

# RE SMITHS FALLS 3 SOLAR PROJECT

Natural Heritage  
Environmental Impact Study

August 24, 2011

RECURRENT  
ENERGY





RE Smiths Falls 3 ULC

Natural Heritage  
Environmental Impact Study

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Project Report

August 24, 2011

# RE Smiths Falls 3 ULC RE Smiths Falls 3 Solar Project

## Natural Heritage Environmental Impact Study

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## 1. Introduction

RE Smiths Falls 3 ULC is proposing to develop and operate a 10-megawatt (MW) solar photovoltaic (Solar PV) facility, on an approximately 53-hectare (ha) parcel of land located 8 km west-northwest of Smiths Falls in the Township of Drummond/North Elmsley in the County of Lanark (Figure 1.1); herein referred to as “RE Smiths Falls 3” or the “Project”.

As stated in Sections 37 and 38 of Ontario Regulation (O. Reg.) 359/09 *Renewable Energy Approvals Under Part V.0.1 of the Act*, (herein referred to as the “REA Regulation”), an Environmental Impact Study (EIS) is required for all significant natural heritage features determined to be within a specified setback in order to obtain a Renewable Energy Approval (REA). The EIS identifies the potential negative environmental effects, documents the proposed mitigation measures, and describes the environmental effects monitoring plan for the natural heritage features.

### 1.1 Renewable Energy Approval Legislative Requirements

As per Section 4 of the REA Regulation, ground-mounted solar facilities with a nameplate capacity greater than 10 kW are classified as Class 3 solar facilities and do require an REA.

The REA process requires the preparation of several reports with respect to natural heritage features on and adjacent to the Project location, including the Records Review Report, Site Investigation Report, Evaluation of Significance, and if necessary, the EIS. The legislative requirements for these reports are summarized in the following sections.

#### 1.1.1 Records Review Report

Section 25 of the REA Regulation requires proponents of Class 3 solar projects to undertake a natural heritage records review to identify “whether the Project is

1. in a natural feature
2. within 50 m of an area of natural and scientific interest (earth science)
3. within 120 m of a natural feature that is not an area of natural or scientific interest (earth science).” (O. Reg. 359/09, s. 25, Table).

Natural features are defined in Section 1(1) of the REA Regulation to be all or part of

- a) an area of natural and scientific interest (ANSI) (earth science)
- b) an ANSI (life science)
- c) a coastal wetland
- d) a northern wetland
- e) a southern wetland
- f) a valleyland
- g) a wildlife habitat, or
- h) a woodland.

Subsection 25(3) of the REA Regulation requires the proponent to prepare a report “setting out a summary of the records searched and the results of the analysis” (O. Reg. 359/09). The Natural Heritage Records Review Report (Hatch Ltd., 2010a) was prepared to meet these requirements.

### **1.1.2 Site Investigation Report**

Section 26 of the REA Regulation requires proponents of Class 3 solar projects to undertake a natural heritage site investigation for the purpose of determining

- a) whether the results of the analysis summarized in the (natural heritage records review) report prepared under Subsection 25(3) are correct or require correction, and identifying any required corrections
- b) whether any additional natural features exist, other than those that were identified in the (natural heritage records review) report prepared under Subsection 25(3)
- c) the boundaries, located within 120 m of the Project location, of any natural feature that was identified in the records review or the site investigation
- d) the distance from the Project location to the boundaries determined under Clause (c).

The Natural Heritage Site Investigations Report (Hatch Ltd., 2010b) was prepared to meet these requirements.

### **1.1.3 Evaluation of Significance Report**

Section 27(1) of the REA Regulation requires proponents of Class 3 solar projects to undertake an evaluation of significance for natural heritage features identified during the records review and site investigation that sets out

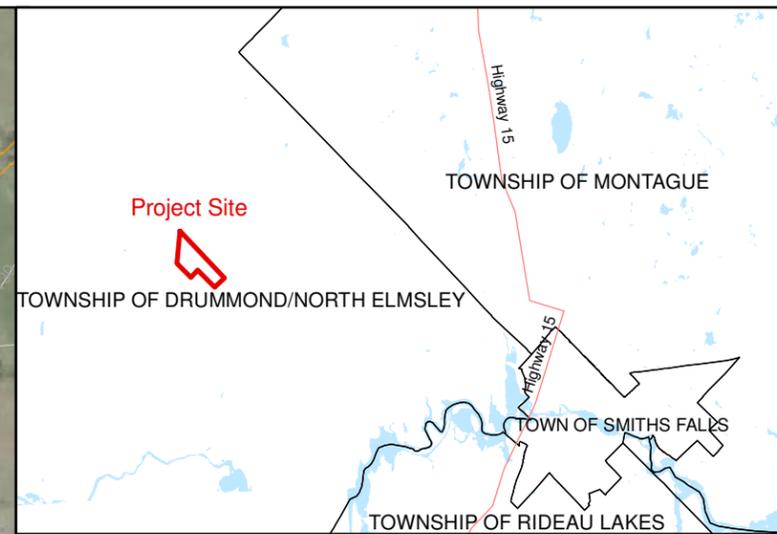
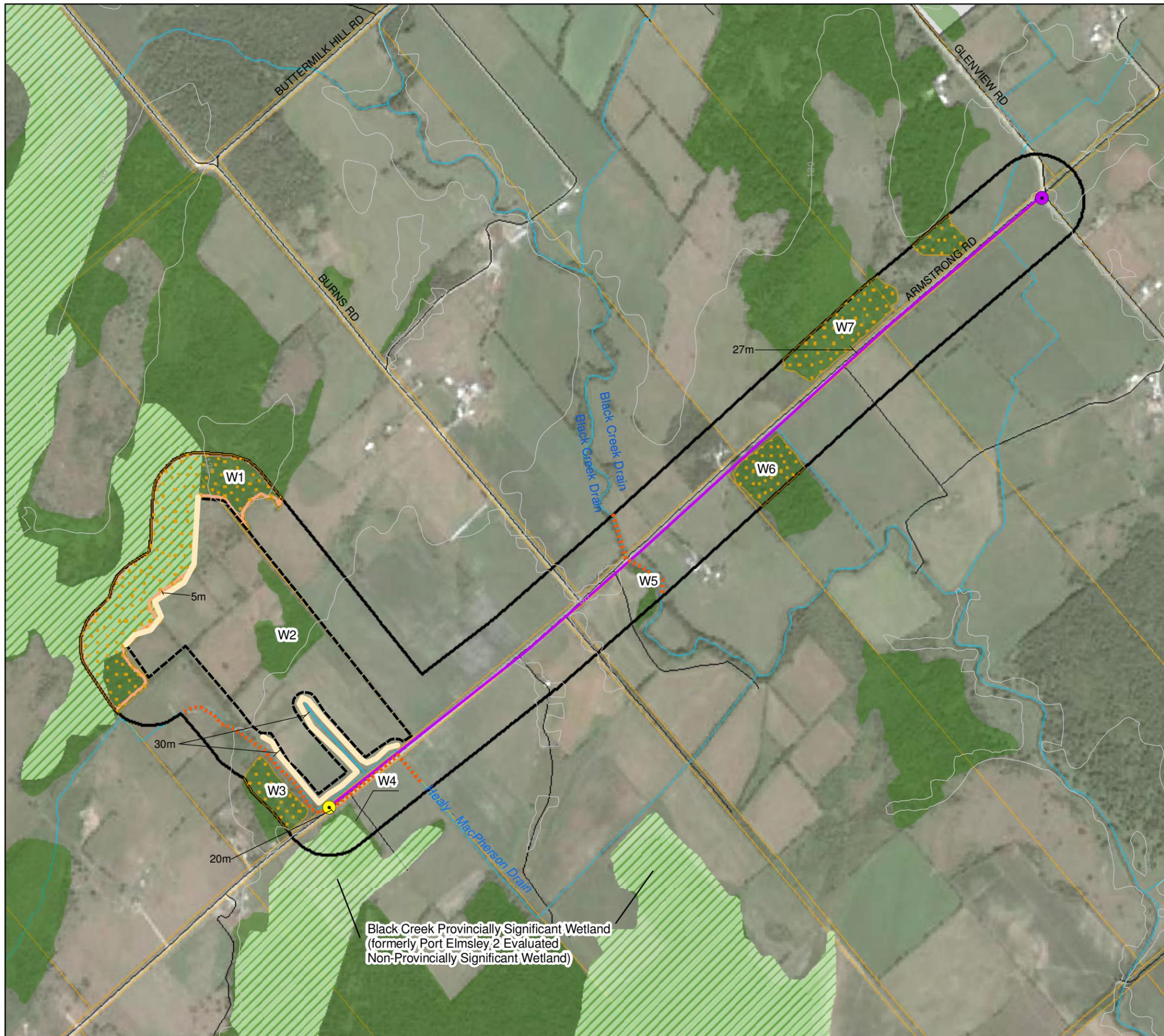
- a determination of whether the natural feature is
  - ◆ provincially significant
  - ◆ significant
  - ◆ not significant
  - ◆ not provincially significant
- a summary of the evaluation criteria or procedures used to make the determinations
- the name and qualifications of any person who applied the evaluation criteria or procedures.

The Evaluation of Significance Report (Hatch Ltd., 2010c) for the natural features identified within 120 m of the Project was prepared to meet these requirements.

### **1.1.4 Environmental Impact Study Report**

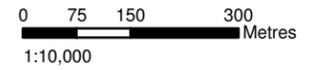
Section 38(1) of the REA Regulation prohibits the construction, installation or expansion of any component of a solar project within the following locations:

- provincially significant northern wetland or within 120 m of a provincially significant northern wetland
- within 120 m of a provincially significant southern wetland



**Legend**

- Road
  - Topographic Contour (5 m Interval)
  - Watercourse
  - ▭ Parcel
  - ▭ Woodland
- Significant Natural Features**
- ▭ Northern Ribbonsnake Habitat /Snapping Turtle Habitat  
Northern Map Turtle Habitat
  - ▭ Black Creek Provincially Significant Wetland
  - ▭ Significant Woodland
  - ▭ Animal Movement Corridor / Forest Providing a High Diversity of Habitats / Woodland Supporting Amphibian Breeding Habitat
- Project Components**
- Potential Point of Common Coupling with Feeder Line
  - Connection Point With Existing Distribution Line
  - Potential Upgraded Existing Distribution Line
  - ▭ Project Location
  - ▭ 120 m from Project Location
  - ▭ Annual Vegetation Management Zone



- Notes:**
1. Spatial Referencing: UTM NAD 83
  2. OBM and NRVIS data downloaded from LIO-MNR with permission.
  3. Satellite imagery from Google Earth Pro.
  4. Evaluated wetland information provided by Natural Resource Solutions Inc. (NRSI), Sept. 2010.

Black Creek Provincially Significant Wetland  
(formerly Port Elmsley, 2 Evaluated  
Non-Provincially Significant Wetland)

Figure 1.1  
 Recurrent Energy  
 RE Smiths Falls 3  
 Project Location and Significant  
 Natural Heritage Features **HATCH**

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- within 120 m of a provincially significant coastal wetland
- a provincially significant area of natural and scientific interest (ANSI) (earth science) or within 50 m of a provincially significant ANSI (earth science)
- a provincially significant ANSI (life science) or within 120 m of a provincially significant ANSI (life science)
- a significant valley land or within 120 m of a significant valley land
- a significant woodland or within 120 m of a significant woodland
- a significant wildlife habitat or within 120 m of a significant wildlife habitat
- within 120 m of a provincial park
- within 120 m of a conservation reserve.

However, Section 38(2) allows proponents to construct within the locations noted above, subject to the completion of an EIS to assess negative effects and evaluate appropriate mitigation and monitoring measures.

Section 38(2) of the REA Regulation indicate that the EIS report must

- identify and assess any negative environmental effects of the projects on a natural feature, provincial park or conservation reserve referred to in Section 38(1)
- identify mitigation measures in respect of any negative environmental effects
- describe how the environmental effects monitoring plan in the Design and Operations Report (RE Smiths Falls 3 ULC, 2010a) addresses any negative environmental effects
- describe how the Construction Plan Report (RE Smiths Falls 3 ULC, 2010b) addresses any negative environmental effects.

This EIS has been prepared to address these requirements for the construction of Project components within 120 m of significant natural heritage features noted in Section 1.1.

## 1.2 Background Information on Natural Heritage Features

The Natural Heritage Records Review Report (Hatch Ltd., 2010a) and Natural Heritage Site Investigations Report (Hatch Ltd., 2010b) confirmed that the Project will be constructed within 120 m of several natural features. Of these natural features, seven were identified as significant natural heritage features during the evaluation of significance (Hatch Ltd., 2010c).

The natural heritage features that are classified as significant are

- Woodland 1 along the northeastern boundary of the Project location, with occurrence on the Project location
- Woodland 3 located less than 120 m away from the southwestern corner of the Project location
- Woodland 6 on the south side of Armstrong Road within 120 m of the distribution line
- Woodland 7 on the north side of Armstrong Road within 120 m of the distribution line

- agricultural lands on and within 120 m of the Project location that provide potential general use habitat for Milksnake (*Lampropeltis triangulum*), a species listed as Special Concern on the *Species at Risk Act (SARA)* and the *Endangered Species Act, 2007 (ESA)*
- Provincially Significant Wetland located within 120 m of the Project location
- the lands associated with the woodlands located north of the Project location that are considered to be a significant animal movement corridor, forest providing a high diversity of habitats, woodland supporting amphibian breeding habitat
- the watercourses within 120 m of the Project location that provide Northern Ribbonsnake, Snapping Turtle, and Northern Map Turtle habitats.

These significant natural heritage features and their locations in relation to the Project development area are shown in Figure 1.1.

### 1.3 Environmental Impact Study Format

Section 1 of this EIS has identified the legislative requirements for an EIS under the REA Regulation and identified the reasons why an EIS is required for the Project. Section 2 provides the methodology of the EIS. Section 3 summarizes the activities associated with project construction, operation and decommissioning. Section 4 identifies and assesses negative environmental effects and the proposed mitigation measures to prevent/minimize the potential effects, and Section 5 describes the environmental effects monitoring plan from the Design and Operations Report (RE Smiths Falls 3 ULC, 2010a). Section 6 describes how the Construction Plan Report (RE Smiths Falls 3 ULC, 2010b) addresses the potential negative environmental effects. Section 7 summarizes the results of the EIS. References are included in Section 8.

## 2. Methodology

The following steps outline the methodology that was used to prepare this EIS:

1. Documentation of Project components and activities during all project phases, including construction, operations and decommissioning, including identification of temporal and spatial boundaries.
2. Background data collection on the natural features within 120 m of the Project location through the records review and site investigation processes.
3. Identification of the effects that is likely to occur on the environmental components as result of implementing the Project.
4. Development of mitigation measures to eliminate, alleviate or avoid the identified negative effects.
5. Design of an environmental effects monitoring program to confirm the predicted effects and the effectiveness of mitigation measures.

### 3. Project Components and Activities

The following sections briefly describe the construction, operation and decommissioning phases of the Project. More detailed information can be found in the Construction Plan Report (RE Smiths Falls 3 ULC, 2010b), Design and Operations Report (RE Smiths Falls 3 ULC, 2010a), and Decommissioning Plan Report (RE Smiths Falls 3 ULC, 2010c).

#### 3.1 Construction

Construction is anticipated to occur over an approximately 6 to 10 month period. The activities associated with construction are summarized in Table 3.1.

**Table 3.1 General Description of Construction Activities (From RE Smiths Falls 3 ULC, 2010)**

Activity	Description
Temporary Power Installation	A temporary connection to the existing electrical system will be constructed to supply power for construction activities.
Survey and Stake Facility	The site will be surveyed and staked to delineate the outline of excavations, roads and foundation locations.
Laydown Area Preparation and Setup	Construction of the construction laydown/long-term parking area (~30 m by 50 m) will include <ul style="list-style-type: none"> <li>• clearing and grubbing laydown area</li> <li>• stripping and removal of all topsoil</li> <li>• shaping and proof-rolling subgrade</li> <li>• shaping ditches and swales</li> <li>• placing, shaping and compacting granular sub-base and base materials</li> <li>• revegetating ditches and swales.</li> </ul>
Access Road Construction	Activities associated with construction of internal access roads will include <ul style="list-style-type: none"> <li>• clear and grub laydown area</li> <li>• strip and remove all topsoil</li> <li>• shape and proof-roll subgrade</li> <li>• shape ditches and swales</li> <li>• place, shape and compact granular sub-base and base materials</li> <li>• revegetate ditches and swales</li> <li>• installation of a water crossing.</li> </ul>
Water Well Installation	A water well will be installed to supply water for construction purposes. Water extracted will not exceed 45,000 L/d. Water will be temporarily stored in a bladder tank on site.
Solar PV Field Preparation	Hedgerows scrub land in the solar PV field will be cleared. Larger trees will be felled by chainsaw; smaller brush will be removed by a bulldozer with a brush rake. Material will be reused on site or managed in accordance with regulatory requirements. Minor grading will be undertaken as required.
Substation Preparation	The substation area (~20 m by 20 m) will be excavated for the transformer foundation and oil containment area. The substation site will be prepared and excavated for the footings required for the termination equipment and control house foundation pad.

Activity	Description
Array Foundation Installation	Array foundations will consist of structural footings (e.g., steel piles, screw piles, concrete piers or a foundation on bedrock) designed and installed depending on the geotechnical conditions.
Foundations for Substation, Transformer and Inverters	Foundations will be formed with plywood and reinforced with structural steel. Concrete will be poured from a ready-mix concrete truck to create foundations.
Cable Trench and Conduit Installation	Cable trench and conduits will be installed for the PV collection and aggregation system. Activities include <ul style="list-style-type: none"> <li>trench excavation by backhoe</li> <li>installation of levelled layer of compacted stone on base of trench</li> <li>installation of conduit within trench</li> <li>installation of cables within the conduit</li> <li>burying of conduit a minimum of 46 cm below grade.</li> </ul>
Dead End Structures	Wood pole dead end structures consisting of wood poles and associated insulators and connectors will be installed to connect the substation to the distribution line.
Control House Installation	A pre-fabricated control house (approximately 6 m by 9 m) will be installed on the foundation pad in the substation area.
Fencing	A 2.7-m (9-ft) high chain-link security fence, topped with barbed wire, will be erected around the perimeter of the Project location.
PV Array Installation	Activities include <ul style="list-style-type: none"> <li>installation of outdoor transformers and inverter units on the foundation pads</li> <li>erection of PV support structures</li> <li>installation of PV modules in the support structures</li> <li>installation of combiner boxes on the rear of the finished PV arrays.</li> </ul>
Substation Installation	Installation of main power transformer, switchgear cells, metering, service transformer and disconnect switches in the substation area.
Commissioning	The substation equipment, inverters, collector system and PV array systems will be tested and commercial operations will commence. Activities will include testing, calibration and troubleshooting.
Rehabilitate Site	Once major construction has been completed, the site will be reseeded/revegetated with native seed.

### 3.2 Operation

The facility will operate 365 d/yr when sufficient solar radiation exists to generate electricity. The facility will be remotely monitored with no regular on-site employees. The facility will require periodic visits for maintenance during the operations phase, such as checking and replacing worn parts, checking electrical connections and maintaining vegetation beneath and around the solar panels. Panel washing will also be conducted on an as-required basis, depending on local dust accumulation rates. It is currently anticipated that washing will be conducted, on average, approximately three times per year. Operations and maintenance requirements are summarized in Table 3.2. It is anticipated that the facility will operate for at least 30 years.

**Table 3.2 General Description of Operating Activities**

Activity	Description
Expected Commercial Operation Date	July 2012
On-Site Employees	Zero (0) on-site employees
Periodic Inspection and Maintenance	<p>Monthly inspections will be conducted with minor maintenance undertaken as required. Activities may include vegetation control, periodic panel washing, transformer inspection, inspection of primary system components, replacement of air filters and other minor adjustments or maintenance as needed. Maintenance activities associated with the maintaining the fence, if required, will be conducted from the Project side (i.e., within the fence).</p> <p>Vegetation management in areas within 30 m of the watercourses will be conducted on an annual basis in the late fall.</p>
Major Maintenance	In the event of a component failure, all major maintenance can be performed utilizing existing roads and site access.
Cleaning of Panels	Approximately three times per year on average, utilizing water from the on-site well. Approximately 25,700 L of water over a 4 to 5 day period is anticipated for each of the three cleaning events. Water only is used for cleaning – no cleaning solutions of any kind are used to wash the panels.
Fuel Consumption	None.
Solid Waste	None – the system does not produce waste of any type. All debris as a result of maintenance or cleaning will be removed from the site immediately by the contracted party.

### 3.3 Decommissioning

Decommissioning would occur when the decision has been made that it is no longer economically feasible to continue operation or refurbish generating equipment. As discussed in Section 2.2, it is anticipated that decommissioning would not occur until at least 2042.

All decommissioning and site restoration activities would adhere to the requirements of appropriate regulatory authorities and would be conducted in accordance with all applicable federal, provincial and municipal permits and other requirements. The decommissioning and restoration process comprises the following activities:

- removal of above-ground structures (i.e., solar panels, upper racking, inverters, distribution line and interconnection equipment and access road materials)
- removal of below ground structures to the depth of at least 1.2 m (i.e., below ground racking, transformer/inverter pads and footings). Best efforts will be made to remove all material from below ground surface. If materials are left below ground surface, it is expected that this would consist primarily of aggregate materials, with occasional rock anchor or solar panel support structures should removal not be possible due to breakage or other such factors.
- site grading (to remove ditches, access road, etc) and replacement of topsoil where moved and reseed with native grass species.

## 4. Potential Negative Environmental Effects and Proposed Mitigation Measures

This section describes the anticipated negative environmental effects on the identified significant natural features that could occur as a result of construction, operation and decommissioning phases of the Project (as described in Section 3).

Mitigation measures are proposed to minimize, eliminate or alleviate any negative effects. Potential negative effects are discussed by environmental component, where affects on the land could negatively affect the significant natural features. Relevant environmental components of the significant natural features that may be impacted by the proposed Project include

- vegetation communities/wildlife habitat
- wildlife communities.

### 4.1 Vegetation Communities/Wildlife Habitat

Vegetation communities/wildlife habitat can be impacted by a number of activities, including the following:

- Direct encroachment on the feature – The removal of vegetation from the significant natural feature would have an impact on the vegetation community as a whole and the wildlife habitat that is provided therein.
- Fugitive dust generation – Fugitive dust generation has the potential to impact vegetation communities within the significant natural feature as heavy dust loads on the photosynthetic surfaces of plants can retard growth and ultimately result in loss of the individual.
- Changes in surface water runoff altering the moisture regime of the feature – Alterations in surface water runoff may impact the moisture regime of the receiving significant natural features. If the moisture regime of the receiving natural features was altered significantly, the composition of these communities may change as a result.

The potential negative effects and proposed mitigation measures associated with these activities are discussed by Project phase in the following sections.

#### 4.1.1 Construction Phase

##### 4.1.1.1 Direct Encroachment on the Natural Heritage Feature

There will be no direct encroachment onto the Black Creek PSW Complex, which includes the significant forest providing a high diversity of habitat, significant woodland, animal movement corridor, and woodland supporting amphibian breeding habitat. Setbacks from this feature are discussed further below.

Similarly, there will be no construction within the identified Northern Ribbonsnake Habitat, Snapping Turtle Habitat, and Northern Map Turtle Habitat. The Project location will be setback 30 m from the watercourse providing this habitat. Given that no specific features of concern were identified in this area, and that the waterbody was identified as only providing potential movement

corridor habitat, it is determined that this setback will provide sufficient protection for the functions associated with this feature.

There will be no direct encroachment onto the significant woodlands located in proximity of the upgraded distribution line.

Construction of the Project will require direct encroachment onto the significant wildlife habitat for Milksnake that is present on the Project location. This will result in a temporary loss of general use habitat for Milksnake during construction. It is not possible to mitigate this effect, however given the abundance of suitable habitat in the area this will not impact local populations. In order to provide some compensation for habitat lost within the Project location, vegetation removed from the hedgerows will be placed around the periphery of the Project on the outside of the fence line in order to provide shelter/retreat habitat. Potential impacts to individual Milksnakes are addressed in Section 4.2.

#### 4.1.1.1.1 Black Creek Provincially Significant Wetland

There are two portions of the Black Creek Provincially Significant Wetland within 120 m of the Project location.

Portions of the Black Creek Provincially Significant Wetland complex south of Armstrong Road are located more than 30 m from the Project location. This setback, and the presence of Armstrong Road between the wetland community and the Project location, will ensure that there is no impact on the wetland community. Areas on the northern side of Armstrong Road will remain naturally vegetated therefore retaining any wildlife and hydrological functions for the wetland that these areas provided. In addition, use of sediment and erosion controls will ensure no impact on the form or function of the wetland community.

In respect of the community along the northern boundary of the Project location, a 5-m setback from the wetland community will be in place. It is not possible to move the Project location farther from the boundaries of this complex given existing constraints on space on the Project location. Prior to construction, the boundary of the feature will be delineated, and the 5-m setback marked off with staking spaced at distances of 20 m, and at any location where the work area boundary changes direction; this will ensure that the setback is preserved. Drainage and sediment and erosion controls are proposed within the Waterbodies Environmental Impact Study (Hatch 2011d) to ensure that there is no significant alteration in either the amount of surface water runoff, or potential sediment transport into the wetland from the Project location. At the completion of construction, the Project location will be vegetated with a mixture of grasses or other low-growing vegetation (mix to be determined), such that following establishment, there will be no variation in the amount of surface water runoff protection provided by the Project location when compared to the existing hayfields. Though there may be some minor alteration in local microclimate at the edge of the feature as a result of Project construction, and ultimately operation, it is not expected that this will impact the form of the wetland community (deciduous/mixed swamp in this area), which would be generally tolerant of a minor change, and no special features or rare vegetation was reported from this area. Connectivity between this wetland community, and other communities of the Black Creek PSW complex will remain intact through the watercourse and hedgerow present along the western edge of the Project location. The 5-m setback will be subject to occasional vegetation management (i.e., tree

removal to minimize shading), to be conducted in the late fall to minimize impacts on wildlife populations. Any trees felled from the hedgerows or woodland on the Project location during construction will be placed at the edge of the wetland community to provide additional wildlife habitat for species such as snakes.

#### 4.1.1.2 *Fugitive Dust Generation*

Dust may be mobilized due to vehicular traffic and heavy machinery use, drilling (if necessary for solar panel installation) and soil moving activities (e.g., excavation, trenching).

However, it is not anticipated that dust generation will result in adverse effects on vegetation communities and associated wildlife habitat since the potential impacts can be substantially mitigated through the use of standard construction site best management practices and mitigation measures. In this regard, the document entitled “Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities” (Cheminfo Services Inc., 2005) will be used as a guideline for contractors. Mitigation measures to be used, as required, to control dust include

- use of approved dust suppression (i.e., water or non-chloride based materials) on exposed areas including access roads, stockpiles and works/laydown areas as necessary
- hard surfacing (addition of coarse granular A material, free of fine soil particles) of access roads or other high-traffic working areas
- phased construction, where possible, to limit the amount of time soils are exposed
- avoid earth moving works during excessively windy weather. Stockpiles to be worked (e.g., loaded/unloaded) from the downwind side to minimize wind erosion.
- stockpiles and other disturbed areas to be stabilized as necessary (e.g., tarped, mulched, graded, revegetated or watered to create a hard surface crust) to reduce/prevent erosion and escape of fugitive dust.

Visual monitoring of dust generation will occur during the construction period and if dust is observed to be of concern, additional mitigation will be implemented. Given the mitigation and monitoring proposed, it is anticipated that dust generation will be relatively low in magnitude and limited in duration and geographical area, such that no negative effects on vegetation communities will occur as a result of dust.

#### 4.1.1.3 *Surface Water Runoff*

Activities that could occur during the construction phase that would have the potential to affect surface water runoff patterns and rates include

- land grading and ditching associated with access roads
- soil compaction due to heavy equipment or stockpiling
- vegetation removal.

The potential negative effects and proposed mitigation measures associated with these activities are discussed in the Waterbodies Environmental Impact Study (Hatch Ltd., 2010d). The study concluded that through the use of effective mitigation measures, there will be minimal change in surface water

runoff rates, quantities and vectors as a result of the proposed Project. Further, land will be graded such that surface water runoff flows in the same general direction as present; therefore, no alterations in moisture regime are anticipated.

#### **4.1.2 Operations Phase**

With the Project operating unmanned and regular maintenance only expected to occur relatively infrequently throughout the year, potential impacts on the significant natural features are expected to be limited to changes in surface water runoff and the presence of the Project within significant wildlife habitat for Milksnake.

##### **4.1.2.1 Surface Water Runoff**

Long-term site alterations associated with the operational phase of the Project that could potentially affect surface water runoff include

- long-term changes in land grading and ditches
- presence of impervious or less pervious surfaces
- changes in vegetation structure and density.

The potential negative effects and mitigation measures associated with these activities are discussed in the following sections as well as the Waterbodies Environmental Impact Study (Hatch Ltd., 2010d). The study concluded that through the use of effective mitigation measures, there will be minimal change in surface water runoff rates, quantities and vectors as a result of the proposed Project. Therefore, no adverse effects on surrounding significant natural features are anticipated to occur.

##### **4.1.2.2 Presence of Project Within Significant Wildlife Habitat for Milksnake**

The presence of Project components on significant wildlife habitat for Milksnake is not expected to impact the amount of available habitat. Milksnake are a habitat generalist and are commonly found around manmade structures, and as such it can be anticipated that the presence of the structures will not result in an impact on the amount of habitat available in the local area.

#### **4.1.3 Decommissioning Phase**

Certain decommissioning activities will be similar to those activities that occurred during the construction phase of the Project, and as such mitigation measures from the construction phase will be similar to those employed in the decommissioning phase.

##### **4.1.3.1 Fugitive Dust Generation**

The potential for dust generation during decommissioning will be the same as that previously discussed for construction (see Section 4.1.1.2). The mitigation measures previously identified with respect to construction will also be effective at mitigating potential impacts during decommissioning.

##### **4.1.3.2 Surface Water Runoff**

Short-term activities and long-term site alterations associated with the decommissioning of the Project that could potentially affect surface water runoff include

- long-term changes in land grading
- changes in vegetation structure and density.

The potential negative effects and mitigation measures associated with these activities are discussed in the Waterbodies Environmental Impact Study (Hatch Ltd., 2010d). In general, it was concluded that these changes will restore the Project location to pre-existing conditions and there will therefore be no effect on the natural features.

## 4.2 Wildlife Communities

Project activities will occur within and adjacent to the significant natural features, causing potential direct and indirect impacts to the wildlife present within those features through the various Project phases.

### 4.2.1 Construction Phase

The installation of the fence may trap wildlife within the Project location, such as deer or coyote that may venture from the animal movement corridor. Once the fence is completed, a visual search of the Project location will be conducted to search for any trapped wildlife species. If species are observed, they will be either directed off of the Project location or collected by a designated employee, who has been provided with protocols for the safe handling and transport of wildlife, and transported to the nearest available location off site and released.

As construction will likely occur during the wildlife breeding season, wildlife species breeding on the Project location, such as nesting birds, may be directly impacted by construction activities resulting in potential loss or abandonment of nest attempts or incidental take of wildlife species. In order to minimize impacts on wildlife species, major construction activities with the potential to disturb breeding wildlife will be timed wherever possible to occur outside of the breeding bird period (generally May through July). Such activities will include vegetation clearing, land grading, excavations, construction of access roads, and trenching. If these activities are required during the breeding wildlife period, the areas potentially impacted will be searched by a trained biologist within 48 hours of the proposed activity in order to determine if birds are currently nesting in these areas. If nests are found, work will be suspended within 100 m of the nest location until such time as the nest is successful or abandoned. Use of these mitigation measures is anticipated to prevent potential effects to nesting wildlife.

In order to minimize the potential for incidental take of wildlife, speeds on access roads of the Project location will be restricted. Further, daily visual monitoring of the project area will be completed to search for reptiles and amphibians to ensure that potential impacts to these species are minimized. In addition, the construction workforce will be made aware of the potential for wildlife occurring on the Project location and that measures should be taken to avoid wildlife wherever possible. If wildlife are observed on the Project location, they will be either directed off of the Project location by the worker (without the use of vehicles) or collected by a designated employee, who has been provided with protocols for the safe handling and transport of wildlife, and transported to the nearest available location off site and released.

Some incidental take may still occur during construction; however, levels should be negligible. Known occurrences of incidental take will be documented in the monthly environmental report. If a

species of conservation concern, such as Milksnake, is noted, work within the area will be ceased immediately, and the Ministry of Natural Resources (MNR)/Environment Canada (EC) will be contacted to make them aware of the occurrence. Work in the area will remain ceased until a survey is conducted by a trained biologist to ensure that there are no species of conservation concern present in the area.

The presence of the construction workforce and construction activities associated with the Project will also result in auditory and visual disturbance of local wildlife populations. Wildlife populations adjacent to the significant wildlife habitats may result in wildlife retreat from the immediate vicinity of the Project as a result of the disturbance, however given the size of these features this is not expected to impact the wildlife communities or the use of the woodlands as an animal movement corridor given the width of the corridor (at more than 100 m) would provide ample retreat habitat. It is expected that wildlife populations that typically occurred on the Project location will abandon these sites throughout the duration of construction. Milksnake may temporarily retreat from these areas during construction as a result of the disturbance; however, as they are habitat generalists, this is not expected to impact the local population.

#### **4.2.2 Operations Phase**

As regular maintenance is anticipated to occur infrequently during the year, this would be consistent with existing disturbances on the Project location from agricultural operations. Mowing of the annual vegetation management zone, located within the 30-m setback from the watercourses and 5-m setback from the northern extent of the Black Creek Provincially significant wetland (see Figure 1.1), will be timed for the late fall to avoid any impacts to wildlife species.

In order to minimize the potential for incidental take of wildlife, speeds on access roads of the Project location will be restricted. Further, visual monitoring of the access roads will be completed. In addition, the construction workforce will be made aware of the potential for wildlife occurring on the Project location and that measures should be taken to avoid wildlife wherever possible. If wildlife are observed on the Project location, they will be either directed off of the Project location by the worker (without the use of vehicles) or collected by a designated employee, who has been provided with protocols for the safe handling and transport of wildlife, and transported to the nearest available location off site and released.

Mowing of vegetation beneath and around the solar panels, if required, may result in incidental take. Known occurrences of incidental take will be reported, and the species impacted will be determined. If the species is determined to be a species of conservation concern, work within the area will be ceased immediately, and the MNR/EC will be contacted to make them aware of the occurrence. Work in the area will remain ceased until a survey is conducted by a trained biologist to ensure that there are no further species of conservation concern present in the area. Milksnake are habitat generalists and may be impacted through incidental take.

Operations are not expected to impact wildlife communities within the significant wildlife habitat and woodlands within 120 m of the Project location. There will be no fence installed through the animal movement corridor on the Project location, therefore animal movement will be unimpeded in this area. As there is very little noise emitted from the Project, and since maintenance requirements are low, it is not expected that the Project would result in significant disturbance to wildlife within

the animal movement corridor. Some minor retreat to other portions of the movement corridor may occur from species sensitive to the presence of anthropogenic features, however the width of the corridor, at more than 100 m, will provide ample retreat habitat to retain movement corridor function.

#### **4.2.3 Decommissioning Phase**

During the decommissioning phase, disturbances present in the area will be similar to those that may occur during the construction phase as described in Section 4.2.1. In order to minimize potential impacts to wildlife communities of the significant natural features, decommissioning will be scheduled to occur outside of breeding wildlife period. Though there may be some avoidance of the significant natural features on or near the Project location during decommissioning, these effects are temporary, and following decommissioning the site will be restored to a grassland state, similar to those found throughout the region. Grassland communities represent the majority of the wildlife habitat found on the Project location at present, and therefore restoration to this habitat type will be generally consistent with existing conditions.

## **5. Environmental Effects Monitoring Plan – Design and Operations Report**

As discussed in the Design and Operations Report (RE Smiths Falls 3 ULC, 2010a), environmental effects monitoring is proposed in respect of any negative environmental effects that may result from engaging in the Project. As per the REA Regulation, the monitoring plan identifies

- performance objectives in respect of the negative environmental effects
- mitigation measures to assist in achieving the performance objectives
- a program for monitoring negative environmental effects for the duration of the time the Project is engaged in, including a contingency plan to be implemented if any mitigation measures fail.

For the purposes of this EIS report, the effects monitoring measures with respect to negative effects on the significant natural feature have been reproduced here, in Table 5.1.

The monitoring proposed in Table 5.1 will serve to verify that mitigation measures are functioning as designed to meet performance objectives. If monitoring shows that performance objectives are not being met, the contingency measures documented in Table 5.1 will be used to ensure that remedial action is undertaken as necessary to meet the performance objectives.

**Table 5.1 Summary of Environmental Effects Monitoring Requirements with Respect to Significant Natural Features**

Negative Effect	Mitigation Strategy	Performance Objective	Monitoring Plan				Contingency Measures	
			Methodology	Monitoring Locations	Frequency	Rationale		Reporting Requirements
<b>Construction Phase</b>								
Dust generation and off-site transport	Standard construction site best management practices to prevent fugitive dust.	Minimize fugitive dust from the construction site.	Visual monitoring of visible dust plumes during construction.	Throughout construction site.	Periodically during all construction activities.	Visual dust monitoring would identify if dust plumes are an issue and where their source may be.	Reported in monthly environmental monitoring report during construction.	Dust control measures implemented as necessary to prevent/minimize dust generation.
Incidental take of wildlife	Daily visual monitoring of work areas and construction equipment prior to start of work. Wildlife observed will be removed from areas of impact through established protocols.  Speeds to be limited on Project location and construction workforce to be made aware of potential for wildlife on the Project location.	Avoid occurrences of incidental take.	Daily visual monitoring will be conducted by workers on foot of the areas to be worked on the given day.  Any wildlife observed will be either directed off of the Project location or collected by a designated employee and transported to the nearest available location off site and released.	Throughout construction site.	Ongoing during construction on a continued basis.	Incidental take will be reported by construction workforce to the on-site personnel responsible for environmental protection if incidents occur.	Reported in monthly environmental monitoring report during construction, unless the species is a species of conservation concern in which case reporting will be immediate to the MNR/EC.	If incidental take of species of conservation concern are recorded, work will be ceased until such time as a trained biologist can state that the species is no longer present in the area.
Wildlife becoming trapped within the fence	Visual inspection following completion of fence and removal of wildlife.	Ensure all trapped wildlife species are removed from the Project location.	Visual search of the Project location for trapped wildlife species.  Any wildlife observed will be either directed off of the Project location or collected by a designated employee and transported to the nearest available location off site and released.	Entire Project location within the fence.	Once following completion of fence.	Visual search will ensure all trapped wildlife species are detected and removed.	Reported in monthly environmental monitoring report following completion of search.	If any wildlife are recorded trapped within the fence following this activity, previously described protocols will be followed to remove wildlife species from the Project location.
Potential impacts to nesting birds	Clearing/land grading to be conducted outside of breeding bird period. If not possible, areas to be cleared to be searched for nests prior to clearing.	Preventing impacts to nesting birds.	Confirmation of timing of clearing. If searches are required, area searches by a trained biologist will be conducted.	Throughout areas to be cleared.	Confirmation of clearing progress to occur weekly during clearing in order to ensure completed prior to breeding bird period. If clearing required during breeding bird period, searches will be conducted within 48 hours of clearing activities.	The use of this monitoring will confirm that clearing is either conducted outside of the breeding bird period, or that nesting birds will be identified prior to clearing being undertaken.	Reported in monthly environmental monitoring report during construction.	If nesting reptiles or amphibians are identified, work will be suspended within 100 m of the nest until the nesting attempt is successful or abandoned.

Negative Effect	Mitigation Strategy	Performance Objective	Monitoring Plan				Contingency Measures	
			Methodology	Monitoring Locations	Frequency	Rationale		Reporting Requirements
<b>Operations Phase</b>								
Incidental take of wildlife	Speeds to be limited on Project location and maintenance workforce to be made aware of potential for wildlife on the Project location.  Visual monitoring of access roads for wildlife species.	Avoid occurrences of incidental take.	Occasions of incidental take to be reported as they are identified.	Throughout Project location.	Ongoing during maintenance activities.	Incidental take will be reported by maintenance staff to the on-site personnel responsible for environmental protection if incidents occur.	No requirement; unless the incident involves a species of conservation concern in which case reporting will be immediate to the MNR/EC.	If incidental take of species of conservation concern are recorded, work will be ceased until such time as a trained biologist can state that the species is no longer present in the area.
<b>Decommissioning Phase</b>								
Dust generation and off-site transport	Standard site best management practices to prevent fugitive dust.	Minimize fugitive dust from the Project location.	Visual monitoring of visible dust plumes during decommissioning.	Throughout Project location.	Periodically during all decommissioning activities.	Visual dust monitoring would identify if dust plumes are an issue and where their source may be.	Reported in monthly environmental monitoring report during decommissioning.	Dust control measures implemented as necessary to prevent/minimize dust generation.
Incidental take of wildlife	Daily visual monitoring of work areas and decommissioning equipment prior to start of work.  Speeds to be limited on Project location and construction workforce to be made aware of potential for wildlife on the Project location.	Avoid occurrences of incidental take.	Daily visual monitoring will be conducted by workers on foot of the areas to be worked on the given day.  Any wildlife observed will be either directed off of the Project location or collected by a designated employee and transported to the nearest available location off-site and released.	Throughout decommissioning site.	Ongoing during decommissioning on a continued basis.	Incidental take will be reported by decommissioning workforce to the on-site personnel responsible for environmental protection if incidents occur.	Reported in monthly environmental monitoring report during decommissioning, unless the species is a species of conservation concern in which case reporting will be immediate to the MNR/EC.	If incidental take of species of conservation concern are recorded, work will be ceased until such time as a trained biologist can state that the species is no longer present in the area.

## 6. Construction Plan Report

The REA Regulation requires proponents of Class 3 solar projects to prepare a Construction Plan Report (CPR). RE Smiths Falls 3 ULC prepared the CPR with technical assistance from Wardrop Engineering and input from Hatch Ltd. regarding potential negative effects and mitigation measures. The CPR is a stand-alone report (RE Smiths Falls 3 ULC, 2010b) that will be included as part of the REA application.

The CPR details the construction and installation activities, location and timing of construction and installation activities, any negative environmental effects that result from construction activities within 300 m of the Project and mitigation measures for the identified negative environmental effects. The CPR addresses all potential effects of construction on natural features within 300 m of the Project location in a general manner. The mitigation proposed in the CPR with respect to preventing/minimizing negative effects on natural features is the same as that discussed in this EIS. Additional mitigation is proposed to address negative effects during construction not related to natural features. Therefore, the CPR and this EIS should be read in conjunction with each other, although all negative effects and mitigation requirements with respect to significant natural features are contained within this EIS and duplicated in the CPR.

## 7. Summary and Conclusions

As discussed in the Natural Heritage Records Review Report (Hatch Ltd. 2010a), the Natural Heritage Site Investigations Report (Hatch Ltd., 2010b) and the Evaluation of Significance (Hatch Ltd., 2010c), there is a provincially significant wetland, significant woodlands and significant wildlife habitat located on and within 120 m of the Project location.

The EIS has been prepared to identify potential negative environmental effects that all phases of the Project may have on the significant natural feature. Mitigation measures have been proposed to prevent these effects from occurring or minimize the magnitude, extent, duration and frequency in the event that they do occur to an acceptable level. The primary mitigation measure that will prevent adverse effects on the natural feature is avoidance of direct encroachment onto the majority of features. Monitoring measures have been proposed to confirm that mitigation measures are having the intended effect and that performance objectives are being met.

## 8. References

Cheminfo Services Inc. 2005. Best Practices for the Reduction of Air Emissions From Construction and Demolition Activities. Prepared for Environment Canada. March 2005. 49 pp.

DeJong-Hughes, J., J. F. Moncreif, W. B. Vorhees, and J. B. Swan. 2001. Soil Compaction Causes, Effects and Control. Regents of the University of Minnesota. Available on-line at <http://www.extension.umn.edu/distribution/cropsystems/DC3115.html>. Accessed November 28, 2007.

Hatch Ltd. 2010a. RE Smiths Falls 3 Solar Project – Natural Heritage Records Review Report.  
Prepared for RE Smiths Falls 3 ULC.

Hatch Ltd. 2010b. RE Smiths Falls 3 Solar Project – Natural Heritage Site Investigations Report.  
Prepared for RE Smiths Falls 3 ULC.

Hatch Ltd. 2010c. RE Smiths Falls 3 Solar Project – Natural Heritage Evaluation of Significance.  
Prepared for RE Smiths Falls 3 ULC.

Hatch Ltd. 2010d. RE Smiths Falls 3 Solar Project – Waterbodies Environmental Impact Study.  
Prepared for RE Smiths Falls 3 ULC.

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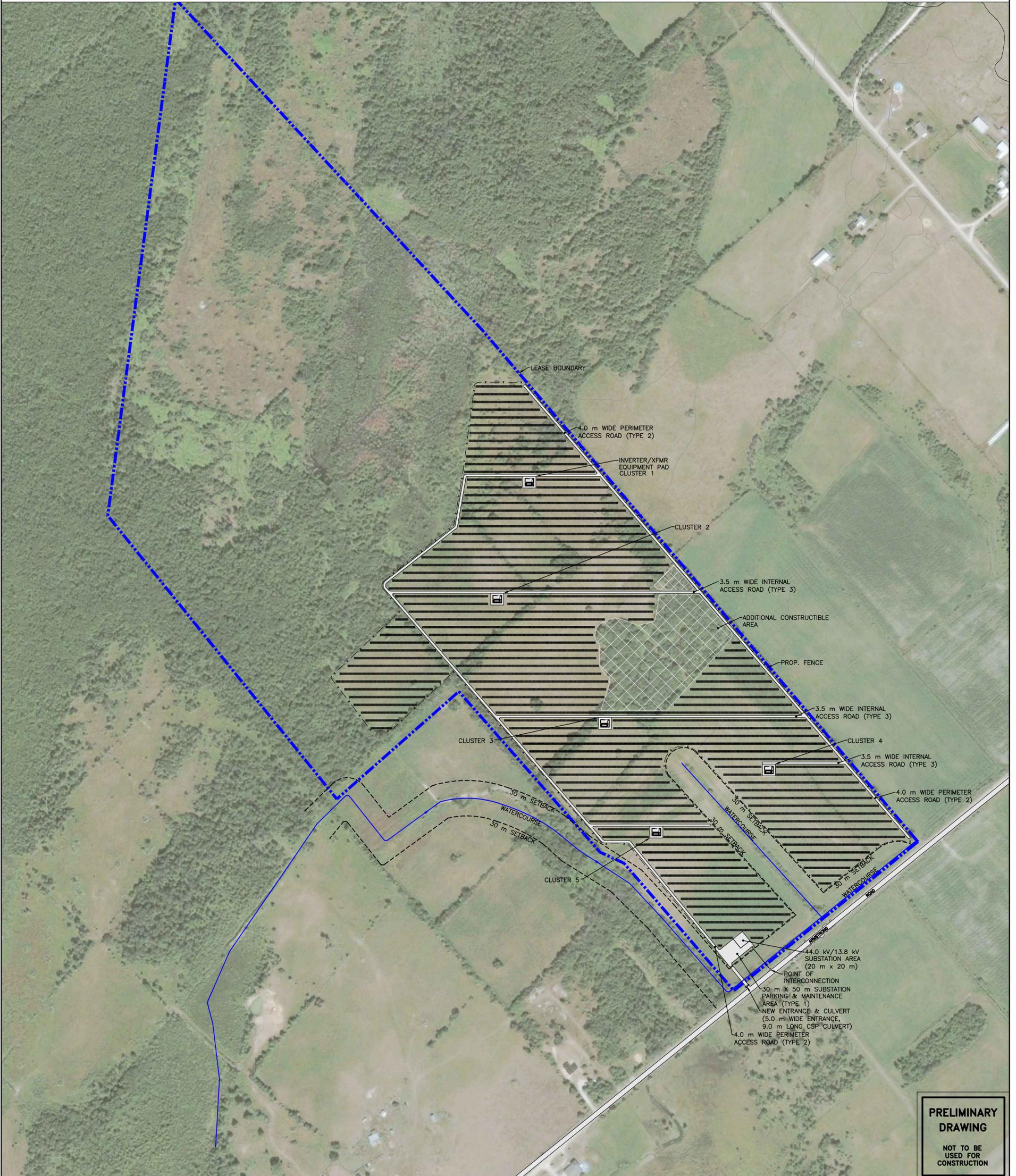
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Report. Prepared for RE Smiths Falls 3 ULC.

RE Smiths Falls 3 ULC Engineering. 2010b. RE Smiths Falls 3 Solar Project – Construction Plan  
Report. Prepared for RE Smiths Falls 3 ULC.

RE Smiths Falls 3 ULC Engineering. 2010c. RE Smiths Falls 3 Solar Project – Decommissioning Plan  
Report. Prepared for RE Smiths Falls 3 ULC.

# Appendix A

## Site Layout



**PRELIMINARY  
DRAWING**

NOT TO BE  
USED FOR  
CONSTRUCTION

**NOTES:**

- AERIAL IMAGERY OBTAINED FROM GOOGLE EARTH PRO, IMAGERY DATE 2006
- ROAD CONSTRUCTION PROCEDURES
  - CLEAR & GRUB ALL AREAS PROPOSED FOR ROAD AND PARKING LOT CONSTRUCTION.
  - STRIP & REMOVE ALL TOPSOIL.
  - SHAPE & PROOF-ROLL SUBGRADE.
  - SHAPE & GRADE DITCHES & SWALES.
  - PLACE, SHAPE AND COMPACT GRANULAR SUBBASE AND BASE MATERIALS AS FOLLOW:
    - TYPE 1 - 300mm GRANULAR "B" SUBBASE, 150mm GRANULAR "A" BASE.
    - TYPE 2 - 200mm GRANULAR "B" SUBBASE, 150mm GRANULAR "A" BASE.
    - TYPE 3 - 150mm TO 200mm GRANULAR "A".
  - RE-VEGETATE DITCHES AND SWALES.

**CULVERTS:**

- CULVERT SHALL BE CORRUGATED STEEL PIPE OR RIBBED PVC PIPE INSTALLED IN ACCORDANCE WITH OPSD.
- MINIMUM CULVERT DIAMETER:
  - 300mm Min. Dia. FOR MINOR CULVERTS
  - 600mm Min. Dia. FOR MAIN CULVERTS
 REFER TO PLANS FOR CULVERT LOCATIONS.

**APP. SCALE:**

1:3000

**LEGEND:**

- INVERTER / XFMR EQUIPMENT PAD
- SOLAR ARRAY
- LEASE BOUNDARY
- ACCESS ROAD
- PROPOSED FENCE
- ADDITIONAL CONSTRUCTIBLE AREA THAT MAY BE USED FOR THE FACILITY

REFERENCE NO. 1088760100-DWG-E0018-06

REV.	DATE	DESCRIPTION	APPROVED BY
06	11.03.23	ISSUED FOR REVIEW	ENERGY
05	10.12.08	ISSUED FOR REVIEW	ENVIRO.
04	10.09.16	ISSUED FOR REVIEW	INFRAS.
03	10.08.05	ISSUED FOR REVIEW	STRUCT.
02	10.07.08	ISSUED FOR REVIEW	

**RECURRENT ENERGY – SMITHS FALLS 3  
10MW AC**

SOLAR GENERATION FACILITY – SITE LAYOUT

**WARDROP** | A TETRA TECH COMPANY

