres wide. Colouration suggests this pond has moderate depth with a narrow shoreline area.
- Stream 1 conveys flow northerly towards Lake Simcoe within the Beaver River Subwatershed. This stream is mapped within and adjacent to WOMM4-1: Fresh – Moist White Cedar – Hardwood Mixed Woodland Type and Annual Row Crops. No outflow connection from adjacent open water area was observed. This stream appears to have a defined channel approximately 1 metre in width.

10.0 ENVIRONMENTAL EFFECTS OF THE PROJECT

The potential negative effects to the applicable water bodies within 120 metres (see **Table 1**) by project activities relating to site preparation, construction, maintenance, operations and decommissioning are outlined in **Table 2**.

No project activities will occur within 30 metres of a water body (see **Figure 2**). Therefore, all potential negative environmental effects of the project outlined in **Table 2** are considered to be indirect effects associated with the drainage area for each water body. Further, the small water body feature (Open water area 1) identified 46.6 metres from the project location has no to very low potential to be negatively affected by the activities related to the Marsh Hill Solar Farm. The water body has no direct overland connection to the project location or the stream adjacent to it. None of the activities outlined in **Table 2** are expected to have any physical or functional effect on a water body provided the appropriate mitigation measures are implemented.

Table 6: Summary of Potential Positive/Negative Environmental Effects and Mitigation Measures for Water Bodies within 120 metres

Project Activity	Water Body With Potential to be Affected by Activity	Minimum Separation Distance Between Activity and Water Body	Potential Positive/Negative Effect(s)		Magnitude of Effect	Frequency of Effect	Duration of Effect	Mitigation Measures	Residual Effect
			Physical Effect (Direct)	Functional Effect (Indirect)					
Site Preparation, Servicing and Construction Phase									
Grading	Stream 1, Stream 2 and Open Water 1 may be indirectly affected	Stream 1: 58.0 m Stream 2: 33.5 m Open Water 1: 46.6 m	▪ Potential for soil mobilization and erosion resulting in increased sedimentation and turbidity ▪ Changes in natural drainage, including increased or decreased surface runoff; increased or decreased stream flows and redirection of surface	▪ Increased sedimentation and turbidity may affect fish habitat downstream within Beaver River (e.g., spawning areas, food sources, benthic composition)	LOW	Single event; Temporary	6 month construction schedule for complete mitigation of activity	▪ An erosion and sediment control (ESC) plan has been developed for the site (see *Construction Plan Report*) ▪ Existing vegetation buffers along Stream 1 and 2 will remain unchanged ▪ Silt fencing will be installed in areas where there is potential for runoff to the receiving water bodies ▪ Rock/straw bail check dams will be constructed between site activities leading to receiving water bodies ▪ Erosion blankets and/or loosened hay bales will be used to prevent erosion and soil mobilization ▪ All areas disturbed during construction of the facility will be re-vegetated using native grass ▪ Changes to land contours will be minimized; all physical land alterations (i.e., cut and fill) were designed to remain consistent with the pre-existing drainage patterns	NONE. The water bodies identified within 120 m to the west and northeast of the project location are not directly connected to the site. Indirect connections have the potential to exist through grass swales based on the slope of the land. Existing vegetation in the riparian zone of these water bodies will be maintained to act as natural buffers.
Installation of services and utilities requiring groundwater taking (ex., installation of solar panel poles and domestic well)	Stream 1, Stream 2 and Open Water 1 may be indirectly affected	Stream 1: 58.0 m Stream 2: 33.5 m Open Water 1: 46.6 m	▪ Overland disposal of water required by dewatering activities ▪ Limited potential for disruption of nearby stream or wetland baseflow	▪ Increased erosion, sedimentation and potential for flooding of nearby water bodies or intolerant vegetation ▪ Potential for loss of aquatic habitat and/or species	LOW	Single event; Temporary	During installation of solar panel piles	▪ Pump all water encountered during installation of solar panel piles to vegetated areas for natural infiltration and avoidance of soil mobilization or use of a temporary storage basin in a disturbed area of the project location (see the Geotechnical Report in **Appendix A** or the *Marsh Hill Solar Farm Construction Plan Report*) ▪ Control rate and timing of water pumping. If possible, restrict groundwater taking to low flow time periods	NONE. The water bodies identified within 120 m to the west and northeast of the project location are not directly connected to the site. Indirect connections have the potential to exist through grass swales based on the slope of the land. Existing vegetation in the riparian zone of these water bodies will be maintained to act as natural buffers.
Construction of Access Roads	Stream 1, Stream 2 and Open Water 1 may be indirectly affected	Stream 1: 58.0 m Stream 2: 33.5 m Open Water 1: 46.6 m	▪ Limited potential to decrease surface permeability and redirect surface runoff	▪ Decreased site permeability has potential to increase amount of surface runoff ▪ Increased sedimentation and turbidity may affect fish habitat downstream within	LOW	Permanent	Construction will occur during a 6 month window. Roads will be in place throughout the lifespan of the facility	▪ Access roads have been designed to promote infiltration; the main roadway within the project location will be gravel ▪ Vegetation buffers are proposed where they are currently absent and existing buffers will be maintained ▪ The quantity and quality of any stormwater runoff from road construction will be controlled using best management practices	NONE. The water bodies identified within 120 m to the west and northeast of the project location are not directly connected to the site. Indirect connections have the potential to exist through grass swales based on the slope of the land. Existing vegetation in the riparian zone of these water

Project Activity	Water Body With Potential to be Affected by Activity	Minimum Separation Distance Between Activity and Water Body	Potential Positive/Negative Effect(s)		Magnitude of Effect	Frequency of Effect	Duration of Effect	Mitigation Measures	Residual Effect
			Physical Effect (Direct)	Functional Effect (Indirect)					
				Beaver River (e.g., spawning areas, food sources, benthic composition)					bodies will be maintained to act as natural buffers.
Storage and Use of Construction Materials and Equipment	Stream 1, Stream 2 and Open Water 1 may be indirectly affected	Stream 1: 58.0 m Stream 2: 33.5 m Open Water 1: 46.6 m	▪ Limited potential for accidental spills or contamination of soil and/or surface runoff	▪ Runoff of contaminated soil and/or surface runoff may impact fish habitat and water quality of any downstream receiving waters of Beaver River	LOW	Short-term; only when construction materials and equipment on-site	6 month construction schedule for complete mitigation of activity	▪ All construction equipment and materials will be primarily stored at the southern end of the project location to maximize the distance between the identified water bodies and the construction laydown areas	NONE. The water bodies identified within 120 m to the west and northeast of the project location are not directly connected to the site. Indirect connections have the potential to exist through grass swales based on the slope of the land. Existing vegetation in the riparian zone of these water bodies will be maintained to act as natural buffers.
Operations Phase									
Solar Panel Placement and Operation	Stream 1, Stream 2 and Open Water 1 may be indirectly affected	Stream 1: 58.0 m Stream 2: 33.5 m Open Water 1: 46.6 m	▪ Some potential for overall decrease in permeability of project location. Solar panels are impervious	▪ Decreased site permeability may lead to an increase in surface runoff. Limited potential for increased erosion, sedimentation and turbidity to receiving downstream waters	NONE	Permanent	Throughout the lifespan of the project	▪ Each solar panel will be elevated, tilted and mounted on two poles as a base. ▪ Area below panels will be vegetated with a mix of native grasses.	NONE. The planting of native grasses under the solar panels will marginally lower the overall runoff coefficient of the site based on the existing exposed agricultural soil (see SWM Report in **Appendix B**).
Accidental Spills from step-up transformers	Stream 1, Stream 2 and Open Water 1 may be indirectly affected	Stream 1: 58.0 m Stream 2: 33.5 m Open Water 1: 46.6 m	▪ Limited potential for accidental spills or contamination of soil and/or surface runoff	▪ Runoff of contaminated soil and/or surface runoff may impact fish habitat and water quality of any downstream receiving waters in Beaver River	LOW	Temporary	Short-term effect; potential throughout lifespan of solar facility	▪ Notify MOE (Spills Action Centre) and LSRCA immediately in the event of a spill ▪ Follow the Emergency Response and Communication Plan(s) as outlined in the *Marsh Hill Solar Farm Design and Operations Report*	NONE. In the event of a spill from an inverter, the area of the spill will be remediated.

Project Activity	Water Body With Potential to be Affected by Activity	Minimum Separation Distance Between Activity and Water Body	Potential Positive/Negative Effect(s)		Magnitude of Effect	Frequency of Effect	Duration of Effect	Mitigation Measures	Residual Effect
			Physical Effect (Direct)	Functional Effect (Indirect)					
Decommissioning Phase									
Removal of above-ground solar panel poles	Stream 1, Stream 2 and Open Water 1 may be indirectly affected	Stream 1: 58.0 m Stream 2: 33.5 m Open Water 1: 46.6 m	▪ Some potential for groundwater resources and/or connected water bodies in the general area to be impacted by removal of poles that intersect the water table (i.e., impacts on the baseflow levels)	▪ Potential for loss of aquatic habitat and/or species if baseflow levels are reduced	LOW	Single Event; Temporary	During decommissioning of solar panels	▪ If possible, restrict removal of solar panel poles that intersect with groundwater to periods of low flow (see the Geotechnical Report in **Appendix A**)	NONE. The solar panel poles are not expected to be removed to depth. Portions of the solar panel poles that intersect with groundwater will permanently remain in place.
Removal of access roads	Stream 1, Stream 2 and Open Water 1 may be indirectly affected	Stream 1: 58.0 m Stream 2: 33.5 m Open Water 1: 46.6 m	▪ Some potential for changes in surface runoff	▪ Increased sedimentation and turbidity may affect fish habitat downstream within Beaver River (e.g., spawning areas, food sources, benthic composition)	LOW	Single Event; Temporary	During decommissioning of solar facility	▪ Access roads will be graded (at the discretion of the landowner) to match surrounding landform ▪ Gravel road base will be removed and replaced with native soils and seeding to stabilize lands	NONE. The water bodies identified within 120 m to the west and northeast of the project location are not directly connected to the site. Indirect connections have the potential to exist through grass swales based on the slope of the land. Existing vegetation in the riparian zone of these water bodies will be maintained to act as natural buffers.

11.0 ENVIRONMENTAL EFFECTS MONITORING PLAN

The Environmental Effects Monitoring Plan (EEMP) prepared for the Marsh Hill Solar Farm is targeted towards environmental effects that have potential to occur during the construction, design and operation, and decommissioning of the facility. The potential negative environmental effects outlined in **Table 7** are specific to the water bodies identified within 120 metres of the project location and will form part of the overall EEMP for the project in the *Design and Operations Report* and the *Construction Plan Report*, as applicable. **Table 7** also summarizes the monitoring plan and monitoring frequency during operation of the facility, as well as contingency measures that will be undertaken if performance objectives are not achieved.

Table 7: Water Body Environmental Effects Monitoring Plan for the Construction, Operation and Decommissioning of the Marsh Hill Solar Farm

Potential Environmental Effect	Affected Water Body	Mitigation Strategy	Residual Effects	Performance Objective(s)	Monitoring Plan				Contingency Measures
					Methodology	Monitoring Locations	Frequency/ Duration	Reporting Requirements	
Construction Phase									
Erosion and Sediment Control (ESC): Surface runoff and soil mobilization may impact any receiving water bodies Erosion and Sediment Control (ESC)	Stream 1 is located a minimum of 50.8 m from the project location. Stream 2 is located a minimum of 33.5 m from the project location. Open water area 1 is located a minimum of 46.6 m from the project location.	An erosion and sediment control plan has been developed for the site. This plan includes, but is not limited to silt fencing, erosion control blankets and/or hay bales, check dams, etc. (see SWM Report in **Appendix B**)	NONE. The water bodies identified within 120 m to the north of the project location are not directly connected to the site. Indirect connections have the potential to exist via grass swales due to the slope of the land. Existing vegetation in the riparian areas of the streams will be maintained to act as natural buffers.	Appropriate ESC measures are implemented prior to and during construction. All ESC controls are maintained during the construction phase.	Routine checks of all ESC controls implemented.	At all areas where ESC controls are constructed.	Checks to occur weekly.	Site records/ paperwork to include record of ESC weekly controls monitoring during the construction phase. Logs to be provided to the MNR/MOE if requested.	If during the routine checks it is determined that ESC controls are not sufficient, appropriate ESC controls will be re-established.
Dewatering of Solar Panel Pole Installation Locations may affect local hydrological regime. Overland dispersal of water during dewatering may increase surface runoff	Excavation dewatering is not anticipated, however if required there is limited potential for baseline flow of Stream 1, Stream 2 and Open water area 1 to be affected.	Control the rate and timing of water pumping. Pump water onto vegetated surfaces if possible or into a temporary retention basin. If possible, restrict groundwater taking to low flow time periods. Implement ESC measures and monitor/report as indicated above.	NONE. ESC measures will mitigate any excess overland runoff from dewatering activities. No permanent impacts to the water table are anticipated. Water takings to be <50,000 L/day.	Any dewatering activities required during solar panel pole installation will be controlled to ensure pumped water re-infiltrates the ground without causing increased runoff. See the Marsh Hill *Construction Plan Report* for more information.	Ensure dewatering occurs into vegetated areas or into a temporary retention basin.	At solar panel installation locations that require dewatering.	Once during construction/ installation of solar panel pole.	Site records/ paperwork to include record of locations that required dewatering and the volume of water taken.	If dewatering causes increased soil mobilization or surface runoff in areas of exposed soil, dewatering activities will be stopped until a solution can be implemented. If water taking needs to exceed 50,000 L/day, the MOE will be consulted.
Operations Phase									
Erosion and Sediment Control (ESC): Provide for the permanent establishment of vegetation in project location to minimize exposed soils that may impact receiving waters downstream	Stream 1 is located a minimum of 50.8 m from the project location. Stream 2 is located a minimum of 33.5 m from the project location. Open water area 1 is located a	Upon completion of facility construction, the project location will be vegetated with a mix of native grasses.	NONE. Riparian vegetation will prevent the mobilization of sediment and any surface runoff. The planting of native grasses under the solar panels will marginally lower the overall runoff coefficient of the site based on the	Ensure that the seed mix is appropriate for the locale and site conditions by ensuring growth is established.	Visual check of the project location to ensure grasses are growing in all areas planted.	Throughout the project location.	Weekly until evidence of growth is observed, then monthly until all areas are vegetated/re-vegetated as indicated in	Photo documentation will be collected showing soil stabilization and maintenance of pervious conditions through vegetation establishment. A memo with the photo record will be sent to the MNR and MOE at the end of the growing season.	If the performance measures aren't met, areas with no growth will be re-vegetated as per the original landscape plans. Interim ESC measures will be implemented until vegetation is shown to be

Potential Environmental Effect	Affected Water Body	Mitigation Strategy	Residual Effects	Performance Objective(s)	Monitoring Plan				Contingency Measures
					Methodology	Monitoring Locations	Frequency/ Duration	Reporting Requirements	
	minimum of 46.6 m from the project location.		existing exposed agricultural soil (see SWM Report).				landscape plans		established and thriving.
Decommissioning Phase									
Erosion and Sediment Control (ESC): Stabilization of exposed soils once project components are removed (if land is not returned to being actively farmed)	Stream 1 is located a minimum of 50.8 m from the project location. Stream 2 is located a minimum of 33.5 m from the project location. Open water area 1 is located a minimum of 46.6 m from the project location.	An erosion and sediment control plan has been developed for the site and should be implemented prior to any decommissioning activities. The ESC plan includes, but is not limited to silt fencing, erosion control blankets and/or hay bales, check dams, etc.	NONE. All decommissioned project components will be removed and the project location restored to its original or improved condition.	Maintain appropriate ESC measures during decommissioning activities. Ensure that all areas being decommissioned are vegetated or stabilized using proven ESC measures.	Routine checks of all ESC controls implemented during decommissioning phase. Routine monitoring to ensure exposed soils are permanently stabilized.	At all areas where ESC controls are implemented.	Weekly during decommissioning activities.	Site records/ paperwork to include record of ESC weekly controls monitoring during the decommissioning phase. Photo record to be maintained to document methods used to stabilize exposed soils. Logs/ Records to be provided to the MNR/MOE if requested.	If during the routine checks it is determined that ESC controls are not sufficient, appropriate ESC controls will be re-established. If exposed soil shows signs of mobilization, appropriate corrective action is to be undertaken to prevent entry of soil into a water body.

12.0 NEGATIVE ENVIRONMENTAL EFFECTS, DESIGN AND OPERATIONS

As required, an EEMP has been prepared for inclusion in the *Design and Operations Report*. The potential negative environmental effects to water bodies within 120 metres of the project location, as outlined in **Table 6**, will be negligible after mitigation measures are implemented. Upon the completion of construction, the exposed soil in the project location will be vegetated with a mix of native grasses. This conversion of exposed agriculture land to vegetated solar farm will result in a marginally lower overall runoff coefficient for the project location (see the *Stormwater Management Report* or the *Design and Operations Report*).

Table 7 also summarizes the monitoring plan and monitoring frequency during the design and operation of the facility until the vegetation surrounding the project components is established. Contingency measures that will be undertaken if performance objectives are not achieved are also included. Additional mitigation measures proposed to minimize impacts of the facility and not related to water bodies are summarized in the *Design and Operations Report*.

13.0 NEGATIVE ENVIRONMENTAL EFFECTS, CONSTRUCTION

As required in *Ontario Regulation 359/09*, the *Construction Plan Report* will include the information in **Table 6** and **Table 7** of this *Water Body Report* to address any potential negative environmental effects anticipated on water bodies within 300 metres of the project location during the construction phase of the project. The potential negative environmental effects to water bodies within 300 metres of the project location, as outlined in **Table 6,** will be negligible after mitigation measures are implemented. During construction of the Marsh Hill Solar Farm, appropriate erosion and sediment control measures will be implemented (see the *Construction Plan Report*). As identified in the Geotechnical Report, excavation dewatering is not anticipated during the installation of solar panel poles in the project location. Should it be required, dewatering should be controllable with sumps and filtered pumps within the excavations but is not expected to exceed 50,000 L/day. Any such dewatering activity below this threshold is not expected to have an effect on the hydrological regime of the nearby applicable water bodies.

Table 7 also summarizes the monitoring plan and monitoring frequency during the construction of the facility. Contingency measures that will be undertaken if performance objectives are not achieved are also included. Additional mitigation measures proposed to minimize impacts of the facility and not related to water bodies are summarized in the *Construction Plan Report*.

14.0 ADDITIONAL APPROVAL AND PERMIT REQUIREMENTS

Based on consultation with the Lake Simcoe Region Conservation Authority (LSRCA), the project location and setback areas fall within lands or water regulated under *Ontario Regulation 179/06* (the LSRCA's *Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*). Additional permitting or approvals is required with respect to water bodies and delineation of project lands as an Intake Protection Zone and Significant Groundwater Recharge Area. These will be sought in conjunction with the REA.

15.0 CONCLUSIONS

Through a records review and site investigation included in the *Water Assessment Report*, it was determined that water bodies exist within the prescribed setback areas (**Figure 2**). As such, a *Water Body Report* was required under Section 39 and 40 of *Ontario Regulation 359/09*. This second and final report therefore satisfies the requirements under *Ontario Regulation 359/09* with respect to a water body assessment report.

This EIS was completed to mitigate any potential negative environmental effects to the following water bodies:

- An open water area located 46.6 metres from the project location;
- A stream within the northeast 120 metre setback, flowing in a northerly direction, within the Beaver River Subwatershed towards Lake Simcoe; and
- An intermittent stream within the western 120 metre setback, flowing in a northerly direction, within the Beaver River Subwatershed toward Lake Simcoe.

Tables 6 and **7** outlines how the activities related to the construction, operation and decommissioning of the facility may affect these water bodies and the appropriate mitigation and monitoring work to be implemented.

16.0 REFERENCES

Ontario Ministry of the Environment. 2011. Technical Guide to Renewable Energy Approvals. Toronto: Queen's Printer for Ontario. 199 pp.