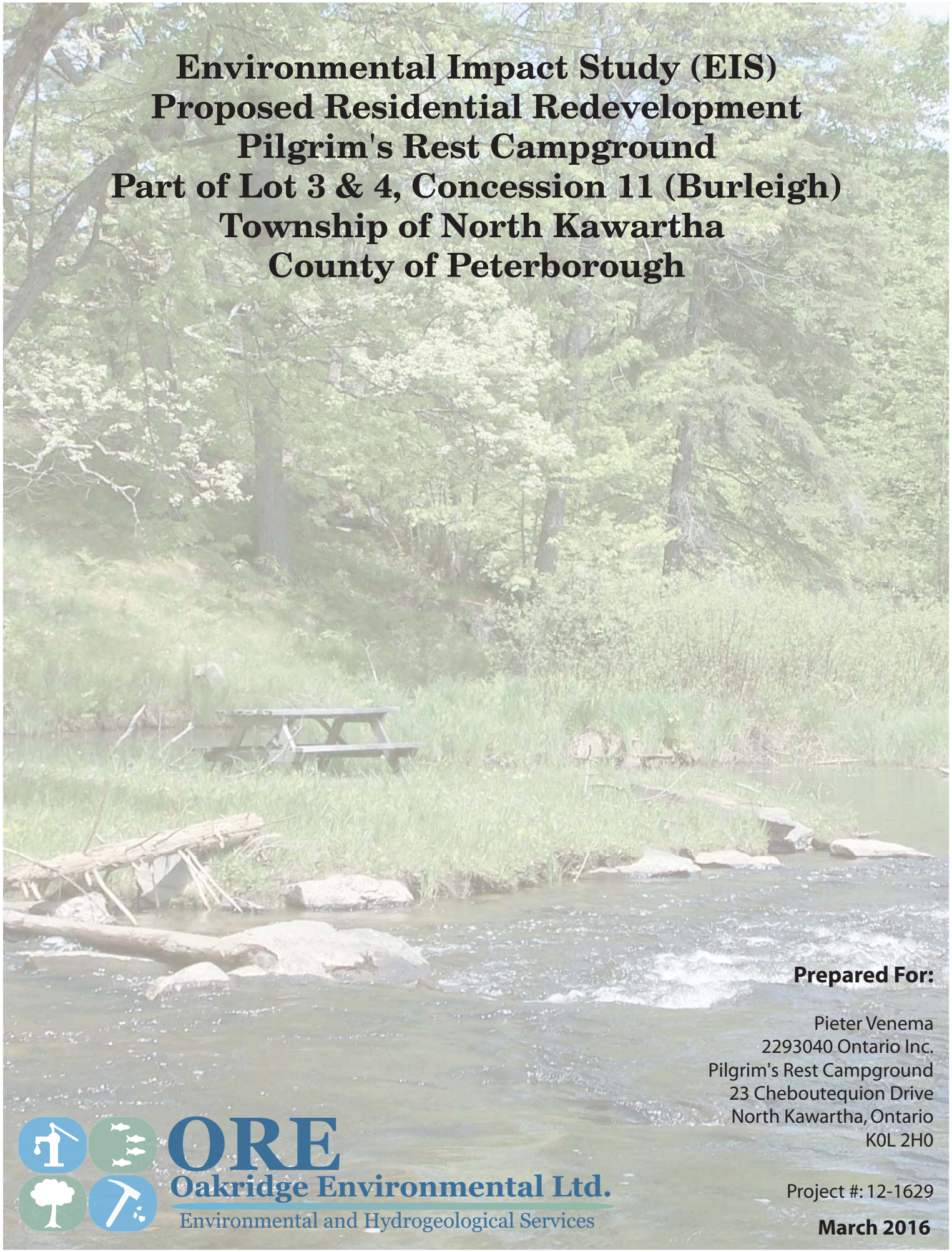
Environmental Impact Study (EIS)
Proposed Residential Redevelopment
Pilgrim's Rest Campground
Part of Lot 3 & 4, Concession 11 (Burleigh)
Township of North Kawartha
County of Peterborough



Prepared For:

Pieter Venema
2293040 Ontario Inc.
Pilgrim's Rest Campground
23 Cheboutequion Drive
North Kawartha, Ontario
K0L 2H0

ORE
Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

Project #: 12-1629

March 2016

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Oakridge Environmental Limited
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March 25th, 2016

2293040 Ontario Inc.
Pilgrim's Rest Campground
23 Cheboutequion Drive
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Attention: **Mr. Pieter Venema**,

Re: Environmental Impact Study (EIS)
Proposed Residential Redevelopment
Pilgrim's Rest Campground
Part Lots 3 & 4, Concession 11 (Burleigh)
Township of North Kawartha, County of Peterborough
Our File No. 12-1629

Dear Mr. Venema:

We are pleased to present our Environmental Impact Study (EIS) in support of a proposed residential redevelopment of the property currently occupied by the Pilgrim's Rest Campground.

Based on our evaluations, it is our opinion that the proposed redevelopment of the site into a four-season residential condominium development can proceed with minimal impact on environmentally sensitive receptors in the area, provided reasonable mitigation measures and controls are implemented to protect those features.

Four (4) Species at Risk (SAR) were detected on the property: Butternut (Endangered), Western Chorus Frog (Threatened), Snapping Turtle (Special Concern) and Whip-poor-will (Threatened). However, provided that the mitigation measures outlined in our recommendations are adhered to, the redevelopment will be able to coexist with these SAR. In addition, it is expected that the redevelopment of the property will result in reduced concentration of uses and will thereby serve as a net benefit to the natural environment.

Should you have any questions, please contact the undersigned.

Yours truly,
Oakridge Environmental Ltd.

Original Signed By

Rob West, HBSc., CSEB
Environmental Scientist

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Pilgrim's Rest Campground
Part Lots 3 & 4, Concession 11 (Burleigh)
Township of North Kawartha, County of Peterborough

Prepared For:

Mr. Pieter Venema
2293040 Ontario Inc.
Pilgrim's Rest Campground
23 Cheboutequion Drive
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March 25th, 2016

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1.0 Introduction

1.1 Site Description and Access

The subject property is situated on Northey's Bay Road, approximately 1.5 km west of County Road 6 (Figure 1). The site is bounded by Northey's Bay Road in the north, Cheboutequion Drive in the west, Stony Lake (locally referred to as Upper Stoney Lake) to the south and Jack Creek to the east. The entrance to the property is via Cheboutequion Road, approximately 170 m south of the intersection with Northey's Bay Road.

The campground has an alternate access route (Fire Route 24) that is utilized by neighbouring residents to access their private cottages adjacent to the campground.

The subject property consists of two separate parcels, consisting of a 28.5 hectare (70 acre) mainland and a small approximately 0.5 hectare (1.2 acre) island situated immediately off-shore. The site is currently comprised of a seasonal trailer and camping resort (Pilgrim's Rest Campground), which contains approximately eighty seven (87) communally-serviced trailer sites in addition to approximately twenty (20) un-serviced camping sites (Figure 2).

1.2 Study Approach and Proposed Development

A four-season residential (condominium) development is proposed to replace the existing seasonal campground. The proposed residential development will consist of approximately thirty (30) seasonal residential ("condo") units.

To support the applications for an Official Plan amendment and proposed plan of condominium, an Environmental Impact Study (EIS) is one of the requirements (by the County of Peterborough) necessary to determine environmental constraints for the proposed redevelopment.

Our study has been completed in conjunction with planning assessments by EcoVue Consulting Services Inc. In addition, our firm is conducting an Environmental Site Assessment (ESA) and a Hydrogeological and Site Servicing Study for the redevelopment. Relevant environmental information from these parallel studies have been included in this EIS.

The site servicing plan prepared by our firm as part of the Hydrogeological and Site Servicing Study illustrates the thirty (30) individually serviced lots being proposed for the redevelopment. It is expected that updates to the conceptual servicing plan could be needed as the redevelopment application proceeds. As such, the reader is referred to the

final draft plan of condominium for the most up-to-date layout. It is anticipated that the draft plan will incorporate constraints from all studies completed at the site.

2.0 Scope of Work

In conducting this study, the following tasks have been completed:

- Available background data regarding the subject site have been obtained and compiled.
- The property has been attended for purposes of conducting detailed inspections. These have included delineation of the adjacent wetland boundaries and feature mapping utilizing a mapping-grade differential Global Positioning System (dGPS) system and air photo interpretation.
- Lists of floral and faunal species have been prepared for the property. Where possible, the on-site vegetation communities have been classified under the Ecological Land Classification (ELC) for Southern Ontario.
- The significance of any species has been verified through agency database reviews and contacts.
- This report was prepared outlining our findings, conclusions and recommendations with respect to potential environmental impacts and mitigation requirements.

3.0 Policy Framework

3.1 Provincial Policy Statement

The Provincial Policy Statement (PPS) provides policy direction on matters of provincial interest related to land use planning and development. This document stresses the need for appropriate development while protecting resources of provincial interest, public health and safety, and the quality of natural heritage features. Subsection 3.1 of the Planning Act requires that decisions made by planning authorities shall be consistent with the PPS.

The excerpt below has been directly taken from Section 2.1 of the PPS (2014):

"*2.1 Natural Heritage*

2.1.1 Natural features and areas shall be protected for the long term.

2.1.2 The diversity and connectivity of natural features in an area, and the long-term

ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features.

2.1.3 Natural heritage systems shall be identified in Ecoregions 6E & 7E, recognizing that natural heritage systems will vary in size and form in settlement areas, rural areas, and prime agricultural areas.

2.1.4 Development and site alteration shall not be permitted in:

a) significant wetlands in Ecoregions 5E, 6E and 7E; and
b) significant coastal wetlands.

2.1.5 Development and site alteration shall not be permitted in:

a) significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E;
b) significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);
c) significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);
d) significant wildlife habitat;
e) significant areas of natural and scientific interest; and
f) coastal wetlands in Ecoregions 5E, 6E and 7E1 that are not subject to policy 2.1.4(b)

unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.

2.1.6 Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.

2.1.7 Development and site alteration shall not be permitted in habitat of endangered species and threatened species, except in accordance with provincial and federal requirements.

2.1.8 Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4, 2.1.5, and 2.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

2.1.9 Nothing in policy 2.1 is intended to limit the ability of agricultural uses to continue."

The proposed development elicits the following PPS criteria:

The proposed development will include lands that occur directly adjacent to the Hull South Bay Provincially Significant Wetland (PSW) feature and could contain suitable habitat for species at risk. Therefore, Sections 2.1.7 and 2.1.8 of the PPS is applicable, requiring an evaluation to demonstrate that no negative impacts on this feature will occur as a result of the proposed redevelopment.

3.2 Trent-Severn Waterway

As Stony Lake comprises part of the Trent Severn Waterway navigable route, any alterations to the lake and/or shoreline may require authorization from the Trent Severn Waterway (Parks Canada) agency. In many cases, site alteration such as dredging, weed removal, boathouse construction and dock installation/repair must comply with the regulations found in the National Historic Sites of Canada Trent–Severn Waterway and Rideau Canal Policies for In-Water and Shoreline Works and Related Activities (2007).

Currently, the site contains two (2) common areas along the shore of Stony Lake, including a small sandy beach at the south-western extent of the property and a docking area that contains approximately thirty (30) individual docks. Although not contemplated at this time, any new construction activities that require entering the waterway would be subject to approval from Parks Canada.

To obtain permission from Parks Canada it would be necessary to provide a Basic Impact Assessment (BIA). The BIA is a template-type assessment report which would outline the proposed works. This EIS does not constitute a BIA, however, bio-physical data collected as part of this EIS could be utilized for completing a BIA.

3.3 Peterborough County Official Plan

3.3.1 General

The Official Plan (OP) of Peterborough County states the relevant requirements for all studies to be completed in support of a proposed development application. As per the OP, the following criteria must be met for an "Environmental Impact Assessment":

- *a description of the proposal and statement of rationale for the undertaking;*
- *a description of the existing land use(s) on site and adjacent lands;*
- *the land use designation on site and adjacent lands, as identified by the County and local municipal Official Plans;*

- *a description of alternative development proposals for the site as well as the environmental impacts of the alternatives;*
- *a comprehensive description of the proposal including its direct and indirect effect on the environment and considering both the advantages and disadvantages of the proposal;*
- *an identification of environmental constraint areas;*
- *an environmental inventory of the area under development consideration (plant life, land-based and aquatic wildlife, wetlands, natural landforms, surface waters, hydrogeological features);*
- *a statement of environmental and ecological significance of the area affected by the proposed development;*
- *a statement on how the development will establish or facilitate the establishment of linkages between natural areas within the watershed and adjacent watersheds and how these linkages will contribute to the preservation and enhancement of the natural areas;*
- *a detailed description of mitigating effects;*
- *any additional information requested by the local municipality;*
- *an assessment of options for servicing the development with full municipal or communal water and sewage services as well as the environmental impacts of the servicing options.*

An environmental impact assessment for proposed development within or adjacent to a significant natural heritage feature will include as its study area the natural heritage feature plus the area surrounding that feature as follows:

- *significant wetlands - all lands within 120 metres;*
- *significant portions of the habitat of endangered and threatened species - all lands within 50 metres;*
- *fish habitat - all lands within 30 metres of the high water mark of all watercourses;*
- *significant wildlife habitat - all lands within 50 metres;*
- *significant woodlands south of the southern limit of the Canadian Shield - all lands within 50 metres;*

- *significant valleylands south of the southern limit of the Canadian Shield - all lands within 50 metres;*

- *significant areas of natural and scientific interest (ANSI) - all lands within 50 metres.*

The proposed development elicits the following Peterborough County OP criteria:

In this instance, the proposed redevelopment will be located adjacent to water features that possess fish habitat. The site is also within 120 m of a significant wetland (Hull South Bay PSW) and within 30 m of Stony Lake. As such, this EIS addresses the relevant requirements of the Peterborough County Official Plan.

3.3.2 Township of North Kawartha Land Use Plan

Our review of Schedule A3 of the County OP (Township of North Kawartha Land Use Plan), indicates that the southern half of the property is designated Recreational Commercial. The northern extent of the site is designated Rural. However, it is apparent that the boundaries of these designations do not accurately reflect the current uses. The reader is referred to the accompanying Planning Report by EcoVue Consulting Services Inc. for more detailed information in this regard.

3.4 The Clear, Ston(e)y and White Lake Plan

In 2008, the Clear, Ston(e)y and White (CSW) Lake Plan was published by the Environment Council for Clear, Ston(e)y and White Lakes. The CSW Lake Plan was prepared through a partnership that included the Stony/Upper Stoney Lake Environment Council, Upper Stoney Lake Association, Association of Stony Lake Cottagers, and White Lake Association, with support from the Stony Lake Heritage Fund. The Plan incorporates information/data submitted by various agencies, institutions and residents.

Although the CSW Lake Plan has not been adopted as official policy and its mapping does not identify Pilgrim's Rest Campground as a commercial property, it does provide extensive background information on the Stony Lake watershed and also includes a number of general recommendations. As such, this report has regard for the CSW Lake Plan.

4.0 Physical Setting

4.1 Existing Property Use

As mentioned previously, the subject site encompasses approximately 29 ha (72 acres),

including a 0.5 ha (1.2 acre) island. The property contains approximately eighty seven (87) trailer sites that have water services in addition to approximately twenty (20) un-serviced camping sites. All of the partially-serviced trailer sites are located within approximately 220 m of the shore of Stony Lake. Un-serviced camp sites are primarily located north of the trailer sites within the forested areas of the property, however, there are sites located on the adjacent island to the south which is only accessible by boat.

The campground obtains water from a communal surface water intake located at the mouth of Jack Creek. It is understood that the current water system is registered with the Ministry of Health (through the Peterborough County-City Health Unit).

A central pump-out station occurs adjacent to public washroom facilities that allows trailers to dispose of waste water into a central subsurface sewage system on the site. This central sewage treatment system is located approximately 25 m from the shore of Stony Lake.

4.2 Proposed Development

To replace the existing campground, a residential condominium redevelopment has been proposed for the site. Each condominium lot (unit) will be privately serviced by a drilled well for water supply and a subsurface sewage disposal system. Figure 2 illustrates the proposed development area. The development area will utilize the campground's existing driveway off Cheboutequion Drive and from Fire Route 24.

While the property encompasses approximately 29 ha (72 acres), the proposed development will only occupy approximately 19.0 ha (46 acres). The remaining area will be maintained in a natural state for passive recreational uses only (e.g., walking trail, etc). There are no redevelopment plans for the 0.5 ha (1.1 acre) island associated with the property. Furthermore, the island will be placed in a protective zone category which will preclude future development, reflecting the recommendations of a Stage 3 archaeological assessment completed by others.

The redevelopment of the property is in general agreement with the following statement included in the CSW Lake Plan:

> *"There is little potential for the creation of additional shoreline lots so most new development will be in the form of conversions, infilling, redevelopment and clusters involving several small lots"*

Replacement of the campground (and trailer park) with a modern, less concentrated residential development based on suitably constructed private sewage systems (that are well set back from the lake) should be viewed as environmentally beneficial with respect to the overall health of Stony Lake.

4.3 Topography and Drainage

The site is situated immediately north of the southern edge of the Canadian Shield. As such, the topography is dominated by rock knobs, ridges and trough-like valleys which often contain wetlands or pockets of poorly drained soil (Figure 3). Total relief across the site is approximately 20 m, as measured from Northey's Bay Road (255 masl) to the lakeshore (235 masl).

The subject property contains a series of small scarps and somewhat discrete plateau-like areas, typically with a few metres of elevation difference between them. The distribution of these features is controlled by the bedrock structure.

Most of the northern part of the site is forested and unimproved. In contrast, the existing camp occupies a cleared and comparatively level sandy area within 250 m of the shoreline. The camp area appears to have been subjected to considerable grading and filling over time, including the creation of filled areas along several parts of the shoreline. In several instances filling has likely replaced shoreline wetland areas.

The site's drainage pattern is complex as a result of the Shield terrain. The major watercourse (other than Stony Lake) is Jack Creek, an important perennial waterway which defines approximately half of the site's eastern boundary.

It is understood that Jack Creek is classified as a navigable waterway. The main channel of the creek appears to form south of Jack Lake near Nephton, Ontario. The creek then flows south, adjacent to Petroglyphs Provinicial Park before crossing Northey's Bay Road and eventually outlets into Stony Lake.

To the north and east of the site, Jack Creek is a fairly wide, slower-flowing stream associated with pooled wetland conditions. Closer to the lake, the creek occurs in a deeply incised valley wherein flows cascade over the bedrock, forming attractive rapids and falls.

A sluggish bifurcated stream system originating from the adjacent Petroglyphs Provincial Park, enters the property primarily via culverts below Northey's Bay Road on the northern portion of the site. The stream system is mapped by the Ministry of Natural Resources and Forestry (MNRF) as a permanent stream. Some minor swales may also contribute seasonal flows. Typically, the flows occupy several narrow, poorly defined channels with associated "pocket wetlands" occurring in low lying areas between the rock outcroppings.

Although it is possible to hike across the property to the northernmost part of the site, the network of east-west oriented streams and wetlands isolates this area from the remainder of site with respect to development.

For the purpose of this EIS, drainage on the site has been divided by three (3) local drainage divides that occur on the previously developed portion of the property. The

drainage divides typically align with the bedrock ridges and split flows between three surface water features that occur both on, or adjacent to the site. The receiving water features include Jack Creek and its associated wetlands, Stony Lake and the associated Hull South Bay Provincially Significant Wetland (PSW), and a small unnamed tributary of Stony Lake that flows through a culvert at Fire Route 24 before discharging into Stony Lake at the southwestern extent of the site (Figure 3).

For more information about the local drainage divides, the reader is referred to our Hydrogeological and Site Servicing Report.

4.4 Geology

According to Chapman and Putnam's (1972) physiography mapping, the subject site occurs within an area described as containing bare rock ridges and shallow till (Figure 4). This is consistent with published surficial geology mapping and is typical of terrain on the Canadian Shield. However, aggregate resources mapping provides some detail regarding the distribution of granular deposits in the area, including two small occurrences on (or partially on) the subject site (Figure 5).

These outwash sand deposits are observed to occur on many areas of the site, although they are predominantly contained in the central portion of the site. A Red Pine (*Pinus resinosa*) stand in the central portion of the site is associated with one of these sandy outwash deposits. The sandy deposits extend further northeast and also correspond to the existing boat storage area in what appears to be a former sand pit. It is presumed that some of the sand from this deposit may have been utilized by a previous owner to fill and grade the existing seasonal campground.

5.0 Information Resources

5.1 Ontario Breeding Bird Atlas

The Ontario Breeding Bird Atlas (OBBA) is an organization mainly comprised of volunteers who monitor birds across selected regions of Ontario. Birds are recorded to occur within defined 10 km^2 areas denoted as "regional squares". Two versions of the Atlas have been published, with the 2nd edition comprising the most recent data from 2001-2005. The data from the OBBA is used as an indicator or tool to assist us in identifying important species that may occur in the area of the subject site, prior to conducting field surveys.

The OBBA was consulted by ORE to acquire data regarding species of birds identified within the area of the subject site. The subject site was found to occur within regional square 17QK34 in the Peterborough No. 16 Region. Summary Sheets from the OBBA website are provided in Appendix A.

Both the 1st and 2nd editions of the atlas identify a variety of federally, provincially and regionally rare species to occur within the area:

Common Name	**Scientific Name**	**Status**
Least Bittern	*Ixobrychus exilis*	Threatened
Red-shouldered Hawk	*Buteo lineatus*	Not At Risk
Common Night Hawk	*Chordeiles minor*	Special Concern
Chimney Swift	*Chaetura pelagica*	Threatened
Eastern Wood-Pewee	*Contopus virens*	Special Concern
Barn Swallow	*Hirundo rustica*	Threatened
Wood Thrush	*Hylocichla mustelina*	Special Concern
Golden-winged Warbler	*Vermivora chrysoptera*	Special Concern
Canada Warbler	*Wilsonia canadensis*	Special Concern
Bobolink	*Dolichonyx oryzivorus*	Threatened
Eastern Meadowlark	*Sturnella magna*	Threatened
Whip-poor-will	*Caprimulgus vociferus*	Threatened

As outlined in the accompanying Summary Sheets, the majority of these above-listed species were observed to either be nesting during the breeding season, or to be observed in permanent territory (as "presumed through registration of territorial behaviour"). Each of the above are briefly described below.

Least Bittern is listed as "Threatened" by *Species at Risk Ontario* (SARO) and is protected under the *Endangered Species Act* (ESA). The Least Bittern inhabits freshwater marshes where tall, impenetrable stands of emergent vegetation are utilized for coverage. The Least Bittern may build up a hunting platform in search of small fish, insects, and amphibians.

The shoreline associated with Stony Lake and the Hull South Bay PSW possesses suitable habitat for this species.

Red-shouldered Hawk no longer possesses an official status in Ontario, although is still considered to be a "sensitive" species with respect to development. It prefers mature deciduous dominated forests, often nesting within hundreds of metres of the edge of wetlands or waterways. The nest can occur in the crotch of deciduous trees. It prefers slopes where it can easily fly to the tree-tops and overlook the waterway for foraging purposes, hunting for small mammals, birds, reptiles and amphibians.

The site and surrounding lands are ideal for this species. Petroglyph Provincial Park, north of the site, also possesses an ideal setting for this species.

Common Nighthawk is listed as "Special Concern" by (SARO) and is protected under the

ESA. The Common Nighthawk is part of the Nightjar family which prefers forest openings, bogs and sometimes open field/meadow areas. Nesting is on bare ground where both adults feed the young. Feeding can take place during day or night, while the species constantly forages for all types of insects.

The site does not possess any substantial areas of open bedrock ridges that this species would prefer. In contrast, the author has hiked within Petroglyphs Provincial Park many times and has observed suitable habitat within the park boundary.

Chimney Swift is listed as "Threatened" by SARO and is protected under the ESA. The Chimney Swift is a somewhat generalist species. It will utilize empty cavity nests found in dead trees within fencerows (etc.), or may utilize unused chimneys as suggested by its common name. This species is most active in early morning and early evening (i.e., dawn and dusk). It will venture outside of the nesting area and feast on insects during these times. It then flies back to the nesting site, entering the nesting feature one after another in an orderly funnel-shaped sequence.

The habitat on-site is marginal to poor for this species.

Eastern Wood-Pewee is listed as "Special Concern" by SARO and is protected under the ESA. This species prefers mixed deciduous and coniferous woodlands which are open or considered edge habitat. Nesting occurs on a tree branch as the species flycatches insects from a perch.

There is suitable habitat directly on and adjacent to the to the subject site for this avian.

Barn Swallow is listed as "Threatened" by SARO and is protected under the ESA. The Barn Swallow inhabits open-rural and urban sites where buildings are situated near watercourses. Nesting is typically within loose colonies on building structures, bridges and other suitable overhanging structures. Structures are chosen because they keep the half "cup-like" mud nest dry and have edges that the nest can adhere to. The Barn Swallow feeds on insects by catching them on its wing.

Stony Lake contains suitable habitat for this species. Structures such as cottages, sheds, and boathouses are common nesting locations for this species.

Wood Thrush is listed as "Special Concern" by SARO and is protected under the ESA. This species prefers mature woodland habitats similar to that of the Eastern Wood-Peewee, and is sometimes found co-existing within these woodland tracts.

The subject site possesses suitable woodland habitat for this species.

Golden-winged Warbler is listed as "Special Concern" by SARO and is protected under the ESA. The Golden-winged Warbler prefers woodland edge habitat with young successional tree species and moist shrubby fields. This species gleans insects on shrubs and the forest floor and nesting occurs on the ground.

The hydro-electric corridor and former sand pit area would possess habitat that is suitable for this species.

Canada Warbler is listed as "Special Concern" by SARO and is protected under the ESA. It prefers large tracts of mixed forests on bottomlands within wetlands or drainage courses. The species nests within the upper extremities of the canopy in deciduous and coniferous trees. The Canada Warbler feeds on beetles, caterpillars and common insects.

The site's waterfront area and island possess suitable habitat for this species, as does the wetland features in the northern portion of the property.

Bobolink is listed as "Threatened" by SARO and is protected under the ESA. The Bobolink prefers large tracts of tallgrass areas, such as true prairies or hay fields.

The site does not possess suitable habitat for this species.

Eastern Meadowlark is listed as "Threatened" by SARO and is protected under the ESA. The Eastern Meadowlark is similar to Bobolink, as this species also prefers large tracts of agricultural fields or tallgrass prairies to nest within. Eastern Meadowlark is a ground nester, thus requiring tallgrass to conceal its nest and eggs. Feeding includes beetles, crickets, and spiders.

The site does not possess suitable habitat for this species.

Whip-poor-will is listed as "Threatened" by SARO and is protected under the ESA. The Whip-poor-will prefers a combination of large natural tracts of forest, watercourses and edge habitat consisting of meadow areas with open, deciduous and pine woodlands. The Whip-poor-will does not construct a nest, but rather utilizes the soft leaf litter on the ground to form a nest and lay the eggs directly on the ground. The Whip-poor-will is a nighttime hunter, calling it's own name while searching for large flying insects, beetles, moths, mosquitos and sometimes grasshoppers. The Whip-poor-will often choose pine species adjacent to waterways to call from.

The site and surrounding woodland habitats and waterways are the preferred habitat of this species. The neighbouring Petroglyphs Provincial Park also contains ideal habitat for the Whip-poor-will. The combination of wetland and mature White Pine forested edges

are the preferred habitat of this species. The Red Pine Plantation forest on the site would also be attractive to this species, however, the tract is relatively small.

5.2 Natural Heritage Information Centre

The Natural Heritage Information Centre (NHIC) website database was queried to determine whether the agency has a record of any significant species previously identified within the vicinity of the subject site. The database allows for a search of the site and surrounding area to be completed by geographical query (Geographic Information System - GIS). A query of the database on May 15th, 2013 indicated that the following species have been historically observed within the two 1 km squares (17QK3542 and 17QK3541) that cover the site:

Common Name	**Scientific Name**	**Rank**	**Date of Sighting**
Blanding's Turtle	*Emydoidea blandingii*	S3	1973, 1987
Northern Map Turtle	*Graptemys geographica*	S3	2006
Restricted			2004

The MNRF was contacted in regards to the Restricted Species and it was determined that this species is Flooded Jellyskin (*Leptogium rivulare*). Targeted searches for Flooded Jellyskin were completed by ORE staff in the areas where temporary flooding occurs between the ridge features and near the creek.

A second query of the NHIC database on November 18th, 2015 indicated that the restricted species had been removed from the database, however, the remaining data appears to be current. It is unclear as to why the restricted species would been removed from the database. Regardless, targeted inspections were conducted with respect to Flooded Jellyskin as previously mentioned.

Stony Lake possesses excellent habitat for both Blanding's Turtle and Northern Map Turtle. A kayak and canoe were utilized to search along the shoreline and outer islands directly off-shore of the subject property. The lake was also examined for turtles each time from the shore utilizing binoculars and a spotting scope. ORE staff entered the water and snorkelled the entire shoreline of the proposed redevelopment, extending beyond the lakeshore property boundary by approximately 100 m.

In addition to species occurrences, the NHIC tracks and identifies natural areas and Areas of Natural and Scientific Interest (ANSI). Four (4) centroids of significant natural areas are identified within approximately 3 km of the study site. The centroids include Eel's Creek Prairie (AR ID# 18503), Pine Island South PSW (AR ID# 8230), Petroglyphs Provincial Park (AR ID# 3178) and Hull South Bay PSW (AR ID# 19816). Of these areas, only two (2), Hull South Bay PSW and Petroglyphs Provincial Park, are located on or adjacent to the subject property.

Petroglyphs Provincial Park is known to contain significant First Nations archaeological artifacts, including petroglyphs. Based on this and other factors, an archaeological assessment was commissioned by the proponent to determine if any artifacts exist in the development area on the subject site. The reader is referred to the archaeological report conducted by others for further information.

The Hull South Bay Wetland is 105 ha (259 acres) in size and is described as a Provincially Significant Wetland, comprised of a single contiguous lacustrine wetland that includes three wetland types (i.e., 96% marsh, 2% fen, 1% swamp).

Figure 6 illustrates the location of the above-listed element occurrences. Appendix B contains excerpts from the NHIC database listing the rare species occurrences from the geographic mapping tool.

6.0 Bio-physical Findings

6.1 Methodologies

6.1.1 General

For this EIS, ORE staff conducted site inspections on the following dates:

Date of Inspection	Survey Time	Temp. ^{O}C	Beaufort (Wind) Scale	Conditions
April 23, 2013	7 AM - 9 AM	4.3	3- Gentle Breeze	Cool and Minor Cloud
May 3, 2013	5 AM - 9 AM	9	1- Light Air	Humid and Clear
May 25, 2013	5 AM - 9 AM	4	2 - Light Breeze	Humid and Minor Cloud
June 12, 2013	5 AM - 9 AM 7 PM - 11PM	12	2- Light Breeze	Clear
July 17, 2013	5 AM - 9 AM 7 PM - 11 PM	30	2- Light Breeze	Humid and Variable Cloud
July 19, 2013	5 AM - 9 AM	33	1- Light Air	Humid and Variable Cloud
April 20, 2014	8 PM - 10 PM	8	2- Light Breeze	Cool and Minor Cloud
April 30, 2015	7 PM - 11 PM	7	1- Light Air	Cloudy and Cool Air from North

Flora and fauna were recorded and site features were mapped with the use of dGPS and recent aerial photography. Where possible, adjacent site features were taken into consideration. Representative photos of the site are provided in Appendix C.

6.1.2 Vegetation

The site has been characterized by its various vegetation communities using the methodologies included in the *Ecological Land Classification (ELC) - First Approximation and Its Applications* (1998). The classification of each vegetation community has been designated in accordance with the second approximation catalogue issued in 2008 that provides a more detailed classification system than the 1998 version. The 2008 guide also provides the classification coding included in the 1998 ELC manual for reference purposes.

The 2008 Ecological Land Classification System (ELC) was utilized for the purposes of presenting the vegetation communities that occur on the site. The 2008 version of the ELC (second approximation) serves as an update to the *1998 ELC for Southern Ontario - First Approximation and Its Application* by including a wider range of communities. As such, the 1998 ELC coding has been cross referenced within the 2008 ELC Catalogue[1]. It is understood that the MNRF is actively updating and refining the new ELC to fill in the gaps of the previous version. As the 2008 version serves as an update to the 1998 version, each community type observed on-site has been categorized according to the 2008 ELC Catalogue.

Prior to conducting the site inspections, aerial photography of the subject site was analysed to roughly delineate communities based on recognizable vegetation differences. Each identified community was subsequently inspected through soil and vegetation analysis. Dominant vegetation types were recorded during different stages of the growing season and boundaries of the various communities mapped using dGPS. Soil characteristics were determined using the methods outlined in the *Field Manual for Describing Soils in Ontario* (2009) and the results are used to further classify the ecological community.

In addition to identifying and mapping the ELC communities, ORE staff assessed each vegetation community from the perspective of whether they are hydrologically sensitive, and/or whether they may contain a Species at Risk. Several wetlands were initially identified by examining MNRF Land Informaiton Ontario data. The boundaries of the wetlands were verified by ORE staff during inspections.

[1] The 2008 ELC catalogue is currently available to the public from the Conservation Ontario website http://www.conservation-ontario.on.ca/

6.1.3 Avifauna Surveys

ORE staff attended the site during the breeding season and conducted point-count surveys according to, and exceeding the Ontario Breeding Bird Atlas (OBBA) survey techniques. Inspections were also conducted outside the breeding bird period during the early spring avian migratory period and during the fledgling period. All species overheard or observed during the survey were recorded. The surveys were conducted in the early morning chorus hours between 5 AM and 9 AM which was ideal for the season. The majority of birds were very active in the early morning, foraging, singing, with dominant males defending their territories.

ORE staff attempted to detect the presence of all avian species by sight, calls and notes, within and proximal to the site. Bird calling devices and "pishing and squeaking" were also used to attract bird species from within the forest communities to the edge of the property.

The avian surveys were not restricted to only the early morning time periods. Observations also continued later in the day while vegetation surveys were being conducted within the waterfront, wetlands and the woodland settings. In addition, night inspections were completed on-site to determine whether any nocturnal Species at Risk avian were present. The nocturnal surveys were completed between 9 PM and 11 PM.

Figure 7 illustrates the various point-count locations for conducting the avian surveys. However, species occurrences were not limited to these inspections and also included observations during concurrent hydrogeological field studies and verified by a qualified assessor.

6.1.4 Mammals

Mammals were detected utilizing the methodologies outlined in the MNRF's March 1998 - Wildlife Monitoring Programs and Inventory Techniques for Ontario. Mammals were generally identified by either direct observation or via their tracks and/or scat droppings at the site.

Surveys were conducted specifically in areas where fresh tracks could be identified, such as the edge of the wetland and after precipitation events on-site. During concurrent hydrogeological investigations conducted in the winters of 2013 and 2014, tracks were also recorded as they were easily distinguishable in the snow.

6.1.5 Herpetiles

The methodology employed for detection of Herpetiles followed MNRF's March 1998 - Wildlife Monitoring Programs and Inventory Techniques for Ontario. The surveys were

completed during the spring and summer seasons, when most herpetiles are active.

During the inspections, ORE staff searched through brush piles, checked old building rubble materials and rolled over lumber and deadfall to determine whether any significant species of herpetile (such as Five-lined Skink) could be detected.

In addition, ORE staff completed evening surveys for the purpose of collecting nocturnal avian data and to identify amphibian species utilizing the site. The amphibian surveys were conducted according to the MNRF's Marsh Monitoring Program (MMP). This program identifies the abundance of amphibians on-site according to a numerical scale (from 1-3) such that: 1 = 1 to 2 individuals calling; 2 = several individuals calling, however, the number of individuals can still be identified; and, 3 = an abundance of amphibians calling and it is either very difficult to or impossible to determine the number of individuals due to overlap in the number of calling males.

ORE staff focussed the amphibian surveys on the waterfront area, Jack Creek and the ephemeral flooded areas on the north edge of the development area.

Two (2) herpetiles of significance have been detected in the area based on the NHIC occurrence database (Blanding's Turtle and Northern Map Turtle). Therefore, ORE staff conducted targeted surveys to detect whether either of these species are present on the property or in the waterways. The results of the survey are presented in a following section.

6.2 Vegetation Communities

6.2.1 General

Based on our field inspections, we have identified seventeen (17) principal habitat types on-site. Each habitat type has been listed below and assigned an ELC code based on the 2008 ELC Catalogue.

Previously Developed Communities:

1. Trailer Park (CVR_5)
2. Extraction (CVC_4)

Terrestrial Forest Communities:

3. Dry - Fresh Red Pine Naturalized Coniferous Plantation (FOCM6-2)
4. Dry - Fresh White Pine - Hardwood Mixed Forest (FOMM2)
5. Dry - Fresh Sugar Maple Deciduous Forest (FODM5)
6. Fresh - Moist White Cedar Coniferous Forest (FOCM4)
7. Fresh - Moist White Cedar - Hardwood Mixed Forest (FOMM7)

Stony Lake PSW, Shoreline & Aquatic Communities:

8. Red Maple - Conifer Organic Mixed Swamp (SWMO2-1)
9. Maple Mineral Mixed Swamp (SWMM2)
10. Thicket Swamp (SWTM1) (SWTM2-1) (SWTM3) (SWTM5-7)
11. Black Ash Mineral Deciduous Swamp (SWDM2-1)
12. Cattail Mineral Shallow Marsh (MASM1-1)
13. Submerged Shallow Aquatic (SAS_1-1) (SAS_1-2)
14. Water Milfoil Mixed Shallow Aquatic (SAM_1-7)
15. Water Lily - Bullhead Lily Floating-leaved Shallow Aquatic (SAF_1-1)
16. Open Aquatic (OAO)

Island Terrestrial Habitat:

17. Fresh-Moist Hemlock Coniferous Forest (FOCM3)

The boundaries of these vegetation communities have been delineated on the aerial photograph base plan (Figure 7). A description of each community is provided in the following sections. The ELC data cards have been provided in Appendix D and a species list has been provided in Appendix E.

6.2.2 Previously Developed Communities

1. Trailer Park (CVR_5)

The current trailer park contains 87 trailer sites which makes up the CVR_5 ecosite and occupies approximately 4.6 ha (~11 acres) of the property. This constructed cultural community contains less than 25% tree canopy consisting mostly of manicured lawns and bedrock outcroppings. The minor tree cover consists primarily of White Pine (*Pinus strobus*) and Red Oak (*Quercus rubra*).

2. Extraction (CVC_4)

A former sand pit in the centre of the site comprises the CVC_4 ecosite. It is believed the pit supplied fill for the majority of the trailer park but has not been an active pit for decades. Currently, the area is utilized for the storage of boats in the winter months.

The pit area contains less than 25% tree canopy and less than 25% shrub cover with the majority of the sparse vegetation consisting of graminoid species such as grasses.

6.2.3 Terrestrial Forest Habitats

3. Dry - Fresh Red Pine Naturalized Coniferous Plantation (FOCM6-2)

This plantation pine area occurs in the central portion of the property and abuts the former sand pit. According to the ELC, a Plantation Pine community habitat must possess 75% or more coniferous species in the canopy cover. The Red Pine (*Pinus resinosa*) at the site dominates the canopy cover at 100% in this tract. The pine trees are relatively large diameter, mature trees. Some large White Pine occur around the periphery of the Red Pine forest and occur as a transition zone to the more deciduous dominated surrounding areas.

The understory in this area possesses the occasional tufts of White-grained Mountain Rice (*Oryzopsis asperifolia*) and Bracken Fern (*Pteridium aquilinum*). However, the needle litter from the pines have carpeted the forest floor in this area which limits the types of species to the more "hardy" species such as some seedlings of European Buckthorn (*Rhamnus cathartica*).

4. Dry - Fresh White Pine - Hardwood Mixed Forest (FOMM2)

According to the ELC, this community possesses a dry to moderately fresh regime with shallow soils over bedrock consisting of sands and coarse loams. It is well drained due to the sandy soils which result in dry conditions in these upper to middle slope and tableland type habitats.

The ELC also states that the dominant species are typically White Pine, Sugar Maple *(Acer saccharum*), Red Oak and to a lesser extent White Oak (*Quercus alba*). With the exception of White Oak, all of these dominant species were observed within the community.

This ecosite had occurrences of Red Maple (*Acer rubrum*), Basswood (*Tilia americana*), White Ash (*Fraxinus americana*) and Ironwood (*Ostrya virginiana*) also as suggested by the ELC to be common in this vegetation community.

ORE also observed the following groundcover within the ecosite: Serviceberry (*Amelanchier sp.*), Downy Arrow-wood (*Viburnum rafinesquianum*), Partridgeberry (*Mitchella repens*), Bracken Fern, Gaywings (*Polygala paucifolia),* Bristle-leaved Sedge (*Carex eburnea*), White Trillium (*Trillium grandiflorum*) and White-grained Mountain Rice.

These groundcover species are consistent with the FOMM2 community described in the ELC.

A small intermittent tributary (drainage feature) of Stony Lake occurs between the FOMM2 community and the FODM5 forest tract to the south (described below). Portions of the drainage feature appear to have been historically improved by straightening and/or deepening the channel. Although the tributary is an important hydraulic feature of the site, the channel is discrete with minimal land area.

One (1) Butternut tree (*Juglans cinerea*) was observed along the northern edge of this tributary and contained within the FOMM2 community. The location of this Butternut was recorded with a dGPS. The presence of the tree this far north and within the dominantly Precambrian bedrock zone could be considered unusual, as Butternut is typically a calcophile species. However, the tree appears to be located within an area of marble bedrock, thereby providing a carbonate rich substrate.

The Butternut was observed to possess canker on the root, the bole and the limbs, all of which cause serious health stressors to the individual. Dieback was noted also in the canopy of the tree. ORE conducted a Butternut Health Assessment (BHA)[2] as the proponent was unsure as to whether the tree would have to be removed as part of the proposed redevelopment. The BHA data were collected during the growing season of 2013 and the tree was been determined to be retainable. Recommendations are provided in a following section regarding this Butternut.

5. Dry - Fresh Sugar Maple Deciduous Forest (FODM5)

According to the ELC, FODM5 is typically Sugar Maple rich with fewer occurrences of Beech (*Fagus grandifolia)*, Red Oak, White Pine, Ironwood, Basswood, Wild Black Cherry (*Prunus serotina*), White Ash, Red Maple, White Birch (*Betula papyrifera*), Trembling Aspen (*Populus tremuloides)*, and Large-tooth Aspen (*Populus grandidentata*).

The subject site's forest area is dominated by Sugar Maple, however, also contains minor amounts of Ironwood, American Basswood, Wild Black Cherry, White Ash, Red Maple, Trembling Aspen, White Birch, White Pine, Basswood and Large-tooth Aspen.

The moisture regime is moderately dry to fresh, and possesses shallow sandy substrate on relatively well drained slopes or tablelands. There is minor flooding between the ridge features which sometimes supports a transitional area with White Ash and Red Maple, however, Sugar Maple still dominates even in these fresher micro-habitats.

The subject forest appears to be consistent with the FODM5 community outlined in the ELC.

[2] The author is a Butternut Health Assessor (BHA Licence No. 213).

6. Fresh - Moist White Cedar Coniferous Forest (FOCM4)

According to the ELC, the Fresh - Moist White Cedar Coniferous Forest Ecosite (FOCM4) tends to be dominated by Eastern White Cedar (*Thuja occidentalis*). Secondary species include Balsam Fir (*Abies balsamea*), Eastern Hemlock (*Tsuga canadensis*), Sugar Maple, and White Pine. Ground cover generally tends to be fern rich with little evidence of shrubs and herbs. This ecosite possesses a damp to moist moisture regime and therefore, can possess a variety of wetland related species.

Ecosite FOCM4 occurs in two locations on the property. The first is associated with an area of bedrock outcropping that occurs directly adjacent to Northey's Bay Road on the northern portion of the site. The second occurrence is on another bedrock outcrop that is elevated higher (approximately <5 m) than its surrounding ecosites, positioned between three (3) wetland type communities.

The FOCM4 ecosite in both locations is mainly dominated by Eastern White Cedar with occurrences of Red Maple, White Pine, and Balsam Fir. There is little ground cover as a result of the dense canopy. However, the following sparsely observed ground cover species were observed: Sarsaparilla (*Aralia nudicaulis)*, Sensitive Fern (*Onoclea sensibilis*), Bracken Fern, and European Buckthorn.

7. Fresh - Moist White Cedar - Hardwood Mixed Forest (FOMM7)

The Fresh - Moist White Cedar - Hardwood Mixed Forest Ecosite (FOMM7) has a shared dominance between coniferous and deciduous species, specifically Eastern White Cedar and Red Maple. Secondary species include Yellow Birch (*Betula alleghaniensis*), Ash species, and White Birch.

The subject site's FOMM7 ecosite was dominated by Red Maple and was associated as a secondary species by Eastern White Cedar. Other herbaceous species identified in this ecosite include White Elm, Basswood, Red Oak, and White Spruce (*Picea glauca*). Fallen wooded debris and leaves covered most of the ground. Some ground cover vegetation includes, Lily-of-the-Valley (*Convallaria majalis*), Sarsaparilla, and Marginal Wood Fern (*Dryopteris marginalis*).

FOMM7 is located northeast of the former pit area that is used for storage. It contains a small seasonal stream that crosses through the northeast corner of the ecosite. The stream flows from the nearby cattail marsh into Jack Creek. The FOMM7 ecosite is bounded by wetland habitats which may allow for species that are predominately found in wetlands to occur on the periphery.

6.2.3 Stony Lake PSW Shoreline and other Wetlands

8. Red Maple - Conifer Organic Mixed Swamp (SWMO2-1)

This community is dominated by Red Maple and contains secondary dominant species of Hemlock, Balsam Fir, and White Pine. This type of treed swamp habitat usually contains tree and shrub cover exceeding 25% of its total area and the species must be hydrophytic, being able to withstand a variable flooding regime whereby water levels can be up to 2 m deep. During the summer period, the wooded swamp possesses vernal pools which can potentially dessicate between precipitation events.

The subject habitat is dominated by Red Maple and contains secondary species of Red Oak, Black Ash (*Fraxinus nigra*), Balsam Fir, Eastern Hemlock, and White Spruce.

This community occurs only within the southern portion of the site and just up-gradient of the beach area. This wooded swamp area possesses hummock substrate, and contains small "islands" of upland species on the hummocks. In some instances Sugar Maple and Eastern Hemlock occur on these hummocks along with the Red Maple.

The SWMO2-1 ecosite was observed to contain a flooded area in the freshet period. Water levels were approximately 20-30 cm in this area. The meltwaters slowly recharged into the ground surface in this location.

9. Maple Mineral Mixed Swamp (SWMM2)

The ELC states that the Maple Mineral Mixed Swamp community must possess greater than 25% tree and shrub cover and be dominated by hydrophytic species. The swamp could undergo seasonal variability with respect to flooding (< 2 m deep), vernal pooling and short aeration periods in the mid-summer period.

Soils that typically occur in this community consist of peaty and mineral phases which are consistent with the substrates ORE observed. Some uprooted areas occur within the wetland, exposing the organic-rich substrates. Water was also observed at the surface where the vegetation had been uprooted, suggesting a shallow groundwater condition. ORE observed the vernal pooling during the early spring season (April 2013) inspections and the drier aerated conditions in the summer season (July 2013) inspections.

The dominant canopy is Red Maple with minor occurrences of Silver Maple (*Acer saccharinum*). A variety of other species such as Yellow Birch, Balsam Poplar (*Abies balsamea*) and Trembling Aspen were present in very minor amounts.

The groundcover, canopy, soils and moisture regime appear to be consistent the SWMM2 community.

10. Thicket Swamp (SWT)

The Thicket Swamp community typically has 25% or less tree or shrub cover which is predominantly hydrophytic species. During flood conditions, the water depth is typically less than 2 m. During dry periods, depressions can host vernal pools comprising 20% or more of the total area of the swamp.

ORE has grouped the SWT sub-communities (SWTM1, SWTM2-1, SWTM3 and SWTM5-7) together as they can either dominate or intermingle, converging to form the main thicket band that borders the emergent shallow marsh areas along the waterfront and within the bedrock ridge dominated communities along the northern edge of the proposed redevelopment.

The mineral thicket swamp along the waterfront would constitute the outer edge of the PSW. The thicket observed in the swampy areas about the property consisted of the four (4) following types:

1) Alder Mineral Deciduous Thicket (SWTM1)
2) Red-osier Dogwood Mineral Deciduous Thicket (SWTM2-1)
3) Willow Mineral Deciduous Thicket (SWTM3)
4) Meadowsweet Mineral Deciduous Thicket (SWTM5-7)

The dominant species within the thicket swamp areas are Speckled Alder (*Alnus incana*), Pussy Willow (*Salix discolor*), Red-osier dogwood (*Cornus sericea*), and Meadow-sweet (*Spirea alba*). Minor amounts of Ninebark (*Physocarpus opulifolius*) and Nannyberry (*Viburnum lentago*) were also observed within these thickets.

The substrate consists of a mixture of peaty and mineralic phases, however, accumulations are typically less than 40 cm. The peaty materials are usually aerated in the summer months under normal baseflow conditions. Intermittent precipitation events may saturate the soils, however, the hydrophytic species are normally deep rooted within the peaty materials, which typically tap the fluctuating shallow groundwater table.

The base layer in these thickets is typically comprised of the emergent marsh species.

11. Black Ash Mineral Deciduous Swamp (SWDM2-1)

This community is dominated by Black Ash and contains minor occurrences of Red Maple, American Elm (*Ulmus americana*), White Ash, and Green Ash (*Fraxinus pensylvanica*). This type of treed swamp habitat usually contains tree and shrub cover exceeding 25% of its total area and the species must be hydrophytic, being able to withstand a variable flooding regime whereby water levels can be up to 2 m deep. During the summer period, the wooded swamp possesses vernal pools which can potentially dessicate between precipitation events.

This community occurs only within a transition area between the upland White Pine forest and the Maple Swamp on the northeastern extent of the site. This wooded swamp area is very hummocky. In some instances Red Maple and Eastern Hemlock occur on the dryer hummocks.

Two (2) Butternut trees were observed within the transition zone on the adjacent lands immediately east of the site. Details about those trees were included as part of a severance application approved by the County of Peterborough in January 2016.

12. Cattail Mineral Shallow Marsh (MAS2-1)

According to the ELC, MAS2-1 communities can experience variable flooding regimes and water depths of up to 2 m. These zones typically have mineralized substrates, are seasonally flooded and represent the core zone within the wetland.

This habitat comprises the majority of the shoreline, including the channel between the island and the mainland, the outlet of Jack Creek and areas on either side of the beach. This community was also detected in some of the elongated bedrock ridge dominated wetlands situated along the northern edge of the proposed development area.

This community is dominated by Broad-leaf Cattail (*Typha latifolia)* with minor Narrow-leaved Cattail (*Typha angustifolia*), and occasionally some Canada Blue-joint (*Calamagrostis canadensis*).

Typically, the MAS2-1 habitat is a thin cover along the lakeshore which transitions quickly into the shallow marsh habitats and open water areas.

The MAS2-1 aquatic community would be sensitive to the proposed redevelopment.

13. Submerged Shallow Aquatic (SAS_1-1) (SAS_1-2)

According to the ELC, Submerged Shallow Aquatic communities are dominated by submerged macrophytes (greater than 25%). The dominant types of Submerged Shallow Aquatic communities observed within Stony Lake are provided below.

- Pondweed (SAS_1-1), and
- Waterweed (SAS_1-2)

The main pondweed types observed beneath the surface in the discharge area of Jack Creek and surrounding the island were Illinois Pondweed (*Potamogeton illinoensis*) and Curly-leaved Pondweed (*Potamogeton crispus*). Canada Waterweed (*Elodea canadensis*) is the dominant waterweed species observed below the surface of the lake. This species dominated the mouth of the creek in the area of the raft and docks. A few occurrences of

Common Horn-wort (*Ceratophyllum demersum*) were also observed beneath the surface while snorkelling the open water areas off-shore of the development.

The substrate where these species are attached consists of a thin organic layer with sandy sediments. These submerged species congregated on the bottom where currents are much slower and sediments accumulated. At no time were any deep muck deposits observed. The bottom typically contained rock rubble or bare bedrock conditions with small sediment laden valleys, mimicking the terrestrial conditions.

The maximum depth observed was approximately 2.5 m, occurring between the subject site's island, Stony Lake Island No. 120, and Stony Lake Island No. 121.

14. Water Milfoil Mixed Shallow Aquatic (SAM_1-7)

As the name of the community suggests, Eurasian Water-milfoil (*Myriophyllum spicatum*) is the dominant species within this Mixed Shallow Aquatic habitat.

Eurasian Water-milfoil can be both a floating-leaved and submerged species. Both variations were present in the channel between the island and the mainland where the milfoil floated on the surface of the water. The milfoil was observed to be dense in this area and likely supported itself.

Common Horn-wort was also interspersed with the milfoil within the shallow channel area.

In addition, the Eurasian Water-milfoil was observed within the deeper sections of the lake, including the boat channels. This species was only observed with the submerged species periodically and not as abundant as the Pondweeds.

15. Water Lily - Lily Bullhead Floating-leaved Shallow Aquatic (SAF_1-1)

The White Water-lily (*Nymphaea odorata*) is the dominant floating-leaved macrophyte in the channel between the island and the mainland and constituted approximately 25% of the aquatic vegetation observed in the channel that was on the surface.

The substrate in the channel is a relatively deep accumulation of organic muck deposit that contains an abundance of macrophytes. The Water-lily is the most noticeable among the macrophytes in the channel.

In contrast, Yellow Water-lily (*Nuphar variegatum*) was not observed in the channel during the inspections, however, was observed within the other areas of the PSW in the outer islands.

16. Open Aquatic (OAO)

The ELC describes the Open Aquatic habitat to be an aquatic environment that contains no macrophyte vegetation and no tree or shrub cover. It typically has water depths of 2 m or greater and a lake trophic status. This community is associated with Stony Lake only a few metres from shore.

The bottom possesses a mixture of submerged aquatic species such Canada Waterweed and Eel-grass (*Villisneria americana*). The substrate is a mixture of bedrock boulders, cobbles and exposed bedrock ridges with intermittent tufts of submerged vegetation.

The substrate of Jack Creek is dominated by undulating bare bedrock ridges with boulders and cobbles strewn over the bottom. This faster flowing regime possesses very little vegetation as sediments are only present in small depressions where they have become trapped. The sediments are comprised mainly of fine to medium sand and gravels and possess very little organic material that would support vegetation.

6.2.4 Island Habitat

17. Fresh - Moist Hemlock Coniferous Forest (FOCM3)

According to the ELC, this community is dominated by Eastern Hemlock and the canopy must consist of at least 75% coniferous trees.

The island contained greater than 75% Eastern Hemlock and also possessed the following species in minor amounts: White Pine, Balsam Fir, White Cedar, Sugar Maple and White Birch.

In the base layer there was Sensitive Fern, Spotted Touch-me-not (*Impatiens capensis*) and Bracken Fern.

6.3 Fauna

6.3.1 General

On-site surveys for fauna were conducted mainly in the active morning hours and were based on sightings or vocalizations of species. Targeted searches were conducted to determine whether suitable habitat for SAR fauna could occur on the subject property and surrounding adjacent lands. The list of faunal species observed at the site are presented in Appendix E. A brief summary of the notable fauna is included below.

6.3.2 Avifauna

According to the Ontario Breeding Bird Atlas (OBBA), three (3) species of provincial significance have occurred in the past within a 1 km radius of the site:

- Black Tern - Open Water and Marsh Habitats
- Least Bittern - Marsh Habitats
- Red-shouldered Hawk - Mature Woodlands Habitats

The OBBA also listed the following regionally rare avian species in the 10 km^2 area that encompasses the property:

- Canada Warbler - damp to moist creeks and rivers
- Golden-winged Warbler - forest edge and old field
- Red-shouldered Hawk - same as above
- Least Bittern - open water and marsh habitats
- Wood Thrush - mature woodlands habitats
- Eastern Wood-Pewee - same as above
- Barn Swallow - open field and waterways
- Chimney Swift - originally within tree cavities - now in chimneys
- Whip-poor-will - old field - livestock ranges and pine forests
- Common Night Hawk - rock barrens and coastal dune environments
- Bobolink - agricultural fields/tallgrass meadows/prairies
- Eastern Meadowlark -same as above

Nocturnal surveys conducted from Northey's Bay Road detected the calls of the Whip-poor-will and Common Nighthawk that were detected a significant distance from the property. The calls were appeared to originate from the adjacent Petroglyphs Provincial Park.

A Whip-poor-will was also observed flying overhead towards Petroglyph Provincial Park in the former sand pit area. ORE identified the silhouette of the bird as being a Nightjar and did not observe any bright white underside wing-bars that would indicate a Common Nighthawk. Therefore, ORE is confident that the sighting was a Whip-poor-will.

As for the remainder of the rare species listed by the MNRF and OBBA, any could potentially be associated with the site from time to time as suitable habitat occurs within Stony Lake, the PSW and the surrounding tracts of deciduous/coniferous woodlands. These natural areas could be used for breeding and nesting purposes.

6.3.3 Mammals

The NHIC search did not indicate the presence of SAR mammals in the general area and none were observed during site inspections. As the site is located within a wildlife

preservation area that prohibits hunting, numerous White-tailed Deer (*Odocoileus virginianus*) can be observed in the early morning and evening hours utilize the edge of the forests on-site for grazing.

6.3.4 Herpetiles

Blanding's Turtle (Threatened) and Northern Map Turtle (Special Concern) were detected during the NHIC search. These herpetile species have statuses of "Threatened" and "Special Concern", respectively, by the province of Ontario.

ORE staff completed targeted searches for turtles in Jack Creek, the flooded areas between the ridges in the northern part of the property, and within Stony Lake. Only two (2) types of turtles were observed during the searches, consisting of one (1) Snapping Turtle and five (5) Midland Painted Turtles (*Chrysemys picta).*

ORE staff did not detect either of the herpetile species listed on the NHIC database at the site, however, Western Chorus Frog (*Pseudacris triseriata*), "Threatened" under the SARA, and Snapping Turtle (*Chelydra serpentina*), "Special Concern" under the ESA, were observed directly adjacent to the proposed development area.

6.3.5 Fisheries

Fish surveys were conducted from the shoreline, on the surface of the water (in a canoe), and while snorkelling off-shore. The list of fish species identified is presented in Appendix E. The following is a brief summary of our findings:

Spawning Species and their Habitat

- Muskellunge - spawning between the island and the mainland in the weedy channel.
- Walleye - spawning within the mouth of the river and upstream area prior to the chute.
- White Sucker - abundantly spawning within Jack Creek and at the mouth of Jack Creek.
- Smallmouth Bass - spawning within the redds that occur sporadically along the shoreline and around the island property. Redds were also observed in the sandy materials associated with the beach area.
- Pumpkinseed - spawning in the area of the island and the channel between the mainland and island.
- Largemouth Bass - spawning within the redds observed prior to the embayment of Jack Creek near some of the shoals next to the island and on the southern edge of the island.

Non-spawning Fish Species and their Habitat

- Carp - observed in the area of the raft in the Jack Creek embayment.
- Creek Chub - directly in the creek in crevasses of the bedrock.
- Brown Bullhead - small fry in the weedy channel.
- Yellow Perch - Young of Year observed on the south side of the island.
- Rock Bass - directly on the south side of the island and beneath the existing parks docks.

Jack Creek appears to be an important Walleye spawning habitat. Walleye were observed in pods advancing upstream within the pools and riffles. ORE staff snorkelled Jack Creek and observed two (2) pods - one containing 4 Walleye and another containing 6 Walleye.

ORE staff also attended the site during the prime spawning period (April 20, 2014) to observe the use of Jack Creek. Flashlights were utilized to detect the number and types of spawning species. The spawning species detected were mainly Walleye (6 pods) and White Sucker (5 fish), attempting to advance upstream.

6.4 Species at Risk

The Endangered Species Act (ESA) and many municipal level Official Plans provide regulations and guidelines with respect to protection of Endangered and Threatened species in Ontario. Federal Species at Risk are protected by the Species at Risk Act (SARA) and the Migratory Bird Convention Act. The SARA regulates SAR for all of Canada but targets mainly federal lands (such as federal parks) that contain many of these rare species.

According to the NHIC, the following provincial Species at Risk have been detected either on the site or in the vicinity of the site:

1) Northern Map Turtle
2) Blanding's Turtle
3) Flooded Jellyskin

As outlined above, Northern Map Turtle and Blanding's Turtle were not identified on or immediately adjacent to the proposed development.

ORE searched the ephemeral flooded areas of the site for Flooded Jellyskin lichen. ORE did not detect this species on the property. Five (5) other lichens were observed on the property in swales located on-site. There are likely other species of lichens in the dryer upland zones of the property, however, Flooded Jellyskin prefers the moist to damp low-lying areas between the rock ridges and knobs.

Although none of the SAR reported by the NHIC were identified during our inspections,

four (4) listed species were observed, consisting of Butternut, Snapping Turtle, Western Chorus Frog, and Whip-poor-will (Figure 7). These are briefly described below:

Butternut

As outlined previously, one (1) Butternut tree was observed along the northern edge of the western tributary on the site that drains into Stony Lake. The Butternut is located on a metasedimentary bedrock outlier or boulder in an area that has not been subject recent development/disturbance.

Two (2) other Butternut trees were identified on adjacent lands, well away from the proposed development.

The Butternut is considered to be "Endangered" according to the Ontario Endangered Species Act, 2007.

Snapping Turtle

A Snapping Turtle was observed in the mouth of Jack Creek where the existing boats slips and launch are located. It is possible that this species would find the marshy bay area suitable for foraging within as the small embayment contains a variety of fish and frogs. In addition, the sandy shoreline materials in this area would be ideal for laying their eggs as they often utilize sandy bars or berms, road shoulders, etc. to nest within.

This species is considered to be "Special Concern" according to the Ontario Endangered Species Act, 2007.

Western Chorus Frog

The Western Chorus Frog was identified in the ephemeral ponds located between the proposed redevelopment area and the retained lands to the northeast. Only one (1) Chorus Frog was detected in each of the early morning and evening investigations.

The Western Chorus Frog is currently listed as "Not at Risk" under the Ontario Endangered Species Act, 2007. The Carolinian population (south and west of Toronto) is listed as "Not at Risk", and the Great Lakes - St. Lawrence population (east and north of Toronto) is listed as "Threatened" under the Federal Species at Risk Act. The subject site is located east and north of Toronto, therefore, the Western Chorus Frog detected on the property would have a federal status of "Threatened".

Whip-poor-will

A Whip-poor-will was observed flying overhead toward Petroglyph Provincial Park in the former sand pit area. Whip-poor-will was not overheard on the site during the nocturnal surveys. A faint call of a Whip-poor-will was detected in the early morning hours in the direction of Petroglyph Provincial Park.

7.0 Impact Assessment

7.1 General

The majority of the site is comprised of woodland habitat. Stony Lake and the Hull South Bay Provincially Significant Wetland occur along the entire southern extent of the property. As such, the principal sensitive areas are the mature woodland habitat, the PSW, Jack Creek and Stony Lake.

The redevelopment proposes to remove the trailers and camp infrastructure, and open building envelopes for thirty (30) condominium lots. This will necessitate some loss of the woodland habitat, however, removal of the campground is viewed as a net positive for the site and Stony Lake, especially with regard to nutrient loading, as discussed in the accompanying hydrogeological study.

To minimize woodland habitat loss, limited redevelopment footprints have been delineated, as illustrated by Figure 8. We regard the footprints outlined on Figure 8 as representing a "least impact" approach for redevelopment. The potential impacts and need for mitigation is further discussed below. Specific recommendations for mitigation are presented in a following section.

7.2 Shoreline Environment

The redevelopment will include the use of the shoreline with respect to the existing dock facilities and existing beach. Neither of these will be expanded along the shoreline. The remainder of the shoreline areas and areas adjacent to Jack Creek will become a common element to be shared by residents of the condominium development for passive recreational use. As such, impacts to the shoreline area should be minimal and shoreline improvements should be possible.

A shoreline buffer is proposed to protect and rehabilitate portions of the shoreline. Specific recommendations are provided in a following section with respect to the buffer.

7.3 Sensitive Bird Species

The redevelopment will not disrupt or impact the listed OBBA species that would utilize Stony Lake and the PSW, since the proposal does not include any major incursions into, or substantial disturbances directly adjacent to, the shoreline. The main impacts are anticipated to be within the mature forested areas of the site.

The redevelopment will require removal of small areas of the upland mature forest for the purpose of internal road and condominium footprints on each lot. It is possible that the Whip-poor-will observed flying over the site may utilize these forests from time to time for the purpose of foraging. Notwithstanding, if the Whip-poor-will were present from time to time within the on-site woodlands, they appear to have been co-existing with the campground uses for years. To protect the Whip-poor-will's woodland habitat, mitigation measures should be considered. This will also help mitigate any potential impacts to any other rare species that may utilize the woodland. Specific recommendations in this regard are provided in a following section.

7.4 Species at Risk

Four (4) listed species at risk were observed on or immediately adjacent to the subject property, including Butternut, Snapping Turtle, Western Chorus Frog, and Whip-poor-will (Figure 7). Potential impacts resulting from the proposed development on each SAR are discussed below. General recommendations to mitigate potential impacts, including potential impacts to SAR not observed on the site but having potential to utilize the site, have been included in a following section.

Butternut

It is understood that the proposed seasonal residential development will be able to maintain a 25 m development setback from the Butternut tree identified on the property (Figure 8). This setback would meet the recommendations made by the MNRF's *Recovery Strategy for Butternut in Ontario (2013)* to ensure habitat protection and regeneration. As a result, the proposed development will not impact Butternut on the property.

Snapping Turtle

As previously outlined, the proposed development will utilize portions of the shoreline that are already developed and in use. As the Snapping Turtle observed adjacent to the site has been able to coexist with the current developed use, impacts from the proposed development are unlikely. Provided the beach area and any other sandy shoreline areas (i.e., turtle nesting habitat) are maintained and/or improved on-site, Snapping Turtle should not be impacted by the redevelopment of the subject property. In addition, there

are no significant in-water works proposed for the redevelopment that could impact this predominantly aquatic species.

Recommended improvements to the shoreline habitat and redevelopment setbacks are described in a following section of this report.

Western Chorus Frog

The proposed development will not encroach on the Western Chorus Frog habitat identified on the site. It is important to recognize that undeveloped portions of the site are currently utilized for passive recreation (i.e., walking trails) and the SAR that has been identified on the property has coexisted with this current land use. It is anticipated that the proposed development will serve as a less intensive use of the property and thereby offer further protection of SAR that utilize the wetlands and watercourses on the property.

Whip-poor-will

Although Whip-poor-will was not identified to be utilizing the subject site, portions of the property (especially along talus slopes) provide ideal habitat for this avian species. As Whip-poor-will tend to utilize edge habitats, it is expected that the proposed development (when completed) will provide additional habitat opportunities for this species.

Mitigation of potential impacts during construction has been discussed in a following section.

7.5 Fisheries

The shoreline of Stony Lake and Jack Creek possesses an important fisheries resource. In particular, Jack Creek appears to be an important Walleye and Mukellunge spawning habitat. Since both of these species are important sport fish, protection of the aquatic environment and water quality will need to be incorporated in the mitigation plans for the redevelopment. Degradation of water quality could occur in the form of erosion and/or sedimentation impacts and/or habitat loss.

Specific recommendations for the protection of the fisheries are provided in a following section.

7.6 Construction

Potential impacts related to construction activities are listed below:

- noise and vibration from operation of equipment;
- habitat damage or disturbance;
- erosion and sedimentation generated by exposed unconsolidated soils during excavation and grading activities;
- mismanagement of excess materials and presence of construction debris or waste materials, and
- importation of materials containing invasive species.

To minimize the potential for impacts associated with the above, appropriate construction scheduling will need to be considered. In addition, careful attention to the limits associated with building/grading envelopes and maintaining buffers will be needed.

Specific recommendations for mitigation of impacts associated with construction activities are provided in a following section.

7.7 Future Use/Occupation

Potential impacts related to future occupation and use of the site include the following:

- improper handling of wastes, chemical, pesticides or other deleterious materials;
- disturbance related to minor alterations, further clearing of land (e.g., to extend lawns, gardens, laneways, etc.);
- impacts related to the use of inappropriate external lighting, and
- sensitivity with respect to potential impacts associated with servicing requirements (i.e., nutrients released by private wastewater treatment systems).

General recommendations for mitigation of impacts associated with the above are provided in a following section.

8.0 Conclusions

8.1 Based on the results of our study, it is our conclusion that the proposed redevelopment can proceed without significantly impacting the sensitive natural features on-site, provided the recommendations and mitigation measures presented herein are implemented. The proposed development represents a significant decrease in the concentration of uses especially within the proximity of Stony Lake. As such, replacement of the existing campground would serve as a net benefit to Stony Lake.

The most sensitive receptors on the property are the wetlands, Jack Creek and Stony Lake.

8.2 MNRF mapping indicates that the Hull South Bay Provincially Significant Wetland (PSW) is located to the south of the subject property and associated with Stony Lake. The boundary of the PSW has been confirmed through our inspections and we have included the shoreline wetland habitat of the site within the wetland boundary.

The PSW and the Species at Risk are considered to be the most sensitive environmental features associated with the subject site.

8.3 The only sensitive bird species identified by ORE staff during the site inspections was the Whip-poor-will. This species was observed flying over the former sand pit area at dusk, in the direction of the Provincial Park to the north of the subject property. However, other rare species could also potentially be associated with the site from time to time as suitable habitat is present. The main potential impacts are anticipated to be within the mature forested areas of the site. As such, to protect the Whip-poor-will's woodland habitat (and any other rare species that could occasionally occur within the same habitat), mitigation measures should be considered.

Recommendations in this regard are provided in a following section.

8.4 Figure 8 presents the recommended redevelopment footprints for the proposed lots and infrastructure. Figure 8 also illustrates the proposed buffers to protect sensitive environmental features.

By limiting disturbance of the site to those footprints, impacts should be minimized.

9.0 Recommendations

9.1 A 30 m setback/buffer is typically implemented to protect Provincially Significant Wetlands. However, since the site is not in pristine condition, the following mitigation measures are recommended:

- Our mapped wetland boundary for the PSW includes the moist treed swamp, which surrounds the beach at the waterfront area. As such, the PSW boundary has been tentatively extended beyond that originally mapped by the Ministry of Natural Resources and Forestry (MNRF). It is recommended that consideration be given to establishing a variable-width buffer in the form of a Vegetation Protection Area (VPA) extending upland from the wetland boundary as illustrated by Figure 8.

- A 15 m development setback/buffer is recommended for the surface water features (i.e., wetlands, drainage courses, etc.) that are not associated with Stony Lake or the PSW. The buffer area and associated hydraulic features would also become part of the VPA.

- The VPA would not extend onto the existing altered areas, thereby allowing the redevelopment to utilize those areas. However, areas that will not be used for the purpose of the redevelopment (that are already open or disturbed) should be naturalized. In doing so, this will compensate for a portion of the tree/undergrowth loss within the woodland habitats.

- In areas that possess existing natural conditions (e.g., the wetland), the VPA shall be extended upgradient from the wetland and shoreline area to protect and buffer these features from the redevelopment.

- The recommended limit of the proposed variable VPA is illustrated on Figure 8.

- In addition to the VPA, Figure 8 illustrates an environmental buffer. This setback is intended to maintain minimum separation from significant natural features for all new construction activities and does not include proposed improvements to existing infrastructure.

9.2 A tree preservation plan should be prepared for the site to promote retention of mature healthy trees. Completely denuding the forest cover from the lots would result in a significant impact on wildlife in the area, especially the Whip-poor-will, which could utilize the on-site forest cover for foraging and attracting a mate. The tree preservation plan should focus on the following:

- Identifying areas that will not be used (or will only be used for passive recreation) where existing openings can be rehabilitated by native tree plantings;

- Attempting to retain the mature healthy tree specimens wherever possible and incorporate those trees into the landscaping of each lot and common areas. In addition to improving habitat, retention of mature trees should also add value to the lots by maintaining the natural setting.

- Reducing lawn spaces to only what is necessary. In addition to improving habitat, retaining the natural forest floor and woodland borders can also enhance privacy.

9.3 Although new docks are not proposed in the boat launch area, it is recommended that any new docks installed be approximately the same length as the existing docks. Longer docks would be subject to approvals by the MNRF and/or Trent Severn Waterway (Parks Canada). This also applies for any new construction along the waterfront.

9.4 To protect the lakeshore environment and fish habitat, and in agreement with the CSW Lake Plan, a minimum 10 m buffer of native vegetation plantings should be extended along the lakeshore area not currently utilized for recreation (i.e., docking area and beach). The buffer would consist of native shrub species that would not impede the use of the lakeshore by residents (i.e., allow for a passive walking trail), but rather in-fill the bare slopes and unused areas of the shoreline.

The vegetation buffer would also extend along the river's edge where some of the slopes possess bare soils. The main purpose of the plantings would be to stabilize the slopes along the lakeshore and reduce erosion and sedimentation effects. Any non-native shrubs within the 10 m buffer should be removed and replaced with native species.

9.5 A communal sewage system currently services the existing campground resort. The main tile field occurs about 25 m from the waterfront. It would be beneficial to the water quality of Stony Lake for this legacy system to be decommissioned and wastewater from the proposed residences be treated individually at each lot using modern sewage systems. Utilizing individual residential systems would remove the effluent from the immediate lake area, thereby better attenuating nutrient loading.

The main potential contaminants from sewage disposal are nutrients, especially nitrate and phosphorus. Phosphorus is a nutrient that possesses the highest potential for increasing the proliferation rate of plant matter, more so than most nitrogen compounds combined. Increased phosphorus levels could impact the watershed by contributing to increased weed and algal growth. Fortunately, phosphorus in the effluent is strongly attenuated by soil sorption processes, and as such is not expected to migrate far from the tile beds.

Nitrate is another nutrient that can be toxic in a surface water environment. Recent studies suggest that increased levels of nitrate in watercourses can be toxic to fauna,

particularly amphibians. Nitrate is a stable form of nitrogen and can be elevated in septic effluent. The proposed treatment should greatly reduce nitrate concentrations.

The ultimate mitigation measure with respect to the sewage systems is to locate the sewage systems as far upgradient as possible from the watercourses and waterbodies, therefore maximizing the potential for natural subsurface effluent attenuation. The Ontario Building Code (OBC) requires a minimum separation distance of 15 m from the source of contamination to a water body. It is expected that the proposed redevelopment will maintain at least a 30 m sewage system setback from Stony Lake and Jack Creek.

9.6 The following are standard protocols that should be implemented during the construction phase of the project to reduce potential impacts to surface water quality:

- Prior to any construction, a suitable silt curtain fence should be installed around each construction zone (i.e., footprint), ensuring that the erosion control measures are outside of the setbacks described above (as illustrated on Figure 8). The contractor should ensure that *no construction* occurs within the cordoned setback zones.

- In addition to the silt curtain fence, bales of straw should be strategically located inside the silt fence, particularly in areas where heavier sediment loads may be transported. The bales can also be used at the corners of the silt fence to further stabilize the fence itself. These reinforcements are particularly important when heavy equipment is being operated on-site. Construction should not continue during heavy precipitation events and after any such events. In addition, the fence and bales should be checked to ensure their effectiveness.

- Members of the construction crew(s) should be educated on the importance of the construction zone limitations and informed not to unnecessarily remove any additional trees or infringe on areas to remain in their natural state with damaging machinery.

- As a planned action against the spread of invasive species under the Ontario Biodiversity Strategy (MNRF, 2005) and the Invasive Alien Species Strategy for Canada (Environment Canada, 2004), only clean fill and screened topsoil should be applied to where it may be necessary to raise areas of the site. The fill and topsoil should not contain plant debris that may be a source of exotic or invasive species that can compete with native species in the nearby woodlands or wetlands.

- To reduce potential post-construction slope failure and/or erosion effects, disturbed areas should be quickly seeded or sodded to re-establish root structures within the upper soils. Planting of native species of trees and shrubs is also encouraged at this stage. Once the seeding or sodding is determined to be a success, the erosion/sedimentation controls can be removed.

- To further reduce the potential for impacts from erosion / sedimentation, excess materials should be stockpiled for only short periods and all excess materials from excavations should be removed from the site once the construction is complete. At no time should any fill materials be allowed within the VPA (Figure 8).

- The final Plan of Condominium must include an Erosion and Sediment Control (ESC) plan illustrating the fill areas and the measures by which the developer will contain and stabilize all disturbed soils on the site as it relates to common elements (i.e., roads, etc.). Individual residential lots should be required to produce a similar ESC plan at the time of applying for a building permit.

- Excessive noise represents a potential for impact on migratory breeding bird and waterfowl species that may utilize the wetlands and woodlands during the breeding season. To mitigate the potential for such impacts, it is recommended that care be exercised with respect to the use of heavy equipment (e.g., excavators, graders, generators, etc.) near the wetlands and woodlands between May 1st and July 31st. When possible, site alteration activities should commence outside this period and be completed as a continuous construction project.

- The wetland environments provide habitat for many frogs, birds and reptiles. As such, these areas are regulated by the Provincial Policy Statement, the Township Official Plan, the County Official Plan and the Ontario Ministry of Natural Resources and Forestry. Construction or physical works within the wetlands will not be allowed unless a permit is obtained from the appropriate agencies. Typically disturbances within these features are limited only to approved habitat improvement projects.

- If a species at risk is observed at any time prior to or during the redevelopment of the site, it is recommended that the developer contact the author of this report to seek recommendations for mitigating potential impacts to the species.

9.8 The following are specific recommendations with respect to mitigating potential impacts to Species at Risk and sensitive areas of the site:

- Two (2) Species at Risk were observed <u>inside</u> the redevelopment area. They are Whip-poor-will and Butternut.

  Whip-poor-will can coexist with redevelopment, however, tree conservation will be vital with respect to this species. Attempts should be made to retain as much of the woodland characteristics as possible. Clear-cutting the mature forest communities is not an option; clearing only enough space for the development footprint on each lot (i.e., retaining the wooded margins) should mitigate loss of habitat for this species.

The Whip-poor-will was neither overheard nor observed to be utilizing the subject property on a continual basis, therefore, the development can proceed without displacing this species.

The Butternut was observed mid-site. This tree has been determined via a Health Assessment to be a "retainable tree". Therefore, it is recommended that this tree be retained in the woodland margins between two condominium lots. While the lot boundaries will encroach on the MNRF's standard 25 m setback, it is expected that the actual development footprint will be able to comply with the setback requirement.

In the event that the developer wishes to remove the Butternut, the tree should be reassessed by a Certified Butternut Health Assessor and a BHA report submitted to the MNRF. It is expected that the removal of any Butternut would result in the planting of Butternut elsewhere on the site at a 5:1 ratio.

- Two (2) other Species at Risk were also observed just outside of the redevelopment boundary, consisting of Western Chorus Frog and Snapping Turtle.

  The Western Chorus Frog was identified within the elongated wetland area north of the main development area. ORE is not recommending any setbacks from this wetland feature as the existing former sand pit and hydro-electric corridor have already altered the area upgradient of the wetland communities in this area.

  The Western Chorus Frog appears to be coexisting with these alterations and has been unaffected. The lands to the north possess undulating topography and wetlands within the bottomlands. The proposed redevelopment will not affect the lands where the Western Chorus Frog was overheard.

  The Snapping Turtle was observed within the channel between the subject property's island and the mainland. Since the channel and waterfront area will remain unchanged, there should be no impacts on this species.

  Similarly, Northern Map Turtle and Blanding's Turtle were detected by the NHIC for the area. Stony Lake and the associated Hull South Bay PSW are excellent habitats for these turtle species. Although neither were observed during the inspections, it is highly likely that these Species at Risk turtles could occur proximal to the site.

- As per the Migratory Bird Convention Act and with regard to the nesting period described by Bird Studies Canada, trees should not be removed between May 1st to July 31st. Preferably all tree removal would be completed late in the summer or early fall season. Any compensatory vegetation plantings should also be targeted for the late summer/early fall season.

- Should tree clearing need to take place during the period covering May 1st to July 31st, it is recommended that a qualified assessor inspect the site for significant avian species immediately prior to these activities. If a significant species is observed during these inspections, the qualified assessor should provide recommendations on when tree clearing activities could resume.

9.9 As a precaution, any construction activities proposed to occur between May 1st and July 31st may be limited. It is preferable that construction occur before or after this period. However, if the agencies or developer requires an opinion as to whether certain construction activity can proceed during this period, this can be provided by the author prior to commencing. In some instances, specific mitigation measures may be applied that could allow some activities to proceed, provided a non-impact statement can be approved by the agencies.

9.10 It is recommended that a condominium unit owner's "Environmental Guide" be prepared for the redevelopment. The Environmental Guide would be provided to new owners and would be an educational aid for those who are unfamiliar with living in a rural setting.

The guide would discuss but not be limited to the following:

- Septic system care and maintenance;
- Water well care and water usage;
- Landscaping tips;
- Pesticide and herbicide use;
- Chemical and fertilizer use;
- Co-existing with wildlife, and
- Outdoor lighting.

The guide would include readily available guidance documents and expand on these concepts by incorporating recommendations included in the CSW Lake Plan and outline the Best Management Practices (BMP's) applicable specifically for this site. The guide should be implemented by the Condominium Corporation.

End of Report

Respectfully Submitted,
Oakridge Environmental Limited

Original Signed By

Rob West, HBSc. CSEB
Senior Environmental Scientist

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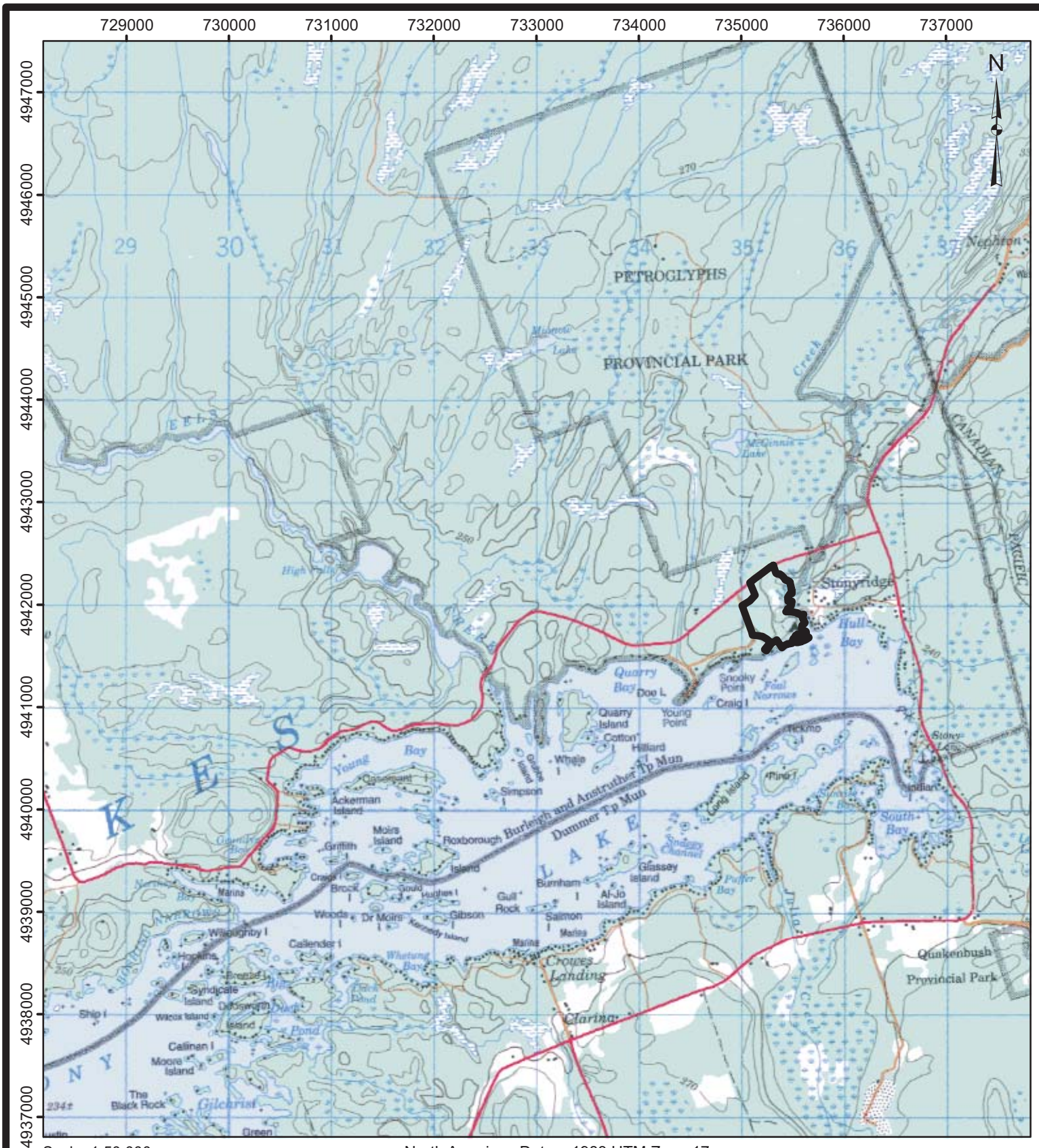
Figures



Approximate Property Boundary

Environmental Impact Study
Preposed Residential Development
Pilgrim's Rest Campground

Part of Lot 3 & 4, Concession 11 (Burleigh),
Township of North Kawartha, County of Peterborough

0 0.5 1 2 km

TITLE

General Location

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT # 12-1629

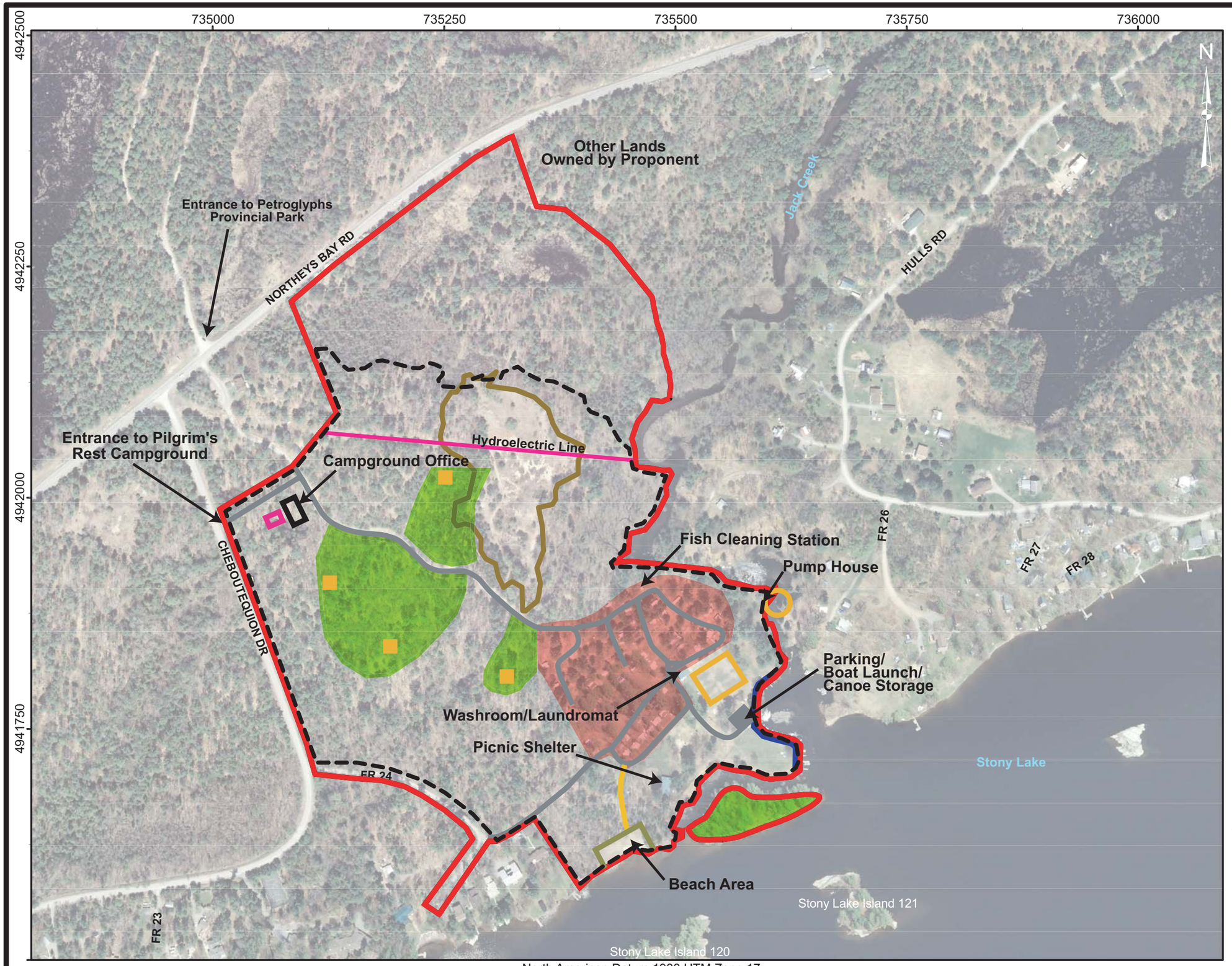
DATE March 2016

FIGURE NO. **1**

Notes: Base map provided by Natural Resources Canada, GEOGRATIS NTS MAP 31/09

Environmental Impact Study (EIS)
Proposed Residential Redevelopment
Pilgrim's Rest Campground

Part of Lot 3 & 4, Concession 11 (Burleigh)
Township of North Kawartha
County of Peterborough



North American Datum 1983 UTM Zone 17

- Approximate Property Boundary
- Unserviced Camping Site Area
- Trailer Site Area
- Campground Road
- Shoreline Area Utilized for Boat Docks
- Former Sand Pit (boat storage area)
- Campground Office/Residence Filter Bed
- Legacy Communal Sewage Disposal System
- Potable Water Intake System
- Class 1 Sewage Systems
- Trail
- Approximate Limit of Proposed Redevelopment

Scale: 1:4,000

0 50 100 200 m

Notes: Imagery provided by First Base Solutions Inc. (DRAPE, 2008)

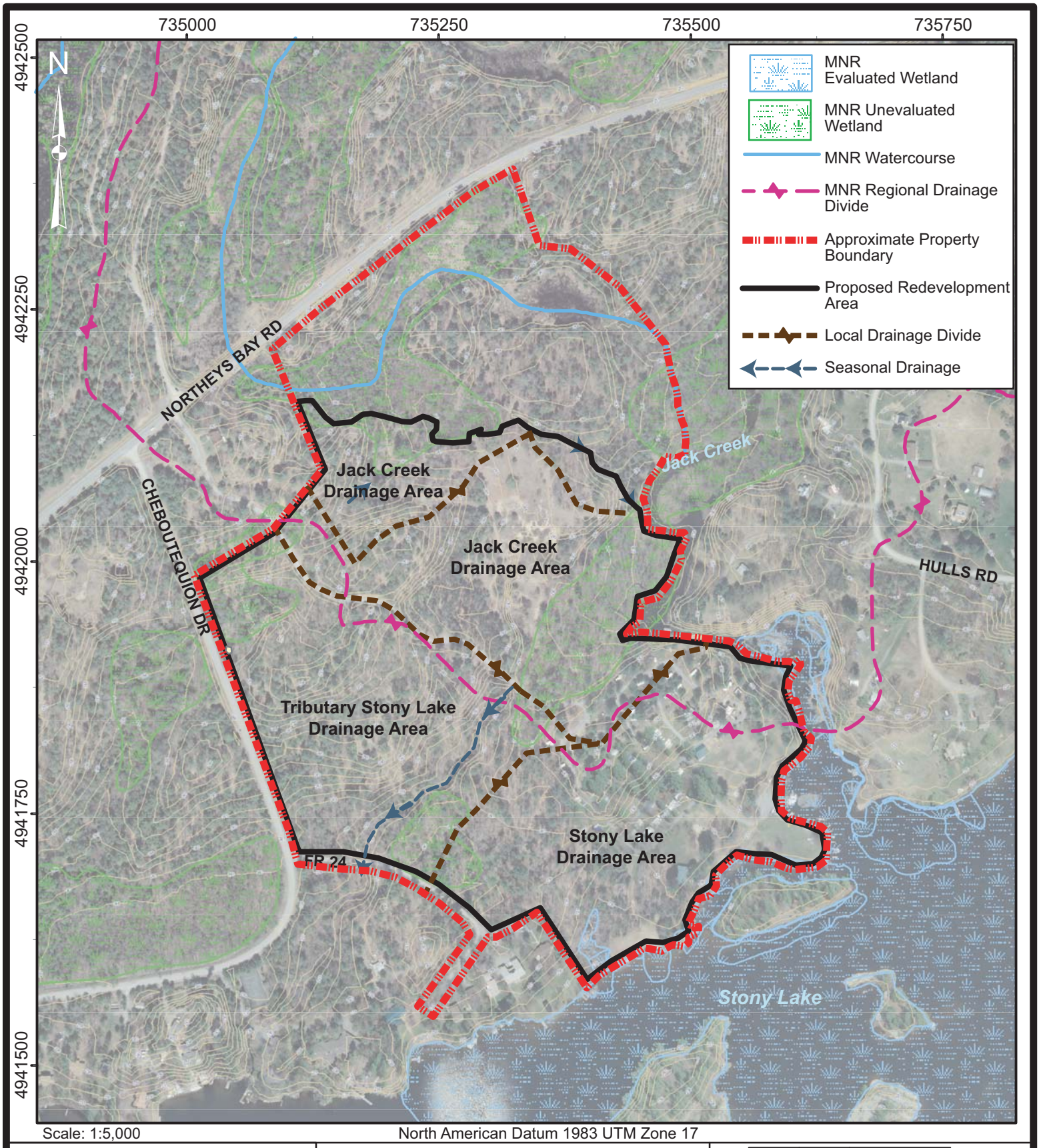
Base map provided by the Ministry of Natural Resources, copyright the Queen's Printer (2013)

TITLE

Existing Features Plan

ORE
Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT #	FIGURE NO.
12-1629	2
DATE	
March 2016	



Scale: 1:5,000

North American Datum 1983 UTM Zone 17

Environmental Impact Study (EIS)
Proposed Residential Redevelopment
Pilgrim's Rest Campground

Part of Lot 3 & 4, Concession 11 (Burleigh),
Township of North Kawartha, County of Peterborough

0 50 100 200 m

TITLE

Topography and Drainage Plan

Notes: Base map provided by the Ministry of Natural Resources (MNR), copyright the Queen's Printer (2013)

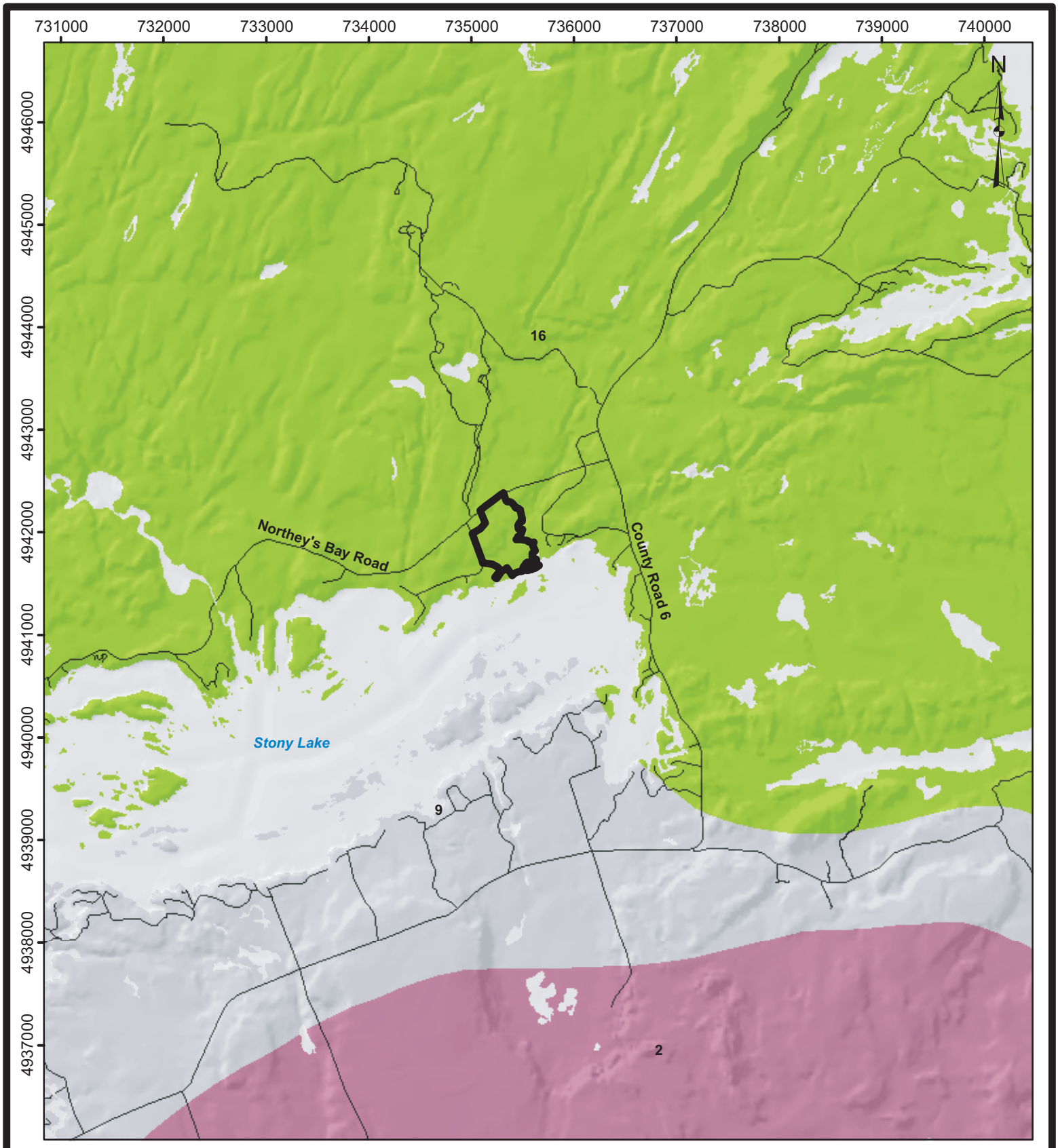
Aerial photography provided by First Base Solutions Inc. (DRAPE, 2008)

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT # 12-1629

DATE March 2016

FIGURE NO. 3



Scale: 1:50,000

North American Datum 1983 UTM Zone 17

- Approximate Property Boundary
- 2: Till Moraines
- 9: Limestone Plains
- 16: Bare Rock Ridges And Shallow Till

Notes: Base map provided by Natural Resources Canada, GEOGRATIS NTS MAP 31/09

Environmental Impact Study
Preposed Residential Development
Pilgrim's Rest Campground

Part of Lot 3 & 4, Concession 11 (Burleigh),
Township of North Kawartha, County of Peterborough

ORE
Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

0 0.5 1 2 km

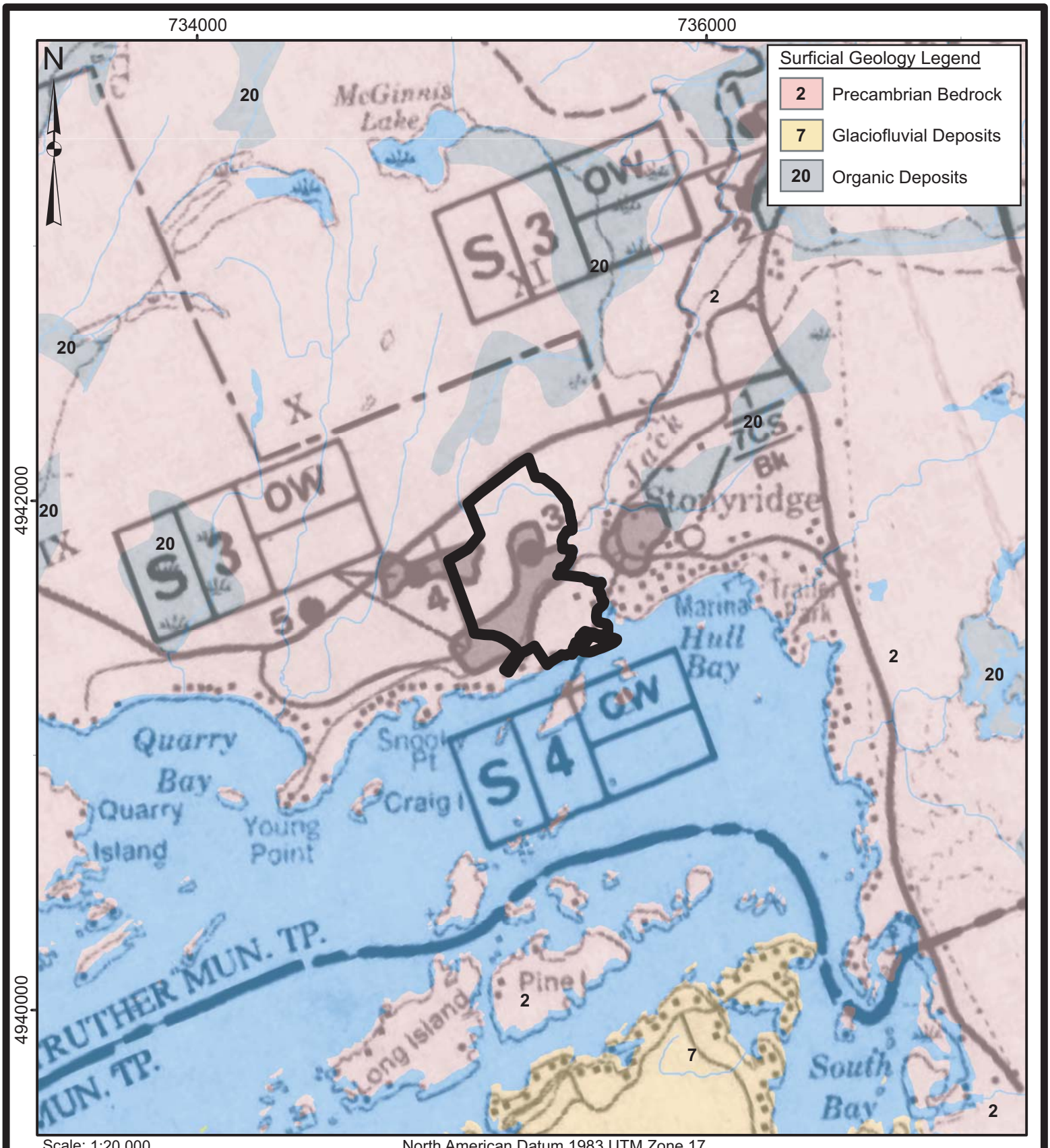
TITLE

Physiography Map

PROJECT # 12-1629

DATE March 2016

FIGURE NO. **4**



Scale: 1:20,000

North American Datum 1983 UTM Zone 17

Aggregate Resource Legend

S 3 OW — Outwash deposit with less than 35% gravel content with thickness of 1.5 to 3 m

S 4 OW — Outwash deposit with less than 35% gravel content, less than 1.5 m thick

Notes: Base map provided by the Ontario Geological Survey, copyright the Queen's Printer (2010)

Environmental Impact Study (EIS)
Proposed Residential Redevelopment
Pilgrim's Rest Campground

Part of Lot 3 & 4, Concession 11 (Burleigh),
Township of North Kawartha, County of Peterborough

0 250 500 1,000 m

TITLE

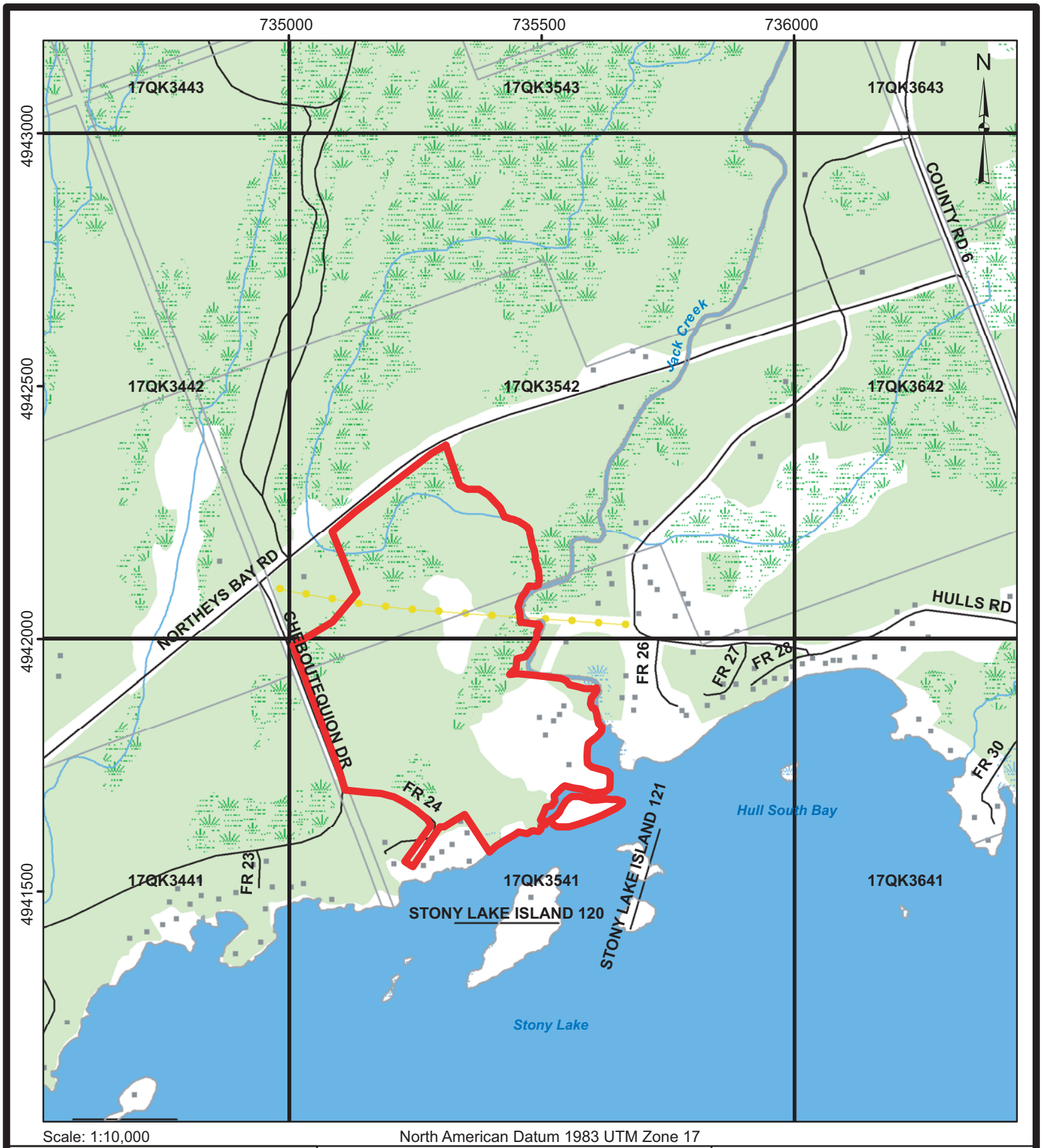
Aggregate Resource Map

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT # 12-1629

DATE March 2016

FIGURE NO. **5**



Scale: 1:10,000

North American Datum 1983 UTM Zone 17

Approximate Site Location

NHIC Grid (UTM 1km Squares)

Environmental Impact Study
Preposed Residential Development
Pilgrim's Rest Campground

Part of Lot 3 & 4, Concession 11 (Burleigh),
Township of North Kawartha, County of Peterborough

0 125 250 500 m

TITLE

NHIC Query

Notes: Base map provided by the Ministry of Natural Resources, Land Information Ontario Database, copyright the Queen's Printer (2013)

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

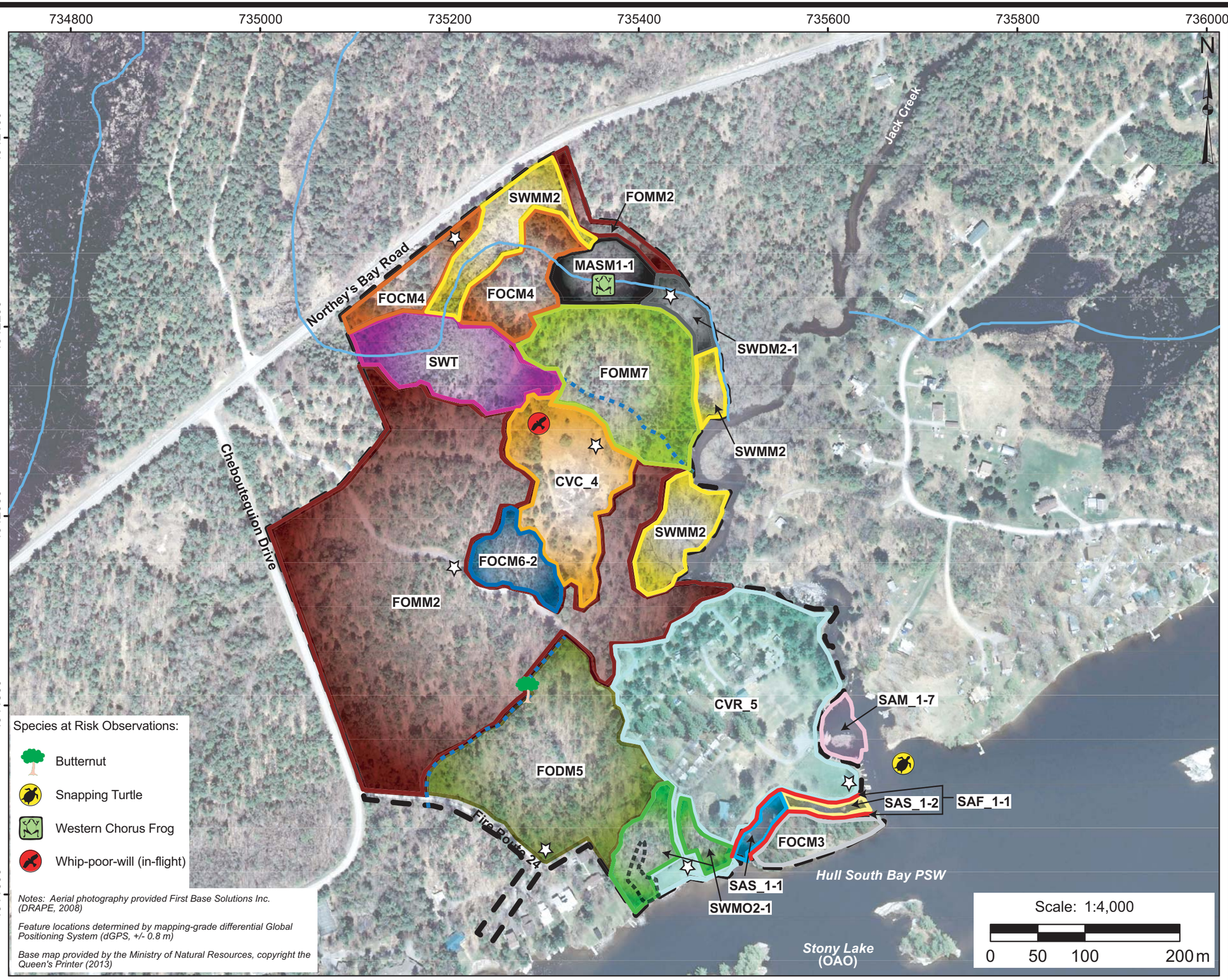
PROJECT # 12-1629

DATE March 2016

FIGURE NO. 6

Environmental Impact Study
Proposed Residential Development
Pilgrim's Rest Campground

Part of Lot 3 & 4, Concession 11 (Burleigh),
Township of North Kawartha, County of Peterborough



Species at Risk Observations:

- Butternut
- Snapping Turtle
- Western Chorus Frog
- Whip-poor-will (in-flight)

Notes: Aerial photography provided First Base Solutions Inc. (DRAPE, 2008)

Feature locations determined by mapping-grade differential Global Positioning System (dGPS, +/- 0.8 m)

Base map provided by the Ministry of Natural Resources, copyright the Queen's Printer (2013)

North American Datum 1983 UTM Zone 17

- CVR_5: Trailer Park
- CVC_4: Extraction (former sand pit)
- FOCM6-2: Dry - Fresh Red Pine Naturalized Coniferous Plantation
- FOMM2: Dry - Fresh White Pine - Hardwood Mixed Forest
- FODM5: Dry - Fresh Sugar Maple Deciduous Forest
- FOCM4: Fresh - Moist White Cedar Coniferous Forest
- FOCM3: Fresh - Moist Hemlock Coniferous Forest
- FOMM7: Fresh - Moist White Cedar - Hardwood Mixed Forest
- SWMO2-1: Red Maple - Conifer Organic Mixed Swamp
- SWMM2: Maple Mineral Mixed Swamp
- SWT: Thicket Swamp (various subcategories)
- SWDM2-1: Black Ash Mineral Deciduous Swamp
- MASM1-1: Cattail Mineral Shallow Marsh
- SAS_1-1: Submerged Shallow Aquatic
- SAS_1-2: Submerged Shallow Aquatic
- SAM_1-7: Water Milfoil Mixed Shallow Aquatic
- SAF_1-1: Water Lily - Bullhead Lily Floating-leaved Shallow Aquatic
- OAO: Open Aquatic (Stony Lake)
- Extension of Hull South Bay PSW
- Drainage Course
- MNR Watercourse
- Approximate Property Boundary
- OBBA Survey Point Count Location

TITLE

Vegetation Plan

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT #	FIGURE NO.
12-1629	7
DATE	
March 2016	

Environmental Impact Study
Proposed Residential Development
Pilgrim's Rest Campground

Part of Lot 3 & 4, Concession 11 (Burleigh),
Township of North Kawartha, County of Peterborough

735000 735250 735500 735750

4942250 4942000 4941750

N

Northey's Bay Road

Cheboutequion Drive

Jack Creek

Western Chorus Frog
Ephemeral Pond

Hull South Bay PSW

Stony Lake

LEGEND

- Vegetation Protection Area (VPA)
- Shoreline Improvement Area (to be planted)
- Hull South Bay Provinicially Significant Wetland (PSW)
- Drainage Course
- Environmental Buffer
- Approximate Floodline (235.95 masl)
- Butternut Location (with 25 m buffer)

Scale: 1:3,500

0 50 100 200 m

Notes: Aerial photography provided by First Base Solutions Inc. (DRAPE, 2008)

Feature locations determined by mapping-grade differential Global Positioning System (dGPS, +/- 0.8 m)

Base map provided by Ministry of Natural Resources, copyright the Queen's Printer (2013)

Floodline after contour data provided by First Base Solutions Inc. (2008)

VPA and shoreline improvement area to be limited to passive recreational use (e.g., walking trails)

North American Datum 1983 UTM Zone 17

TITLE

Mitigation Plan

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT #	FIGURE NO.
12-1629	8
DATE	
March 2016	

Appendix A

OBBA Summary Sheets

Square Summary (17QK34)

#species (1st atlas)				#species (2nd atlas)				#hours		#pc done	
poss	prob	conf	total	poss	prob	conf	total	1st	2nd	road	offrd
18	58	44	120	27	46	43	116	76	60	28	1

Region summary (#16: Peterborough)

#squares	#sq with data		#species		#pc done	target #pc
	1st	2nd	1st	2nd		
60	60	60	171	185	1995	750

Target number of point counts in this square: 22 road side, 3 off road (1 in coniferous forest, 2 in mixed forest). Please try to ensure that each off-road station is located such that the entire 100m radius circle is within the prescribed habitat.

SPECIES	Code		%	
	1st	2nd	1st	2nd
Canada Goose		NE	31	93
Mute Swan			0	1
Wood Duck	P	P	90	96
Gadwall ‡			1	3
American Black Duck	P		63	41
Mallard	P	FY	93	100
Blue-winged Teal	P		48	40
Northern Shoveler ‡			3	3
Northern Pintail ‡			3	0
Green-winged Teal		P	0	18
Ring-necked Duck	P	FY	18	46
Hooded Merganser	H	P	36	83
Common Merganser			30	50
Red-breast Merganser ‡			3	0
Ruffed Grouse	FY	T	91	100
Wild Turkey		S	0	56
Common Loon	P	FY	85	95
Pied-billed Grebe		H	8	48
Double-crest Cormorant ‡§			3	1
American Bittern	T	T	55	81
Least Bittern †		S	18	25
Great Blue Heron §	H	H	100	91
Green Heron §	H	H	55	50
Black-crown N.-Heron † §			3	0
Turkey Vulture	H	H	90	100
Osprey	NY	NY	78	80
Bald Eagle †			6	6
Northern Harrier	CF		63	46
Sharp-shinned Hawk			45	60

SPECIES	Code		%	
	1st	2nd	1st	2nd
Cooper's Hawk	H		28	41
Northern Goshawk		A	26	38
Red-should Hawk †	H	P	35	63
Broad-winged Hawk	T	T	66	86
Red-tailed Hawk	A		78	68
American Kestrel	P		70	66
Merlin			3	46
Virginia Rail	S	FY	21	71
Sora			20	36
Common Moorhen			23	15
American Coot ‡			10	5
Coot/Moorhen			0	0
Sandhill Crane ‡		S	0	1
Killdeer	A	FY	90	85
Rock Dove	FY	H	61	73
Spotted Sandpiper	P	NE	76	66
Upland Sandpiper			31	26
Common Snipe	D	S	63	78
American Woodcock	D	S	71	78
Wilson's Phalarope †			1	1
Ring-billed Gull ‡§			1	8
Herring Gull §	H	V	45	45
Caspian Tern †			1	1
Black Tern † §			30	21
Common Tern §	H		18	5
Mourning Dove	P	T	75	96
Black/Yell-billed Cuckoo		S	0	46
Black-billed Cuckoo		P	48	80
Eastern Screech-Owl			11	15

SPECIES	Code		%	
	1st	2nd	1st	2nd
Great Horned Owl	H		75	46
Barred Owl		FY	48	63
Long-eared Owl			5	13
North Saw-whet Owl			53	30
Common Nighthawk	D	D	73	40
Whip-poor-will	T	T	75	53
Chimney Swift	P		76	21
Ruby-thr Hummingbird	H	FY	98	96
Belted Kingfisher	A	CF	100	98
Red-headed Woodpecker †			30	10
Yellow-bellied Sapsucker	FY	NY	95	100
Downy Woodpecker	AE	T	91	98
Hairy Woodpecker	CF	NY	95	100
Black-backed Woodpecker	P	H	13	21
Northern Flicker	FY	NY	100	98
Pileated Woodpecker	AE	T	93	100
Olive-sided Flycatcher	A	T	53	28
Eastern Wood-Pewee	T	FY	96	100
Yellow-bellied Flycatcher	P		21	16
Alder Flycatcher	S	T	60	96
Willow Flycatcher		S	35	50
Least Flycatcher	NE	T	98	100
Eastern Phoebe	NY	NY	96	100
Gr Crested Flycatcher	AE	FY	100	100
Eastern Kingbird	FY	FY	100	100
Loggerhead Shrike †			13	1
Yellow-throated Vireo	T	S	50	53
Blue-headed Vireo	P	FY	35	68
Warbling Vireo	T	T	98	98

next page >>

Ontario Breeding Bird Atlas - Summary Sheet for Square 17QK34 (page 2 of 3)

SPECIES	Code		%	
	1st	2nd	1st	2nd
Philadelphia Vireo ‡			6	8
Red-eyed Vireo	NY	CF	100	100
Gray Jay	P	FY	20	21
Blue Jay	CF	P	100	100
American Crow	CF	NY	98	100
Common Raven		NY	46	78
Horned Lark			30	28
Purple Martin	P		53	28
Tree Swallow	AE	AE	100	100
North Rgh-wing Swallow	AE		66	53
Bank Swallow §	H		76	36
Cliff Swallow §	AE		81	36
Barn Swallow	AE	S	96	95
Black-capped Chickadee	FY	FY	100	100
Red-breast Nuthatch	N	NB	71	91
White-breast Nuthatch	T	T	91	100
Brown Creeper	FY	FY	55	83
House Wren	D	S	76	78
Winter Wren	A	T	80	93
Sedge Wren	T		11	20
Marsh Wren		S	25	51
Golden-crown Kinglet	FY	FY	33	55
Ruby-crown Kinglet	P	NB	20	15
Blue-gr Gnatcatcher ‡	H		11	1
Eastern Bluebird			45	66
Veery	A	T	100	100
Swainson's Thrush	S	T	36	40
Hermit Thrush		NY	66	78
Wood Thrush	T	S	91	96

SPECIES	Code		%	
	1st	2nd	1st	2nd
American Robin	NY	NY	100	100
Gray Catbird	T	S	98	86
Northern Mockingbird ‡			1	1
Brown Thrasher	P	P	95	81
European Starling	FY	CF	96	91
Cedar Waxwing	CF	CF	100	100
Golden-winged Warbler	FY	S	53	40
Blue/Gold-wing Warbler			0	25
Brewster's Warbler †			1	8
Tennessee Warbler ‡			1	1
Nashville Warbler	FY	T	100	100
Northern Parula			20	18
Yellow Warbler	NE	P	100	100
Chestn-sided Warbler	FY	CF	98	100
Magnolia Warbler	NE	T	60	75
Cape May Warbler ‡		S	1	8
Black-thr Blue Warbler	S	T	43	78
Yellow-rumped Warbler	T	T	83	91
Black-thr Green Warbler	P	T	73	100
Blackburnian Warbler	CF	T	66	78
Pine Warbler	FY	FY	40	88
Prairie Warbler †			3	6
Cerulean Warbler †			8	5
Black-white Warbler	T	A	100	100
American Redstart	CF	P	95	100
Ovenbird	FY	NE	100	100
North Waterthrush	A	T	96	100
Louis Waterthrush †			1	0
Mourning Warbler	S	S	75	83

SPECIES	Code		%	
	1st	2nd	1st	2nd
Common Yellowthroat	CF	FY	100	100
Canada Warbler	P	T	66	83
Eastern Towhee	A	T	45	45
Chipping Sparrow	CF	CF	100	100
Clay-colored Sparrow ‡		S	1	20
Field Sparrow	A	S	68	73
Vesper Sparrow			75	43
Savannah Sparrow	P		78	73
Grasshopper Sparrow			15	28
Song Sparrow	CF	T	100	100
Swamp Sparrow	A	S	100	100
White-throat Sparrow	CF	A	100	100
Dark-eyed Junco	T	S	30	35
Scarlet Tanager	P	T	91	98
Northern Cardinal		S	23	48
Rose-breast Grosbeak	CF	FY	100	100
Indigo Bunting	A	NY	100	98
Bobolink	D		85	68
Red-wing Blackbird	FY	A	100	100
Eastern Meadowlark	FY		70	63
Western Meadowlark ‡			1	1
Common Grackle	CF	CF	100	100
Brown-head Cowbird	FY	NY	98	95
Orchard Oriole ‡			1	3
Baltimore Oriole	P	NU	100	90
Purple Finch	D	T	88	100
House Finch			5	43
Red Crossbill	N		20	5
White-winged Crossbill ‡		D	0	1

<< previous page next page >>

Ontario Breeding Bird Atlas - Summary Sheet for Square 17QK34 (page 3 of 3)

SPECIES	Code		%	
	1st	2nd	1st	2nd
Pine Siskin	D	D	33	41
American Goldfinch	P	T	98	100
Evening Grosbeak	S	D	48	71
House Sparrow	P		70	50

This list includes all species found during the Ontario Breeding Bird Atlas (1st atlas: 1981-1985, 2nd atlas: 2001-2005) in the region #16 (Peterborough). Underlined species are those that you should try to add to this square. They have not yet been reported during the 2nd atlas, but were found during the 1st atlas in this square or have been reported in more than 50% of the squares in this region during the 2nd atlas so far. In the species table, "BE 2nd" and "BE 1st" are the codes for the highest breeding evidence for that species in square 17QK34 during the 2nd and 1st atlas respectively. The % columns give the percentage of squares in that region where that species was reported during the 2nd and 1st atlas (this gives an idea of the expected chance of finding that species in region #16). Rare/Colonial Species Report Forms should be completed for species marked: § (Colonial), ‡ (regionally rare), or † (provincially rare). Current as of 14/02/2014. An up-to-date version of this sheet is available from http://www.birdsontario.org/atlas/summaryform.jsp?squareID=17QK34

<< previous page

Appendix B

NHIC Query Results

NHIC Query

Square Number 17QK3542

Scientific Name	Common Name	EO ID	S RANK	COSEWIC	MNR Status	Last Observed
Emydoidea blandingii	Blanding's Turtle	32371	S3	THR	THR	2006-06-28
RESTRICTED	RESTRICTED	4845				2004-08-03

NHIC Query

Square Number 17QK3541

Scientific Name	Common Name	EO ID	S RANK	COSEWIC	MNR Status	Last Observed
Graptemys geographica	Northern Map Turtle	91605	S3	SC	SC	2006-07-27

Appendix C

Representative Site Photos

Appendix C

ORE
Oakridge Environmental Ltd.
Environmental and Hydrogeological Services


1


2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10


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Appendix C

ORE
Oakridge Environmental Ltd.
Environmental and Hydrogeological Services


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19


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23


24

Appendix D

Ecological Land Classification Data

ELC Primary Data Card

Page 1 of 32

(1) Polygon Code	CVRS
Plot(s)	
Site Name	Pilgrims Rest
Polygon area	
Date	
Time	
Surveyor(s)	CF, RW, SG
Waypoint(s)	
Photo(s)	

Zone 17t
Easting 735484
Northing 4941794

(2) sampling scale: ☐ Plot ☒ Polygon
sampling effort: ☐ verification ☒ survey ☐ research
sampling cards: ☐ Field Desc's ☐ Assoc Desc's ☐ Assoc Desc's 2 ☐ Site+Substrate ☐ Species List ☐ DBH, Age, Ht ☐ Man. / Dist.
size/shape: ☐ 1 m² ☐ 25 m² ☐ 100 m² ☐ 400 m² ☐ circular ☐ square ☐ rectangle

(10) Land Cover: ☐ natural ☒ anthropogenic
Energy: ☐ active ☐ not active
System: ☒ terrestrial ☐ wetland ☐ aquatic ☐ subterranean
Topographic Feature: ☐ lake / pond / wet dep. ☐ river / creek / stream ☐ depression ☐ bottomland ☐ terrace ☐ valley slope ☐ seep ☐ tableland ☐ rolling upland ☐ shoreline ☐ bluff ☐ sand dune ☐ cliff ☐ talus ☐ level rockland ☐ rolling rockland ☐ crevice / cave

(4) Vegetation Summary of prevailing conditions (4 species X 4 layers)

Layer	Cover	species in order of decreasing dominance (">>" much greater than, ">" greater than, "=" equal to)	(9) Ecosystem Coverage (%) 25
> 10 m	4	Eastern White Pine = Red oak > Balsam Fir	
2 - 10 m	3	Eastern White Pine = Red Oak > European Buckthorn	
0.5 - 2 m	—	N/A	
< 0.5 m	1	Common Grass sp. > English plantain	
other			
< 0.5 m			
> 0.5 m			

cover codes: 1 = 0 - 10%, 2 = 10 - 25%, 3 = 25 - 60%, 4 = > 60%

(8) depth augered
mottles
gley
bedrock
carbonates
water table
depth of organics
effective texture
moisture regime
position on slope

0

See Test Pit 11 / Test Pit 12 in ORE's Hydrogeological & Site Servicing Study (2015)

condition	Management / Disturbance	intensity	extent	score
	Residential Housing	moderate	local	
	Manicured lawnspace	low	local	
	Roads	moderate	local	
	Trails	low	local	
	Docks on shorelines	low	local	

Site Coverages (%) (8)

—	bedrock (rockiness)
10	coarse frag. (stoniness)
—	mineral substrate
—	organic material
—	woody debris
—	moss
90	vegetation
—	vernal pooling

Site (11): ☐ open water ☐ shallow water ☐ parent mineral ☐ mineral soil ☐ coarse fragments ☐ bedrock ☐ organic

Material Family (11): ☐ bedrock ☐ coarse fragments ☐ sandy ☐ coarse loamy ☐ silty ☐ fine loamy ☐ clayey ☐ organic - folic (dry) ☐ organic - peat (wet)

Treed Ecosystem
Age (5): ☐ pioneer ☐ young ☐ mid - age ☒ mature ☐ old growth
Substrate Depth (8): ☐ rock (< 5 cm) ☐ very shallow (5 - 15 cm) ☐ shallow (15 - 30 cm) ☐ moderate (30 - 60 cm) ☐ moderately deep (60 - 120 cm) ☐ deep (> 120 cm)

Community Class (11): ☐ still water ☐ flowing water ☐ beach / bar ☐ sand dune ☐ bluff ☐ cliff ☐ talus ☐ rockland ☐ crevice / cave ☐ mineral barren ☐ meadow ☐ prairie ☐ shrubland ☐ treed ☐ treed swamp ☐ shrub swamp ☐ fen ☐ bog ☐ marsh ☐ agriculture ☐ actively managed ☐ constructed

Chemistry (11): ☐ calcareous ☐ non-calcareous ☐ saline

Vegetation Cover (5): ☐ not vegetated ☐ non-vascular ☐ sparse herbaceous ☐ herbaceous ☐ sparse low shrub ☐ low shrub ☐ sparse tall shrub ☐ tall shrub ☐ sparse low treed ☐ low treed ☐ sparse tall teed ☒ semi-closed tall treed ☐ closed tall treed

Vegetation Form (5): ☐ lichen ☐ algal ☐ bryophyte ☐ mixed non-vascular ☐ forb ☐ graminoid ☐ mixed herbaceous ☐ floating-lvd aquatic ☐ suberged aquatic ☐ mixed aquatic ☐ coniferous shrub ☐ evergreen shrub ☐ mixed shrub ☐ deciduous shrub ☐ coniferous treed ☐ mixed treed ☐ deciduous treed

Classification	code	name	2	3	4
(12) Substrate Type					
(13) Vegetation Type					
(14) Ecosite	CVRS	Trailer Park			
(16) Ecoelement					
1st or 2nd Approx					
		Inclusion / Complex			
		(9) Ecosystem Coverage (%)			

Polygon Code CURS | **Field Descriptions** | Page 2 of 32

plant species list for prevailing (1) ecosystem condition

plant species list for _____ ecosystem condition

③ plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5	③ plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5
Eastern White Pine	O	O	X	X											
Balsam Fir	R	R	X	X											
Red oak	O	O	X	X											
English Plantain	X	X	X	O											
Eastern White Cedar	R	R	X	X											
European Buckthorn	X	O	X	X											

10

cond	type	Wildlife Species Code	#

6

size class analysis (cm)	< 10	10 - 25	25 - 50	> 50
live				
standing dead				
deadfall				

codes: **N** = none **R** = rare
O = occasional **A** = abundant

Prism Sweeps | prism factor X

⑦ condition/auger #	__/__	__/__	__/__	__/__	__/__
depth augered					
mottles					
gley					
bedrock					
carbonates					
water table					
organics					
effective texture					
moisture regime					
position on slope					
Substrate Type					

tree species code	__/__	__/__	__/__	__/__	__/__	totals	rel avg
totals							100
basal area							
standing dead tally							

ELC Primary Data Card

Page 3 of 32

(1) Polygon Code	CUC 4
Plot(s)	
Site Name	Pilgrims Rest
Polygon area	
Date	
Time	
Surveyor(s)	CF / RW / SG
Waypoint(s)	
Photo(s)	

Zone 17t
Easting 735330
Northing 4942032

(2) sampling scale: ☐ Plot ☒ Polygon
sampling effort: ☐ verification ☐ survey ☐ research
sampling cards: ☐ Field Desc's ☐ Assoc Desc's ☐ Assoc Desc's 2 ☐ Site+Substrate ☐ Species List ☐ DBH, Age, Ht ☐ Man. / Dist.
size/shape: ☐ 1 m² ☐ 25 m² ☐ 100 m² ☐ 400 m² ☐ circular ☐ square ☐ rectangle

(10) Land Cover: ☐ natural ☒ anthropogenic
Energy: ☐ active ☐ not active
System: ☒ terrestrial ☐ wetland ☐ aquatic ☐ subterranean
Topographic Feature: ☐ lake / pond / wet dep. ☐ river / creek / stream ☐ depression ☐ bottomland ☐ terrace ☐ valley slope ☐ seep ☐ tableland ☐ rolling upland ☐ shoreline ☐ bluff ☐ sand dune ☐ cliff ☐ talus ☐ level rockland ☐ rolling rockland ☐ crevice / cave

(4) **Vegetation Summary** of prevailing conditions (4 species X 4 layers)

Layer	Cover	species in order of decreasing dominance (">>" much greater than, ">" greater than, "=" equal to) (9) Ecosystem Coverage (%)
> 10 m	3	Trembling Aspen = Balsam Poplar = Red Pine
2 - 10 m	2	European Buckthorn = Willow sp. > Trembling Aspen = Red Pine
0.5 - 2 m	1	Canada Golden Rod = willow sp. > Trembling Aspen
< 0.5 m	r	Grass sp. > European Buckthorn = Common Milkweed = English Plantain
other		
< 0.5 m		
> 0.5 m		

cover codes: 1 = 0 - 10%, 2 = 10 - 25%, 3 = 25 - 60%, 4 = > 60%

(8) depth augered
mottles
gley
bedrock
carbonates
water table
depth of organics
effective texture
moisture regime
position on slope

(9)

See Test Pit 19 of ORE's Hydrogeological & Site Servicing Study (2015)

condition	Management / Disturbance	intensity	extent	score
	Historical Substrate Extraction	heavy	local	
	Storage Area - Vehicles	moderate	local	
	Road	light	local	

Site Coverages (%) (8)

-	bedrock (rockiness)
80	coarse frag. (stoniness)
-	mineral substrate
-	organic material
-	woody debris
-	moss
10	vegetation
	vernal pooling

Site (11): ☐ open water ☐ shallow water ☐ parent mineral ☐ mineral soil ☐ coarse fragments ☐ bedrock ☐ organic

Material Family (11): ☐ bedrock ☐ coarse fragments ☐ sandy ☐ coarse loamy ☐ silty ☐ fine loamy ☐ clayey ☐ organic - folic (dry) ☐ organic - peat (wet)

Treed Ecosystem

Age (5): ☐ pioneer ☐ young ☐ mid - age ☐ mature ☐ old growth

Substrate Depth (8): ☐ rock (< 5 cm) ☐ very shallow (5 - 15 cm) ☐ shallow (15 - 30 cm) ☐ moderate (30 - 60 cm) ☐ moderately deep (60 - 120 cm) ☐ deep (> 120 cm)

Community Class (11): ☐ still water ☐ flowing water ☐ beach / bar ☐ sand dune ☐ bluff ☐ cliff ☐ talus ☐ rockland ☐ crevice / cave ☐ mineral barren ☐ meadow ☐ prairie ☐ shrubland ☐ treed ☐ treed swamp ☐ shrub swamp ☐ fen ☐ bog ☐ marsh ☐ agriculture ☐ actively managed ☐ constructed

Chemistry (11): ☐ calcareous ☐ non-calcareous ☐ saline

Vegetation Cover (5): ☐ not vegetated ☐ non-vascular ☐ sparse herbaceous ☐ herbaceous ☐ sparse low shrub ☐ low shrub ☐ sparse tall shrub ☐ tall shrub ☐ sparse low treed ☐ low treed ☐ sparse tall teed ☐ semi-closed tall treed ☐ closed tall treed

Vegetation Form (5): ☐ lichen ☐ algal ☐ bryophyte ☐ mixed non-vascular ☐ forb ☐ graminoid ☐ mixed herbaceous ☐ floating-lvd aquatic ☐ suberged aquatic ☐ mixed aquatic ☐ coniferous shrub ☐ evergreen shrub ☐ mixed shrub ☐ deciduous shrub ☐ coniferous treed ☐ mixed treed ☐ deciduous treed

Classification	code	name	2	3	4
(12) Substrate Type					
(13) Vegetation Type					
(14) Ecosite	CUC-4	Extraction			
(15) Ecoelement					
1st or 2nd Approx					
		Inclusion / Complex			
		(9) Ecosystem Coverage (%)			

Polygon Code CUR 4 | Version 3 Feb 2012 | **Field Descriptions** | **Page** 4 **of** 32

plant species list for prevailing (1) ecosystem condition

③ plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5
European Buckthorn	X	O	X	O			
Canada Goldenrod	X	X	O	X			
English Plantain	X	X	X	O			
Trembling Aspen	R	R	R	X			
Balsam poplar	R	R	X	X			
Red pine	R	R	X	X			
Willow sp.	X	O	O	X			
Common Milkweed	X	X	X	O			
Grass sp.	X	X	X	A			

plant species list for _____ ecosystem condition

③ plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5

⑩ cond	type	Wildlife Species Code	#

⑥ size class analysis (cm)	<10	10 - 25	25 - 50	> 50
live				
standing dead				
deadfall				

codes: **N** = none **R** = rare **O** = occasional **A** = abundant

Prism Sweeps ⑨ prism factor

⑦ condition/auger #	__/__	__/__	__/__	__/__	__/__
depth augered					
mottles					
gley					
bedrock					
carbonates					
water table					
organics					
effective texture					
moisture regime					
position on slope					
Substrate Type					

tree species code	__/__	__/__	__/__	__/__	__/__	totals	rel avg
totals							100
basal area							
standing dead tally							

ELC Primary Data Card

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(1) Polygon Code	FOCM6-2
Plot(s)	
Site Name	Pilgrims Rest
Polygon area	
Date	
Time	
Surveyor(s)	CF/RW/SG
Waypoint(s)	
Photo(s)	

Zone 17t | Easting 35269 | Northing 4941947

(2) sampling scale: ☐ Plot ☒ Polygon

sampling effort: ☐ verification ☒ survey ☐ research

sampling cards: ☐ Field Desc's ☐ Assoc Desc's ☐ Assoc Desc's 2 ☐ Site+Substrate ☐ Species List ☐ DBH, Age, Ht ☐ Man. / Dist.

size/shape: ☐ 1 m² ☐ 25 m² ☐ 100 m² ☐ 400 m² ☐ circular ☐ square ☐ rectangle

(10) Land Cover: ☒ natural ☒ anthropogenic

Energy: ☐ active ☐ not active

System: ☒ terrestrial ☐ wetland ☐ aquatic ☐ subterranean

Topographic Feature: ☐ lake / pond / wet dep. ☐ river / creek / stream ☐ depression ☐ bottomland ☐ terrace ☐ valley slope ☐ seep ☐ tableland ☐ rolling upland ☐ shoreline ☐ bluff ☐ sand dune ☐ cliff ☐ talus ☐ level rockland ☐ rolling rockland ☐ crevice / cave

(4) Vegetation Summary of prevailing conditions (4 species X 4 layers)

Layer	Cover	species in order of decreasing dominance (">>" much greater than, ">" greater than, "=" equal to	(9) Ecosystem Coverage (%)
> 10 m	4	Red Pine > Trembling Aspen	
2 - 10 m	2	Red pine > Trembling Aspen = Red Oak	
0.5 - 2 m	—	N/A	
< 0.5 m	1	European Buckthorn	
other			
< 0.5 m			
> 0.5 m			

cover codes: 1 = 0 - 10%, 2 = 10 - 25%, 3 = 25 - 60%, 4 = > 60%

(8) depth augered, mottles, gley, bedrock, carbonates, water table, depth of organics, effective texture, moisture regime, position on slope

No soil Analysis was completed in this ecosite

(9)

condition	Management / Disturbance	intensity	extent	score
	Adjacent to Road	low	local	

Treed Ecosystem

Age (5): ☐ pioneer ☐ young ☐ mid - age ☐ mature ☐ old growth

Substrate Depth (8): ☐ rock (< 5 cm) ☐ very shallow (5 - 15 cm) ☐ shallow (15 - 30 cm) ☐ moderate (30 - 60 cm) ☐ moderately deep (60 - 120 cm) ☐ deep (> 120 cm)

Community Class (11): ☐ still water ☐ flowing water ☐ beach / bar ☐ sand dune ☐ bluff ☐ cliff ☐ talus ☐ rockland ☐ crevice / cave ☐ mineral barren ☐ meadow ☐ prairie ☐ shrubland ☐ treed ☐ treed swamp ☐ shrub swamp ☐ fen ☐ bog ☐ marsh ☐ agriculture ☐ actively managed ☐ constructed

Site Coverages (%) (8)

10	bedrock (rockiness)
—	coarse frag. (stoniness)
10	mineral substrate
10	organic material
15	woody debris
—	moss
55	vegetation
—	vernal pooling

Site (11): ☐ open water ☐ shallow water ☐ parent mineral ☐ mineral soil ☐ coarse fragments ☐ bedrock ☐ organic

Material Family (11): ☐ bedrock ☐ coarse fragments ☐ sandy ☐ coarse loamy ☐ silty ☐ fine loamy ☐ clayey ☐ organic - folic (dry) ☐ organic - peat (wet)

Chemistry (11): ☐ calcareous ☐ non-calcareous ☐ saline

Vegetation Form (5): ☐ lichen ☐ algal ☐ bryophyte ☐ mixed non-vascular ☐ forb ☐ graminoid ☐ mixed herbaceous ☐ floating-lvd aquatic ☐ suberged aquatic ☐ mixed aquatic ☐ coniferous shrub ☐ evergreen shrub ☐ mixed shrub ☐ deciduous shrub ☐ coniferous treed ☐ mixed treed ☐ deciduous treed

Vegetation Cover (5): ☐ not vegetated ☐ non-vascular ☐ sparse herbaceous ☐ herbaceous ☐ sparse low shrub ☐ low shrub ☐ sparse tall shrub ☐ tall shrub ☐ sparse low treed ☐ low treed ☐ sparse tall teed ☐ semi-closed tall treed ☐ closed tall treed

Classification	code	name	2	3	4
(12) Substrate Type					
(13) Vegetation Type					
(14) Ecosite	FOCM6-2	Dry-Fresh Red Pine Naturalized Coniferous plantation			
(15) Ecoelement					
1st or 2nd Approx					
		Inclusion / Complex			
		(9) Ecosystem Coverage (%)			

Polygon Code FOCM6-2 | Version: 8 Feb 2012 | **Field Descriptions** | **Page** 6 **of** 32

plant species list for prevailing (1) ecosystem condition

③ plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5
Red Pine	A	A	X	X			
Trembling Aspen	R	R	X	X			
European Buckthorn	X	X	X	O			
Red Oak	X	R	X	X			

plant species list for _____ ecosystem condition

③ plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5

⑩ cond	type	Wildlife Species Code	#

⑥

size class analysis (cm)	< 10	10 - 25	25 - 50	> 50
live				
standing dead				
deadfall				

codes: **N** = none **R** = rare
O = occasional **A** = abundant

Prism Sweeps ⑨ prism factor

⑦ condition/auger #	__/__	__/__	__/__	__/__	__/__
depth augered					
mottles					
gley					
bedrock					
carbonates					
water table					
organics					
effective texture					
moisture regime					
position on slope					
Substrate Type					

tree species code	__/__	__/__	__/__	__/__	__/__	totals	rel avg
totals							100
basal area							
standing dead tally							

ELC Primary Data Card

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(1) Polygon Code	FOmm2
Plot(s)	
Site Name	Pilgrims Rest
Polygon area	
Date	
Time	
Surveyor(s)	CF/RW/SG
Waypoint(s)	
Photo(s)	

Zone 176
Easting 735205
Northing 4941856

(2) sampling scale: ☐ Plot ☒ Polygon
sampling effort: ☐ verification ☒ survey ☐ research
sampling cards: ☐ Field Desc's ☐ Assoc Desc's ☐ Assoc Desc's 2 ☐ Site+Substrate ☐ Species List ☐ DBH, Age, Ht ☐ Man. / Dist.
size/shape: ☐ 1 m² ☐ 25 m² ☐ 100 m² ☐ 400 m² ☐ circular ☐ square ☐ rectangle

(10) Land Cover: ☒ natural ☐ anthropogenic
Energy: ☐ active ☐ not active
System: ☒ terrestrial ☐ wetland ☐ aquatic ☐ subterranean
Topographic Feature: ☐ lake / pond / wet dep. ☐ river / creek / stream ☐ depression ☐ bottomland ☐ terrace ☐ valley slope ☐ seep ☐ tableland ☐ rolling upland ☐ shoreline ☐ bluff ☐ sand dune ☐ cliff ☐ talus ☐ level rockland ☐ rolling rockland ☐ crevice / cave

(4) Vegetation Summary of prevailing conditions (4 species X 4 layers)

Layer	Cover	species in order of decreasing dominance (">>" much greater than, ">" greater than, "=" equal to) (9) Ecosystem Coverage (%)
> 10 m	3	White Pine = Red Oak > Sugar maple
2 - 10 m	3	White Pine = Red Oak > Red Pine = Balsam Poplar
0.5 - 2 m	1	Sugar maple > White Pine = Balsam Poplar
< 0.5 m	2	Sarsaparilla = Bracken Fern > White Trillium = Mountain Rice.
other		
< 0.5 m		
> 0.5 m		

cover codes: 1 = 0 - 10%, 2 = 10 - 25%, 3 = 25 - 60%, 4 = > 60%

(8) depth augered
mottles
gley
bedrock
carbonates
water table
depth of organics
effective texture
moisture regime
position on slope

See Testpit 2, Testpit 5, 3 Test Pit 25 of ORE's Hydrogeological & site Servicing study (2015)

condition	Management / Disturbance	intensity	extent	score
-	Road	Moderate	local	-
-	Trailers	Low	local	-

Treed Ecosystem
Age (5): ☐ pioneer ☐ young ☐ mid - age ☐ mature ☐ old growth

Community Class (11): ☐ still water ☐ flowing water ☐ beach / bar ☐ sand dune ☐ bluff ☐ cliff ☐ talus ☐ rockland ☐ crevice / cave ☐ mineral barren ☐ meadow ☐ prairie ☐ shrubland ☐ treed ☐ treed swamp ☐ shrub swamp ☐ fen ☐ bog ☐ marsh ☐ agriculture ☐ actively managed ☐ constructed

Site Coverages (%) (8)

bedrock (rockiness)	
coarse frag. (stoniness)	
mineral substrate	
organic material	
woody debris	
moss	
vegetation	
vernal pooling	

Site (11): ☐ open water ☐ shallow water ☐ parent mineral ☐ mineral soil ☐ coarse fragments ☐ bedrock ☐ organic

Material Family (11): ☐ bedrock ☐ coarse fragments ☐ sandy ☐ coarse loamy ☐ silty ☐ fine loamy ☐ clayey ☐ organic - folic (dry) ☐ organic - peat (wet)

Substrate Depth (8): ☐ rock (< 5 cm) ☐ very shallow (5 - 15 cm) ☐ shallow (15 - 30 cm) ☐ moderate (30 - 60 cm) ☐ moderately deep (60 - 120 cm) ☐ deep (> 120 cm)

Chemistry (11): ☐ calcareous ☐ non-calcareous ☐ saline

Vegetation Form (5): ☐ lichen ☐ algal ☐ bryophyte ☐ mixed non-vascular ☐ forb ☐ graminoid ☐ mixed herbaceous ☐ floating-lvd aquatic ☐ suberged aquatic ☐ mixed aquatic ☐ coniferous shrub ☐ evergreen shrub ☐ mixed shrub ☐ deciduous shrub ☐ coniferous treed ☐ mixed treed ☐ deciduous treed

Vegetation Cover (5): ☐ not vegetated ☐ non-vascular ☐ sparse herbaceous ☐ herbaceous ☐ sparse low shrub ☐ low shrub ☐ sparse tall shrub ☐ tall shrub ☐ sparse low treed ☐ low treed ☐ sparse tall teed ☐ semi-closed tall treed ☐ closed tall treed

Classification	code	name	2	3	4
(12) Substrate Type					
(13) Vegetation Type					
(14) Ecosite	FOmm2	Dry-Fresh White Pine - Hardwood	Mixed Forest		
(15) Ecoelement					
1st or 2nd Approx					
Inclusion / Complex					
(9) Ecosystem Coverage (%)					

Polygon Code FOMM2 | **Field Descriptions** | **Page** 8 **of** 32

plant species list for prevailing (1) ecosystem condition

③ plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5
White pine	A	A	O	X			
Sugar maple	O	O	X	X			
Red Oak	A	A	X	X			
Red pine	R	O	X	X			
Sarsaparilla	X	X	X	A			
Horsetail	X	X	X	O			
Bracken fern	X	X	X	A			
Balsam poplar	R	O	O	X			
Blue Spruce	R	R	X	X			
Sugar maple	R	O	A	X			
Basswood	R	O	O	X			
White Ash	X	R	X	X			
Hop Hornbeam	R	R	X	X			
Serviceberry	X	X	X	O			
Downy Arrow-wood	X	X	X	O			
Partridgeberry	X	X	X	O			
Graywings	X	X	X	O			
Bristle-leaved Sedge	X	X	X	A			
White trillium	X	X	X	O			
White Goamed Mountain	X	X	X	A			
Butternut	R	X	X	X			

plant species list for _____ ecosystem condition

③ plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5

ID cond	type	Wildlife Species Code	#

⑥

size class analysis (cm)	<10	10 - 25	25 - 50	> 50
live				
standing dead				
deadfall				

codes: **N** = none **R** = rare **O** = occasional **A** = abundant

Prism Sweeps ⑤ prism factor

⑦ condition/auger #	__/__	__/__	__/__	__/__	__/__
depth augered					
mottles					
gley					
bedrock					
carbonates					
water table					
organics					
effective texture					
moisture regime					
position on slope					
Substrate Type					

tree species code	__/__	__/__	__/__	__/__	__/__	totals	rel avg
totals							100
basal area							
standing dead tally							

ELC Primary Data Card

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(1) Polygon Code	FOOM5
Plot(s)	
Site Name	Pilgrims Rest
Polygon area	
Date	
Time	
Surveyor(s)	CF / RW / SG
Waypoint(s)	
Photo(s)	

Zone 176
Easting 735269
Northing 4941703

(2) sampling scale: ☐ Plot ☐ Polygon

sampling effort: ☐ verification ☐ survey ☐ research

sampling cards: ☐ Field Desc's ☐ Assoc Desc's ☐ Assoc Desc's 2 ☐ Site+Substrate ☐ Species List ☐ DBH, Age, Ht ☐ Man. / Dist.

size/shape: ☐ 1 m² ☐ 25 m² ☐ 100 m² ☐ 400 m² ☐ circular ☐ square ☐ rectangle

(10) Land Cover: ☒ natural ☐ anthropogenic

Energy: ☐ active ☐ not active

System: ☒ terrestrial ☐ wetland ☐ aquatic ☐ subterranean

Topographic Feature: ☐ lake / pond / wet dep. ☐ river / creek / stream ☐ depression ☐ bottomland ☐ terrace ☐ valley slope ☐ seep ☐ tableland ☐ rolling upland ☐ shoreline ☐ bluff ☐ sand dune ☐ cliff ☐ talus ☐ level rockland ☐ rolling rockland ☐ crevice / cave

(4) Vegetation Summary of prevailing conditions (4 species X 4 layers)

Layer	Cover	species in order of decreasing dominance (">>" much greater than, ">" greater than, "=" equal to) (9) Ecosystem Coverage (%)
> 10 m	3	Sugar maple > Paper Birch = White pine = Basswood
2 - 10 m	3	Sugar maple > White Ash = Trembling Aspen = White pine.
0.5 - 2 m	1	Sugar maple = Red maple = Trembling Aspen > Paper Birch
< 0.5 m	2	Sarsaparilla > Sensitive fern
other		
< 0.5 m		
> 0.5 m		

cover codes: 1 = 0 - 10%, 2 = 10 - 25%, 3 = 25 - 60%, 4 = > 60%

(9) 0

(8) depth augered
mottles
gley
bedrock
carbonates
water table
depth of organics
effective texture
moisture regime
position on slope

See Hand Auger 4 from ORE's Hydrogeological & site Servicing Study (2015)

condition	Management / Disturbance	intensity	extent	score

Treed Ecosystem

Age (5): ☐ pioneer ☐ young ☒ mid - age ☐ mature ☐ old growth

Substrate Depth (8): ☐ rock (< 5 cm) ☐ very shallow (5 - 15 cm) ☐ shallow (15 - 30 cm) ☐ moderate (30 - 60 cm) ☐ moderately deep (60 - 120 cm) ☐ deep (> 120 cm)

Community Class (11): ☐ still water ☐ flowing water ☐ beach / bar ☐ sand dune ☐ bluff ☐ cliff ☐ talus ☐ rockland ☐ crevice / cave ☐ mineral barren ☐ meadow ☐ prairie ☐ shrubland ☒ treed ☐ treed swamp ☐ shrub swamp ☐ fen ☐ bog ☐ marsh ☐ agriculture ☐ actively managed ☐ constructed

Site Coverages (%) (8)

bedrock (rockiness)	
coarse frag. (stoniness)	
mineral substrate	
organic material	
woody debris	
moss	
vegetation	
vernal pooling	

Site (11): ☐ open water ☐ shallow water ☐ parent mineral ☐ mineral soil ☐ coarse fragments ☐ bedrock ☐ organic

Material Family (11): ☐ bedrock ☐ coarse fragments ☐ sandy ☐ coarse loamy ☐ silty ☐ fine loamy ☐ clayey ☐ organic - folic (dry) ☐ organic - peat (wet)

Chemistry (11): ☐ calcareous ☐ non-calcareous ☐ saline

Vegetation Cover (5): ☐ not vegetated ☐ non-vascular ☐ sparse herbaceous ☐ herbaceous ☐ sparse low shrub ☐ low shrub ☐ sparse tall shrub ☐ tall shrub ☐ sparse low treed ☐ low treed ☐ sparse tall teed ☒ semi-closed tall treed ☐ closed tall treed

Vegetation Form (5): ☐ lichen ☐ algal ☐ bryophyte ☐ mixed non-vascular ☐ forb ☐ graminoid ☐ mixed herbaceous ☐ floating-lvd aquatic ☐ suberged aquatic ☐ mixed aquatic ☐ coniferous shrub ☐ evergreen shrub ☐ mixed shrub ☐ deciduous shrub ☐ coniferous treed ☐ mixed treed ☐ deciduous treed

Classification	code	name	2	3	4
(12) Substrate Type					
(13) Vegetation Type					
(14) Ecosite	FOOM5	Dry-Fresh Sugar maple deciduous Forest			
(16) Ecoelement					
1st or 2nd Approx					
		Inclusion / Complex			
		(9) Ecosystem Coverage (%)			

Polygon Code F0DMS | **Field Descriptions** | **Page** 10 **of** 32

plant species list for prevailing (1) ecosystem condition

③ plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5
Sugar Maple	A	A	O	X			
Hop Horn beam	X	R	R	X			
American Basswood	R	R	R	X			
Wild black Cherry	R	R	X	X			
White Ash	X	O	R	X			
Red maple	X	O	O	X			
Trembling Aspen	R	O	O	X			
Paper Birch	O	R	R	X			
White Pine	O	O	X	X			
Large tooth Aspen	R	R	X	X			
sensitive fern	X	X	X	O			
Sarsaparilla	X	X	X	A			

plant species list for _____ ecosystem condition

③ plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5

⑩ cond	type	Wildlife Species Code	#

⑥ size class analysis (cm)	< 10	10 - 25	25 - 50	> 50
live				
standing dead				
deadfall				

codes: **N** = none **R** = rare **O** = occasional **A** = abundant

Prism Sweeps ⑨ prism factor

⑦ condition/auger #	__/__	__/__	__/__	__/__	__/__
depth augered					
mottles					
gley					
bedrock					
carbonates					
water table					
organics					
effective texture					
moisture regime					
position on slope					
Substrate Type					

tree species code	__/__	__/__	__/__	__/__	__/__	totals	rel avg
totals							100
basal area							
standing dead tally							

ELC Primary Data Card

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(1) Polygon Code	FOCm4
Plot(s)	
Site Name	Pilgrims Rest
Polygon area	
Date	
Time	
Surveyor(s)	CF/RW/SG
Waypoint(s)	
Photo(s)	

Zone 17t
Easting 735153
Northing 4942236

(2) sampling scale: ☐ Plot ☒ Polygon
sampling effort: ☐ verification ☒ survey ☐ research
sampling cards: ☐ Field Desc's ☐ Assoc Desc's ☐ Assoc Desc's 2 ☐ Site+Substrate ☐ Species List ☐ DBH, Age, Ht ☐ Man. / Dist.
size/shape: ☐ 1 m² ☐ 25 m² ☐ 100 m² ☐ 400 m² ☐ circular ☐ square ☐ rectangle

(10) Land Cover: ☒ natural ☐ anthropogenic
Energy: ☐ active ☐ not active
System: ☒ terrestrial ☐ wetland ☐ aquatic ☐ subterranean
Topographic Feature: ☐ lake / pond / wet dep. ☐ river / creek / stream ☐ depression ☐ bottomland ☐ terrace ☐ valley slope ☐ seep ☐ tableland ☐ rolling upland ☐ shoreline ☐ bluff ☐ sand dune ☐ cliff ☐ talus ☐ level rockland ☐ rolling rockland ☐ crevice / cave

(4) Vegetation Summary of prevailing conditions (4 species X 4 layers)

Layer	Cover	species in order of decreasing dominance (">>" much greater than, ">" greater than, "=" equal to) (9) Ecosystem Coverage (%)
> 10 m	—	N/A
2 - 10 m	3	Eastern White Cedar > Red maple = White Pine = Balsam Fir
0.5 - 2 m	3	Eastern White Cedar > Red maple = white pine = Balsam Fir
< 0.5 m	1	Sarsaparilla = Sensitive Fern = Bracken Fern = European Buckthorn
other	—	
< 0.5 m	—	
> 0.5 m	—	

cover codes: 1 = 0 - 10%, 2 = 10 - 25%, 3 = 25 - 60%, 4 = > 60%

(9) 0

(8) depth augered	—
mottles	—
gley	—
bedrock	—
carbonates	—
water table	—
depth of organics	—
effective texture	—
moisture regime	—
position on slope	—

A soil Analysis was not completed in this ecosite

condition	Management / Disturbance	intensity	extent	score
	Adjacent to road	Moderate	local	

Treed Ecosystem
Age (5): ☐ pioneer ☐ young ☐ mid - age ☐ mature ☐ old growth
Substrate Depth (8): ☐ rock (< 5 cm) ☐ very shallow (5 - 15 cm) ☐ shallow (15 - 30 cm) ☐ moderate (30 - 60 cm) ☐ moderately deep (60 - 120 cm) ☐ deep (> 120 cm)

Community Class (11)
☐ still water ☐ flowing water ☐ beach / bar ☐ sand dune ☐ bluff ☐ cliff ☐ talus
☐ rockland ☐ crevice / cave ☐ mineral barren ☐ meadow ☐ prairie ☐ shrubland ☐ treed
☐ treed swamp ☐ shrub swamp ☐ fen ☐ bog ☐ marsh ☐ agriculture ☐ actively managed ☐ constructed

Site Coverages (%) (8)

bedrock (rockiness)	
coarse frag. (stoniness)	
mineral substrate	
organic material	
woody debris	
moss	
vegetation	
vernal pooling	

Site (11): ☐ open water ☐ shallow water ☐ parent mineral ☐ mineral soil ☐ coarse fragments ☐ bedrock ☐ organic
Material Family (11): ☐ bedrock ☐ coarse fragments ☐ sandy ☐ coarse loamy ☐ silty ☐ fine loamy ☐ clayey ☐ organic - folic (dry) ☐ organic - peat (wet)

Chemistry (11): ☐ calcareous ☐ non-calcareous ☐ saline

Vegetation Form (5): ☐ lichen ☐ algal ☐ bryophyte ☐ mixed non-vascular ☐ forb ☐ graminoid ☐ mixed herbaceous ☐ floating-lvd aquatic ☐ suberged aquatic ☐ mixed aquatic ☐ coniferous shrub ☐ evergreen shrub ☐ mixed shrub ☐ deciduous shrub ☐ coniferous treed ☐ mixed treed ☐ deciduous treed

Vegetation Cover (5): ☐ not vegetated ☐ non-vascular ☐ sparse herbaceous ☐ herbaceous ☐ sparse low shrub ☐ low shrub ☐ sparse tall shrub ☐ tall shrub ☐ sparse low treed ☐ low treed ☐ sparse tall teed ☐ semi-closed tall treed ☐ closed tall treed

Classification	code	name	2	3	4
(12) Substrate Type					
(13) Vegetation Type					
(14) Ecosite	FOCm4	Fresh-moist white cedar Coniferous Forest			
(16) Ecoelement					
1st or 2nd Approx					
Inclusion / Complex					
(9) Ecosystem Coverage (%)					

Polygon Code FOCM4 | **Field Descriptions** | **Page** 12 **of** 3

plant species list for prevailing (1) ecosystem condition

3 plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5
Eastern White Cedar	X	A	A	X			
Red Maple	X	O	O	R			
White Pine	X	O	O	X			
Balsam Fir	X	O	O	X			
Sarsaparilla	X	X	X	O			
Sensitive Fern	X	X	X	O			
Bracken Fern	X	X	X	O			
European Buckthorn	X	X	R	O			

plant species list for _____ ecosystem condition

3 plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5

10

cond	type	Wildlife Species Code	#

6

size class analysis (cm)	< 10	10 - 25	25 - 50	> 50
live				
standing dead				
deadfall				

codes: **N** = none **R** = rare
O = occasional **A** = abundant

Prism Sweeps * prism factor

7 condition/auger #	__/__	__/__	__/__	__/__	__/__
depth augered					
mottles					
gley					
bedrock					
carbonates					
water table					
organics					
effective texture					
moisture regime					
positiion on slope					
Substrate Type					

tree species code	__/__	__/__	__/__	__/__	__/__	totals	rel avg
totals							100
basal area							
standing dead tally							

ELC Primary Data Card

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Polygon Code	FOCM3
Plot(s)	
Site Name	Pilgrims Rest
Polygon area	
Date	
Time	
Surveyor(s)	CF / RW / SG
Waypoint(s)	
Photo(s)	

Zone 17t
Easting 735565
Northing 4941658

sampling scale: ☐ Plot ☒ Polygon
sampling effort: ☐ verification ☒ survey ☐ research
sampling cards: ☐ Field Desc's ☐ Assoc Desc's ☐ Assoc Desc's 2 ☐ Site+Substrate ☐ Species List ☐ DBH, Age, Ht ☐ Man. / Dist.
size/shape: ☐ 1 m² ☐ 25 m² ☐ 100 m² ☐ 400 m² ☐ circular ☐ square ☐ rectangle

Land Cover: ☒ natural ☐ anthropogenic
Energy: ☐ active ☐ not active
System: ☒ terrestrial ☐ wetland ☐ aquatic ☐ subterranean

Topographic Feature: ☐ lake / pond / wet dep. ☐ river / creek / stream ☐ depression ☐ bottomland ☐ terrace ☐ valley slope ☐ seep ☐ tableland ☐ rolling upland ☐ shoreline ☐ bluff ☐ sand dune ☐ cliff ☐ talus ☐ level rockland ☐ rolling rockland ☐ crevice / cave

Vegetation Summary of prevailing conditions (4 species X 4 layers)

Layer	Cover	species in order of decreasing dominance (">>" much greater than, ">" greater than, "=" equal to)	Ecosystem Coverage (%)
> 10 m	1	Hemlock = White Pine > Sugar maple	
2 - 10 m	4	Hemlock = White Pine > Sugar maple	
0.5 - 2 m	1	Hemlock = White Pine > White Spruce	
< 0.5 m	—	N/A	
other			
< 0.5 m			
> 0.5 m			

cover codes: 1 = 0 - 10%, 2 = 10 - 25%, 3 = 25 - 60%, 4 = > 60%

depth augered	—
mottles	—
gley	—
bedrock	—
carbonates	—
water table	—
depth of organics	—
effective texture	—
moisture regime	—
position on slope	—

A soil Analysis was not completed in this Ecosite

0

condition	Management / Disturbance	intensity	extent	score

Treed Ecosystem

Age: ☐ pioneer ☐ young ☐ mid - age ☐ mature ☐ old growth

Substrate Depth: ☐ rock (< 5 cm) ☐ very shallow (5 - 15 cm) ☐ shallow (15 - 30 cm) ☐ moderate (30 - 60 cm) ☐ moderately deep (60 - 120 cm) ☐ deep (> 120 cm)

Community Class: ☐ still water ☐ flowing water ☐ beach / bar ☐ sand dune ☐ bluff ☐ cliff ☐ talus ☐ rockland ☐ crevice / cave ☐ mineral barren ☐ meadow ☐ prairie ☐ shrubland ☐ treed ☐ treed swamp ☐ shrub swamp ☐ fen ☐ bog ☐ marsh ☐ agriculture ☐ actively managed ☐ constructed

Chemistry: ☐ calcareous ☐ non-calcareous ☐ saline

Site Coverages (%)

5	bedrock (rockiness)
—	coarse frag. (stoniness)
—	mineral substrate
10	organic material
5	woody debris
—	moss
80	vegetation
—	vernal pooling

Site: ☐ open water ☐ shallow water ☐ parent mineral ☐ mineral soil ☐ coarse fragments ☐ bedrock ☐ organic

Material Family: ☐ bedrock ☐ coarse fragments ☐ sandy ☐ coarse loamy ☐ silty ☐ fine loamy ☐ clayey ☐ organic - folic (dry) ☐ organic - peat (wet)

Vegetation Cover: ☐ not vegetated ☐ non-vascular ☐ sparse herbaceous ☐ herbaceous ☐ sparse low shrub ☐ low shrub ☐ sparse tall shrub ☐ tall shrub ☐ sparse low treed ☐ low treed ☐ sparse tall teed ☐ semi-closed tall treed ☐ closed tall treed

Vegetation Form: ☐ lichen ☐ algal ☐ bryophyte ☐ mixed non-vascular ☐ forb ☐ graminoid ☐ mixed herbaceous ☐ floating-lvd aquatic ☐ suberged aquatic ☐ mixed aquatic ☐ coniferous shrub ☐ evergreen shrub ☐ mixed shrub ☐ deciduous shrub ☐ coniferous treed ☐ mixed treed ☐ deciduous treed

Classification	code	name	2	3	4
Substrate Type					
Vegetation Type					
Ecosite	FOCM3	Fresh-moist Hemlock Coniferous	Forest.		
Ecoelement					
1st or 2nd Approx					
		Inclusion / Complex			
		Ecosystem Coverage (%)			

Polygon Code FOCM3 | **Field Descriptions** | **Page** 14 **of** 32

plant species list for prevailing (1) ecosystem condition

plant species list for _____ ecosystem condition

③ plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5	③ plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5
Hemlock	R	O	O	X											
White spruce	R	R	R	X											
Sugar maple	R	R	X	X											
White Pine	R	O	O	X											

10

cond	type	Wildlife Species Code	#

6

size class analysis (cm)	< 10	10 - 25	25 - 50	> 50
live				
standing dead				
deadfall				

codes: **N** = none **R** = rare
O = occasional **A** = abundant

Prism Sweeps 4 prism factor

⑦ condition/auger #	__/__	__/__	__/__	__/__	__/__
depth augered					
mottles					
gley					
bedrock					
carbonates					
water table					
organics					
effective texture					
moisture regime					
position on slope					
Substrate Type					

tree species code	__/__	__/__	__/__	__/__	__/__	totals	rel avg
totals							100
basal area							
standing dead tally							

ELC Primary Data Card

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(1) Polygon Code	FOmm7
Plot(s)	
Site Name	Pilgrims Rest
Polygon area	
Date	
Time	
Surveyor(s)	CF / RW / SG
Waypoint(s)	
Photo(s)	

Zone 17t
Easting 735371
Northing 4942176

(2) sampling scale: ☐ Plot ☒ Polygon

sampling effort: ☐ verification ☒ survey ☐ research

sampling cards: ☐ Field Desc's ☐ Assoc Desc's ☐ Assoc Desc's 2 ☐ Site+Substrate ☐ Species List ☐ DBH, Age, Ht ☐ Man. / Dist.

size/shape: ☐ 1 m² ☐ 25 m² ☐ 100 m² ☐ 400 m² ☐ circular ☐ square ☐ rectangle

(10) Land Cover: ☒ natural ☐ anthropogenic

Energy: ☐ active ☐ not active

System: ☒ terrestrial ☐ wetland ☐ aquatic ☐ subterranean

Topographic Feature: ☐ lake / pond / wet dep. ☐ river / creek / stream ☐ depression ☐ bottomland ☐ terrace ☐ valley slope ☐ seep ☐ tableland ☐ rolling upland ☐ shoreline ☐ bluff ☐ sand dune ☐ cliff ☐ talus ☐ level rockland ☐ rolling rockland ☐ crevice / cave

(4) Vegetation Summary of prevailing conditions (4 species X 4 layers)

Layer	Cover	species in order of decreasing dominance (">>" much greater than, ">" greater than, "=" equal to)
> 10 m	3	Red maple > Eastern White Cedar = Basswood
2 - 10 m	4	Red maple = Eastern white Cedar > White Elm = Basswood.
0.5 - 2 m	1	Red maple > Eastern white Cedar = Basswood.
< 0.5 m	2	Sarsaparilla > Lily of the valley = Marginal wood Fern
other		
< 0.5 m		
> 0.5 m		

(9) Ecosystem Coverage (%)

cover codes: 1 = 0 - 10%, 2 = 10 - 25%, 3 = 25 - 60%, 4 = > 60%

(8) depth augered
mottles
gley
bedrock
carbonates
water table
depth of organics
effective texture
moisture regime
position on slope

A Soil Analysis was not completed at this ecosite.

condition	Management / Disturbance	intensity	extent	score

Treed Ecosystem

Age (5): ☐ pioneer ☐ young ☒ mid - age ☐ mature ☐ old growth

Community Class (11): ☐ still water ☐ flowing water ☐ beach / bar ☐ sand dune ☐ bluff ☐ cliff ☐ talus ☐ rockland ☐ crevice / cave ☐ mineral barren ☐ meadow ☐ prairie ☐ shrubland ☒ treed ☐ treed swamp ☐ shrub swamp ☐ fen ☐ bog ☐ marsh ☐ agriculture ☐ actively managed ☐ constructed

Substrate Depth (8): ☐ rock (< 5 cm) ☐ very shallow (5 - 15 cm) ☐ shallow (15 - 30 cm) ☐ moderate (30 - 60 cm) ☐ moderately deep (60 - 120 cm) ☐ deep (> 120 cm)

Site Coverages (%) (8)

bedrock (rockiness)	
coarse frag. (stoniness)	
mineral substrate	
organic material	
woody debris	
moss	
vegetation	
vernal pooling	

Site (11): ☐ open water ☐ shallow water ☐ parent mineral ☐ mineral soil ☐ coarse fragments ☐ bedrock ☐ organic

Material Family (11): ☐ bedrock ☐ coarse fragments ☐ sandy ☐ coarse loamy ☐ silty ☐ fine loamy ☐ clayey ☐ organic - folic (dry) ☐ organic - peat (wet)

Chemistry (11): ☐ calcareous ☐ non-calcareous ☐ saline

Vegetation Form (5): ☐ lichen ☐ algal ☐ bryophyte ☐ mixed non-vascular ☐ forb ☐ graminoid ☐ mixed herbaceous ☐ floating-lvd aquatic ☐ suberged aquatic ☐ mixed aquatic ☐ coniferous shrub ☐ evergreen shrub ☐ mixed shrub ☐ deciduous shrub ☐ coniferous treed ☒ mixed treed ☐ deciduous treed

Vegetation Cover (5): ☐ not vegetated ☐ non-vascular ☐ sparse herbaceous ☐ herbaceous ☐ sparse low shrub ☐ low shrub ☐ sparse tall shrub ☐ tall shrub ☐ sparse low treed ☐ low treed ☐ sparse tall teed ☒ semi-closed tall treed ☐ closed tall treed

Classification	code	name	2	3	4
(12) Substrate Type					
(13) Vegetation Type					
(14) Ecosite	FOmm7	Fresh - Moist white cedar hardwood Mixed Forest			
(16) Ecoelement					
1st or 2nd Approx					
Inclusion / Complex					
(9) Ecosystem Coverage (%)					

Polygon Code | **Field Descriptions** | Page 16 of 32

plant species list for prevailing (1) ecosystem condition

3 plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5
Red maple	O	A	O	X			
Eastern white cedar	R	A	R	X			
White Elm	X	O	X	X			
Basswood	R	O	R	X			
Red Oak	R	O	X	X			
White spruce	R	R	X	X			
Lilly of the Valley	X	X	X	O			
Sarsaparilla	X	X	X	A			
Marginal wood Fern	X	X	X	O			

plant species list for _____ ecosystem condition

3 plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5

10

cond	type	Wildlife Species Code	#

6

size class analysis (cm)	< 10	10 - 25	25 - 50	> 50
live				
standing dead				
deadfall				

codes: **N** = none **R** = rare **O** = occasional **A** = abundant

Prism Sweeps 4 prism factor

7 condition/auger #	__/__	__/__	__/__	__/__	__/__
depth augered					
mottles					
gley					
bedrock					
carbonates					
water table					
organics					
effective texture					
moisture regime					
positiion on slope					
Substrate Type					

tree species code	__/__	__/__	__/__	__/__	__/__	totals	rel avg
totals							100
basal area							
standing dead tally							

ELC Primary Data Card

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(1) Polygon Code	SWMO 2-1
Plot(s)	
Site Name	P Lyons Rest
Polygon area	
Date	
Time	
Surveyor(s)	CF / RW / SG
Waypoint(s)	
Photo(s)	

Zone 17E
Easting 735415
Northing 4941651

(2) sampling scale: ☐ Plot ☒ Polygon
sampling effort: ☐ verification ☒ survey ☐ research
sampling cards: ☐ Field Desc's ☐ Assoc Desc's ☐ Assoc Desc's 2 ☐ Site+Substrate ☐ Species List ☐ DBH, Age, Ht ☐ Man. / Dist.
size/shape: ☐ 1 m² ☐ 25 m² ☐ 100 m² ☐ 400 m² ☐ circular ☐ square ☐ rectangle

(10) Land Cover: ☒ natural ☐ anthropogenic
Energy: ☐ active ☐ not active
System: ☐ terrestrial ☒ wetland ☐ aquatic ☐ subterranean
Topographic Feature: ☐ lake / pond / wet dep. ☐ river / creek / stream ☐ depression ☐ bottomland ☐ terrace ☐ valley slope ☐ seep ☐ tableland ☐ rolling upland ☒ shoreline ☐ bluff ☐ sand dune ☐ cliff ☐ talus ☐ level rockland ☐ rolling rockland ☐ crevice / cave

(4) Vegetation Summary of prevailing conditions (4 species X 4 layers)

Layer	Cover	species in order of decreasing dominance (">>" much greater than, ">" greater than, "=" equal to)	Ecosystem Coverage (%)
> 10 m		Red maple > Red oak = Eastern Hemlock	
2 - 10 m		Red maple > Red oak = Balsam Fir = Eastern Hemlock	
0.5 - 2 m		Red maple > Red oak = Eastern Hemlock = Sugar maple > Black Ash	
< 0.5 m		Sensitive Fern = Sedge sp. = Horsetail sp. > Black Ash.	
other			
< 0.5 m			
> 0.5 m			

cover codes: 1 = 0 - 10%, 2 = 10 - 25%, 3 = 25 - 60%, 4 = > 60%

(9)

(8)	
depth augered	
mottles	
gley	
bedrock	
carbonates	
water table	
depth of organics	
effective texture	
moisture regime	
position on slope	

See Test Pit 6 in ORE's Hydrogeological & Site Servicing Study. (2015)

condition	Management / Disturbance	intensity	extent	score
	Adjacent to recreational beach	low	local	-
	Trail	low	local	-

Site Coverages (%) (8)

-	bedrock (rockiness)
-	coarse frag. (stoniness)
-	mineral substrate
30	organic material
10	woody debris
10	moss
40	vegetation
10	vernal pooling

Site (11): ☐ open water ☐ shallow water ☐ parent mineral ☐ mineral soil ☐ coarse fragments ☐ bedrock ☐ organic

Material Family (11): ☐ bedrock ☐ coarse fragments ☐ sandy ☐ coarse loamy ☐ silty ☐ fine loamy ☐ clayey ☐ organic - folic (dry) ☐ organic - peat (wet)

Treed Ecosystem

Age (5): ☐ pioneer ☐ young ☐ mid - age ☐ mature ☐ old growth

Substrate Depth (8): ☐ rock (< 5 cm) ☐ very shallow (5 - 15 cm) ☐ shallow (15 - 30 cm) ☐ moderate (30 - 60 cm) ☐ moderately deep (60 - 120 cm) ☐ deep (> 120 cm)

Community Class (11): ☐ still water ☐ flowing water ☐ beach / bar ☐ sand dune ☐ bluff ☐ cliff ☐ talus ☐ rockland ☐ crevice / cave ☐ mineral barren ☐ meadow ☐ prairie ☐ shrubland ☐ treed ☐ treed swamp ☐ shrub swamp ☐ fen ☐ bog ☐ marsh ☐ agriculture ☐ actively managed ☐ constructed

Chemistry (11): ☐ calcareous ☐ non-calcareous ☐ saline

Vegetation Cover (5): ☐ not vegetated ☐ non-vascular ☐ sparse herbaceous ☐ herbaceous ☐ sparse low shrub ☐ low shrub ☐ sparse tall shrub ☐ tall shrub ☐ sparse low treed ☐ low treed ☐ sparse tall treed ☐ semi-closed tall treed ☐ closed tall treed

Vegetation Form (5): ☐ lichen ☐ algal ☐ bryophyte ☐ mixed non-vascular ☐ forb ☐ graminoid ☐ mixed herbaceous ☐ floating-lvd aquatic ☐ suberged aquatic ☐ mixed aquatic ☐ coniferous shrub ☐ evergreen shrub ☐ mixed shrub ☐ deciduous shrub ☐ coniferous treed ☐ mixed treed ☐ deciduous treed

Classification	code	name	2	3	4
(17) Substrate Type					
(15) Vegetation Type					
(14) Ecosite	SWMO 2-1	Red maple - conifer organic mixed swamp			
(16) Ecoelement					
1st or 2nd Approx					
		Inclusion / Complex			
		(9) Ecosystem Coverage (%)			

Polygon Code Samo2-1 | **Field Descriptions** | **Page** 18 **of** 32

plant species list for prevailing (1) ecosystem condition

3 plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5
Red maple	O	A	A	X			
Red Oak	R	O	O	X			
Black Ash	X	O	R	O			
Balsam Fir	X	Ø	R	X			
Eastern Hemlock	R	O	O	X			
White spruce	R	O	X	X			
Sugar maple	X	O	O	R			
Sensitive fern	X	X	X	A			
Sedge sp.	X	X	X	A			
Royal fern	X	X	X	O			
Horsetail	X	X	X	A			

plant species list for _____ ecosystem condition

3 plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5

10

cond	type	Wildlife Species Code	#

6

size class analysis (cm)	<10	10 - 25	25 - 50	>50
live				
standing dead				
deadfall				

codes: **N** = none **R** = rare **O** = occasional **A** = abundant

Prism Sweeps ▪ prism factor

7 condition/auger #	__/__	__/__	__/__	__/__	__/__
depth augered					
mottles					
gley					
bedrock					
carbonates					
water table					
organics					
effective texture					
moisture regime					
position on slope					
Substrate Type					

tree species code	__/__	__/__	__/__	__/__	__/__	totals	rel avg
totals							100
basal area							
standing dead tally							

ELC Primary Data Card

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(1) Polygon Code	SWMM2
Plot(s)	
Site Name	Pilgrims Rest
Polygon area	
Date	
Time	
Surveyor(s)	CF/RW/SG
Waypoint(s)	
Photo(s)	

Zone 17t
Easting 735276
Northing 4942331

(2) sampling scale: ☐ Plot ☒ Polygon
sampling effort: ☐ verification ☒ survey ☐ research

sampling cards: ☐ Field Desc's ☐ Assoc Desc's ☐ Assoc Desc's 2 ☐ Site+Substrate ☐ Species List ☐ DBH, Age, Ht ☐ Man. / Dist.

size/shape: ☐ 1 m² ☐ 25 m² ☐ 100 m² ☐ 400 m² ☐ circular ☐ square ☐ rectangle

(10) Land Cover: ☒ natural ☐ anthropogenic
Energy: ☐ active ☐ not active
System: ☐ terrestrial ☐ wetland ☐ aquatic ☐ subterranean

Topographic Feature: ☐ lake / pond / wet dep. ☐ river / creek / stream ☐ depression ☐ bottomland ☐ terrace ☐ valley slope ☐ seep ☐ tableland ☐ rolling upland ☐ shoreline ☐ bluff ☐ sand dune ☐ cliff ☐ talus ☐ level rockland ☐ rolling rockland ☐ crevice / cave

(4) Vegetation Summary of prevailing conditions (4 species X 4 layers)

Layer	Cover	species in order of decreasing dominance (">>" much greater than, ">" greater than, "=" equal to) (9) Ecosystem Coverage (%)
> 10 m	3	Red Maple = Yellow Birch = Balsam Poplar = Trembling Aspen > Silver maple
2 - 10 m	4	Red maple > Silver maple = Balsam Poplar > Yellow Birch
0.5 - 2 m	1	Red maple > Silver maple > Yellow Birch
< 0.5 m	2	Sensitive Fern = Fowl manna Grass = Sedge sp > Royal Fern
other		
< 0.5 m		
> 0.5 m		

cover codes: 1 = 0 - 10%, 2 = 10 - 25%, 3 = 25 - 60%, 4 = > 60%

(8) depth augered
mottles
gley
bedrock
carbonates
water table
depth of organics
effective texture
moisture regime
position on slope

A soil anaysis was not completed in this ecosite.

condition	Management / Disturbance	intensity	extent	score
	Adjacent to Road	low	local	

Site Coverages (%) (8)

—	bedrock (rockiness)
—	coarse frag. (stoniness)
20	mineral substrate
—	organic material
15	woody debris
—	moss
60	vegetation
5	vernal pooling

Site (11): ☐ open water ☐ shallow water ☐ parent mineral ☐ mineral soil ☐ coarse fragments ☐ bedrock ☐ organic

Material Family (11): ☐ bedrock ☐ coarse fragments ☐ sandy ☐ coarse loamy ☐ silty ☐ fine loamy ☐ clayey ☐ organic - folic (dry) ☐ organic - peat (wet)

Treed Ecosystem

Age (5): ☐ pioneer ☐ young ☐ mid - age ☐ mature ☐ old growth

Substrate Depth (8): ☐ rock (< 5 cm) ☐ very shallow (5 - 15 cm) ☐ shallow (15 - 30 cm) ☐ moderate (30 - 60 cm) ☐ moderately deep (60 - 120 cm) ☐ deep (> 120 cm)

Community Class (11): ☐ still water ☐ flowing water ☐ beach / bar ☐ sand dune ☐ bluff ☐ cliff ☐ talus ☐ rockland ☐ crevice / cave ☐ mineral barren ☐ meadow ☐ prairie ☐ shrubland ☐ treed ☐ treed swamp ☐ shrub swamp ☐ fen ☐ bog ☐ marsh ☐ agriculture ☐ actively managed ☐ constructed

Chemistry (11): ☐ calcareous ☐ non-calcareous ☐ saline

Vegetation Cover (5): ☐ not vegetated ☐ non-vascular ☐ sparse herbaceous ☐ herbaceous ☐ sparse low shrub ☐ low shrub ☐ sparse tall shrub ☐ tall shrub ☐ sparse low treed ☐ low treed ☐ sparse tall teed ☐ semi-closed tall treed ☐ closed tall treed

Vegetation Form (5): ☐ lichen ☐ algal ☐ bryophyte ☐ mixed non-vascular ☐ forb ☐ graminoid ☐ mixed herbaceous ☐ floating-lvd aquatic ☐ suberged aquatic ☐ mixed aquatic ☐ coniferous shrub ☐ evergreen shrub ☐ mixed shrub ☐ deciduous shrub ☐ coniferous treed ☐ mixed treed ☐ deciduous treed

Classification	code	name	2	3	4
(12) Substrate Type					
(13) Vegetation Type					
(14) Ecosite	SWMM2	Maple Mineral Mixed Swamp			
(16) Ecoelement					
1st or 2nd Approx					
		Inclusion / Complex			
		(9) Ecosystem Coverage (%)			

Polygon Code Swmm2 | **Field Descriptions** | **Page** 20 **of** 32

plant species list for prevailing (1) ecosystem condition

③ plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5
Red maple	O	A	A	X			
Silver Maple	R	O	O	X			
Yellow Birch	O	R	R	X			
Balsam Poplar	O	O	X	X			
Trembling Aspen	O	O	X	X			
Sensitive Fern	X	X	X	A			
Fowl manna Grass	X	X	X	A			
Sedge, Sp.	X	X	X	A			
Royal Fern	X	X	X	O			

plant species list for _____ ecosystem condition

③ plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5

cond	type	Wildlife Species Code	#

⑥ size class analysis (cm)

	< 10	10 - 25	25 - 50	> 50
live				
standing dead				
deadfall				

codes: **N** = none **R** = rare **O** = occasional **A** = abundant

Prism Sweeps ⑥ prism factor

⑦ condition/auger # ___/___ ___/___ ___/___ ___/___ ___/___

depth augered					
mottles					
gley					
bedrock					
carbonates					
water table					
organics					
effective texture					
moisture regime					
position on slope					
Substrate Type					

tree species code	__/__	__/__	__/__	__/__	__/__	totals	rel avg
totals							100
basal area							
standing dead tally							

ELC Primary Data Card

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(1) **Polygon Code** SWT
Plot(s)
Site Name Pilgrims Rest
Polygon area
Date
Time
Surveyor(s) CF/RW/SG
Waypoint(s)
Photo(s)

Zone 17G
Easting 735149
Northing 4942148

(2) sampling scale: ☐ Plot ☒ Polygon
sampling effort: ☐ verification ☒ survey ☐ research
sampling cards: ☐ Field Desc's ☐ Assoc Desc's ☐ Assoc Desc's 2 ☐ Site+Substrate ☐ Species List ☐ DBH, Age, Ht ☐ Man. / Dist.
size/shape: ☐ 1 m² ☐ 25 m² ☐ 100 m² ☐ 400 m² ☐ circular ☐ square ☐ rectangle

(10) Land Cover: ☒ natural ☐ anthropogenic
Energy: ☐ active ☐ not active
System: ☐ terrestrial ☒ wetland ☐ aquatic ☐ subterranean
Topographic Feature: ☐ lake / pond / wet dep. ☐ river / creek / stream ☐ depression ☐ bottomland ☐ terrace ☐ valley slope ☐ seep ☐ tableland ☐ rolling upland ☐ shoreline ☐ bluff ☐ sand dune ☐ cliff ☐ talus ☐ level rockland ☐ rolling rockland ☐ crevice / cave

(4) **Vegetation Summary** of prevailing conditions (4 species X 4 layers)

Layer	Cover	species in order of decreasing dominance (">>" much greater than, ">" greater than, "=" equal to) (9) Ecosystem Coverage (%)
> 10 m	—	N/A
2 - 10 m	3	Speckled Alder = Pussy willow = Red Osier Dogwood > meadowsweet
0.5 - 2 m	3	Speckled Alder = Pussy willow = Red osier Dogwood > meadowsweet = Ninebark.
< 0.5 m	1	sedge sp. = Fowl-Manna Grass > Pussy willow = Red osier Dogwood
other		
< 0.5 m		
> 0.5 m		

cover codes: 1 = 0 - 10%, 2 = 10 - 25%, 3 = 25 - 60%, 4 = > 60%

(8) depth augered
mottles
gley
bedrock
carbonates
water table
depth of organics
effective texture
moisture regime
position on slope

A soil Analysis was not completed in this ecosite.

(9)

condition	Management / Disturbance	intensity	extent	score

Treed Ecosystem
Age (5): ☐ pioneer ☒ young ☐ mid - age ☐ mature ☐ old growth
Substrate Depth (8): ☐ rock (< 5 cm) ☐ very shallow (5 - 15 cm) ☐ shallow (15 - 30 cm) ☐ moderate (30 - 60 cm) ☐ moderately deep (60 - 120 cm) ☐ deep (> 120 cm)

Community Class (11)
☐ still water ☐ flowing water ☐ beach / bar ☐ sand dune ☐ bluff ☐ cliff ☐ talus ☐ rockland ☐ crevice / cave ☐ mineral barren ☐ meadow ☐ prairie ☐ shrubland ☐ treed ☐ treed swamp ☒ shrub swamp ☐ fen ☐ bog ☐ marsh ☐ agriculture ☐ actively managed ☐ constructed

Site Coverages (%) (8)

5	bedrock (rockiness)
—	coarse frag. (stoniness)
20	mineral substrate
—	organic material
10	woody debris
—	moss
60	vegetation
5	vernal pooling

Site (11): ☐ open water ☐ shallow water ☐ parent mineral ☐ mineral soil ☐ coarse fragments ☐ bedrock ☐ organic
Material Family (11): ☐ bedrock ☐ coarse fragments ☐ sandy ☐ coarse loamy ☐ silty ☐ fine loamy ☐ clayey ☐ organic - folic (dry) ☐ organic - peat (wet)

Chemistry (11): ☐ calcareous ☐ non-calcareous ☐ saline

Vegetation Form (5): ☐ lichen ☐ algal ☐ bryophyte ☐ mixed non-vascular ☐ forb ☐ graminoid ☐ mixed herbaceous ☐ floating-lvd aquatic ☐ suberged aquatic ☐ mixed aquatic ☐ coniferous shrub ☐ evergreen shrub ☐ mixed shrub ☐ deciduous shrub ☐ coniferous treed ☐ mixed treed ☐ deciduous treed

Vegetation Cover (5): ☐ not vegetated ☐ non-vascular ☐ sparse herbaceous ☐ herbaceous ☐ sparse low shrub ☒ low shrub ☐ sparse tall shrub ☒ tall shrub ☐ sparse low treed ☐ low treed ☐ sparse tall teed ☐ semi-closed tall treed ☐ closed tall treed

Classification	code	name	2	3	4
(12) Substrate Type					
(13) Vegetation Type					
(14) Ecosite	SWT	Thicket Swamp			
(15) Ecoelement					
1st or 2nd Approx					
Inclusion / Complex			SWTM1	SWTM2-1	SWTM2 / SWTM2-7
(9) Ecosystem Coverage (%)			25%	25%	25% / 25%

Polygon Code SWT | **Field Descriptions** | **Page** 22 **of** 30

plant species list for prevailing (1) ecosystem condition

③ plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5
Speckled Alder	X	O	A	X			
Pussy willow	X	O	A	R			
Red-osier Dogwood	X	O	A	R			
Meadow sweet	X	R	O	X			
Nine Bark	X	X	O	X			
Nanny Berry	X	X	O	X			
Sedge sp	X	X	X	O			
Fescue - Manna grass	X	X	X	O			

plant species list for _____ ecosystem condition

③ plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5

⑩ cond	type	Wildlife Species Code	#

⑥

size class analysis (cm)	< 10	10 - 25	25 - 50	> 50
live				
standing dead				
deadfall				

codes: **N** = none **R** = rare
O = occasional **A** = abundant

Prism Sweeps ⑥ prism factor

⑦ condition/auger #	__/__	__/__	__/__	__/__	__/__
depth augered					
mottles					
gley					
bedrock					
carbonates					
water table					
organics					
effective texture					
moisture regime					
position on slope					
Substrate Type					

tree species code	__/__	__/__	__/__	__/__	__/__	totals	rel avg
totals							100
basal area							
standing dead tally							

ELC Primary Data Card

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(1) Polygon Code	SWDM 2-1
Plot(s)	
Site Name	Pilgrims Rest
Polygon area	
Date	
Time	
Surveyor(s)	LF / SG / RW
Waypoint(s)	
Photo(s)	

Zone 17t
Easting 735460
Northing 4942206

(2) sampling scale: ☐ Plot ☒ Polygon
sampling effort: ☐ verification ☒ survey ☐ research
sampling cards: ☐ Field Desc's ☐ Assoc Desc's ☐ Assoc Desc's 2 ☐ Site+Substrate ☐ Species List ☐ DBH, Age, Ht ☐ Man. / Dist.
size/shape: ☐ 1 m² ☐ 25 m² ☐ 100 m² ☐ 400 m² ☐ circular ☐ square ☐ rectangle

(10) Land Cover: ☒ natural ☐ anthropogenic
Energy: ☐ active ☐ not active
System: ☐ terrestrial ☒ wetland ☐ aquatic ☐ subterranean

Topographic Feature: ☐ lake / pond / wet dep. ☐ river / creek / stream ☐ depression ☐ bottomland ☐ terrace ☐ valley slope ☐ seep ☐ tableland ☐ rolling upland ☐ shoreline ☐ bluff ☐ sand dune ☐ cliff ☐ talus ☐ level rockland ☐ rolling rockland ☐ crevice / cave

(4) Vegetation Summary of prevailing conditions (4 species X 4 layers)

Layer	Cover	species in order of decreasing dominance (">>" much greater than, ">" greater than, "=" equal to)	(9) Ecosystem Coverage (%)
> 10 m	3	Black Ash >> Red maple = American Elm = White Ash = Green Ash	
2 - 10 m	3	Black Ash > Red Maple = American Elm > White Ash = Green Ash	
0.5 - 2 m	2	Black Ash = American Elm = Red osier Dogwood > Red maple	
< 0.5 m	1	Sensitive Fern = Sedge sp. > Fowl manna grass	
other			
< 0.5 m			
> 0.5 m			

cover codes: 1 = 0 - 10%, 2 = 10 - 25%, 3 = 25 - 60%, 4 = > 60%

(8) depth augered
mottles
gley
bedrock
carbonates
water table
depth of organics
effective texture
moisture regime
position on slope

(9)

A Soil Analysis was not completed in this ecosite.

condition	Management / Disturbance	Intensity	extent	score

Treed Ecosystem
Age (5): ☐ pioneer ☐ young ☒ mid - age ☐ mature ☐ old growth
Substrate Depth (8): ☐ rock (< 5 cm) ☐ very shallow (5 - 15 cm) ☐ shallow (15 - 30 cm) ☐ moderate (30 - 60 cm) ☐ moderately deep (60 - 120 cm) ☐ deep (> 120 cm)

Community Class (11)
☐ still water ☐ flowing water ☐ beach / bar ☐ sand dune ☐ bluff ☐ cliff ☐ talus
☐ rockland ☐ crevice / cave ☐ mineral barren ☐ meadow ☐ prairie ☐ shrubland ☐ treed
☐ treed swamp ☒ shrub swamp ☐ fen ☐ bog ☐ marsh ☐ agriculture ☐ actively managed ☐ constructed

Site Coverages (%) (8)

	bedrock (rockiness)
~	coarse frag. (stoniness)
~	mineral substrate
20	organic material
10	woody debris
—	moss
65	vegetation
5	vernal pooling

Site (11): ☐ open water ☐ shallow water ☐ parent mineral ☐ mineral soil ☐ coarse fragments ☐ bedrock ☐ organic
Material Family (11): ☐ bedrock ☐ coarse fragments ☐ sandy ☐ coarse loamy ☐ silty ☐ fine loamy ☐ clayey ☐ organic - folic (dry) ☐ organic - peat (wet)

Chemistry (11): ☐ calcareous ☐ non-calcareous ☐ saline

Vegetation Cover (5): ☐ not vegetated ☐ non-vascular ☐ sparse herbaceous ☐ herbaceous ☐ sparse low shrub ☒ low shrub ☒ sparse tall shrub ☐ tall shrub ☐ sparse low treed ☐ low treed ☐ sparse tall treed ☐ semi-closed tall treed ☐ closed tall treed

Vegetation Form (5): ☐ lichen ☐ algal ☐ bryophyte ☐ mixed non-vascular ☐ forb ☐ graminoid ☐ mixed herbaceous ☐ floating-lvd aquatic ☐ suberged aquatic ☐ mixed aquatic ☐ coniferous shrub ☐ evergreen shrub ☐ mixed shrub ☐ deciduous shrub ☐ coniferous treed ☐ mixed treed ☐ deciduous treed

Classification	code	name	2	3	4
(12) Substrate Type					
(13) Vegetation Type					
(14) Ecosite	SWDM2-1	Black Ash mineral deciduous swamp			
(15) Ecoelement					
1st or 2nd Approx					
Inclusion / Complex					
(9) Ecosystem Coverage (%)					

Polygon Code SWDM 2-1 | **Field Descriptions** | Page 24 of 32

plant species list for prevailing (1) ecosystem condition

3 plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5
Black Ash	A	A	O	X			
Red maple	R	O	R	X			
American Elm	R	O	O	X			
White Ash	R	R	R	X			
Green Ash	R	R	R	X			
Red osier Dogwood	X	R	O	X			
Eastern Hemlock	R	R	X	X			
Sensitive Fern	X	X	X	A			
Sedge sp.	X	X	X	A			
Fowl manna Grass	X	X	X	O			

plant species list for _____ ecosystem condition

3 plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5

10

cond	type	Wildlife Species Code	#

6

size class analysis (cm)	< 10	10 - 25	25 - 50	> 50
live				
standing dead				
deadfall				

codes: **N** = none **R** = rare **O** = occasional **A** = abundant

Prism Sweeps 6 prism factor

7 condition/auger #	__/__	__/__	__/__	__/__	__/__
depth augered					
mottles					
gley					
bedrock					
carbonates					
water table					
organics					
effective texture					
moisture regime					
positiion on slope					
Substrate Type					

tree species code	__/__	__/__	__/__	__/__	__/__	totals	rel avg
totals							100
basal area							
standing dead tally							

ELC Primary Data Card

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(1) Polygon Code	MASM1-1
Plot(s)	
Site Name	Pilgrims Rest
Polygon area	
Date	
Time	
Surveyor(s)	GF/RW/SG
Waypoint(s)	
Photo(s)	

Zone 17E
Easting 735365
Northing 4942258

(2) sampling scale: ☐ Plot ☒ Polygon
sampling effort: ☐ verification ☒ survey ☐ research
sampling cards: ☐ Field Desc's ☐ Assoc Desc's ☐ Assoc Desc's 2 ☐ Site+Substrate ☐ Species List ☐ DBH, Age, Ht ☐ Man. / Dist.
size/shape: ☐ 1 m² ☐ 25 m² ☐ 100 m² ☐ 400 m² ☐ circular ☐ square ☐ rectangle

(10) Land Cover: ☒ natural ☐ anthropogenic
Energy: ☐ active ☐ not active
System: ☐ terrestrial ☒ wetland ☐ aquatic ☐ subterranean
Topographic Feature: ☐ lake / pond / wet dep. ☐ river / creek / stream ☐ depression ☐ bottomland ☐ terrace ☐ valley slope ☐ seep ☐ tableland ☐ rolling upland ☐ shoreline ☐ bluff ☐ sand dune ☐ cliff ☐ talus ☐ level rockland ☐ rolling rockland ☐ crevice / cave

(4) Vegetation Summary of prevailing conditions (4 species X 4 layers)

Layer	Cover	species in order of decreasing dominance (">>" much greater than, ">" greater than, "=" equal to) — (9) Ecosystem Coverage (%)
> 10 m	—	N/A
2 - 10 m	—	N/A
0.5 - 2 m	4	Broad leaf Cattail > Narrow leaf Cattail
< 0.5 m	2	Broad leaf Cattail
other		
< 0.5 m		
> 0.5 m		

cover codes: 1 = 0 - 10%, 2 = 10 - 25%, 3 = 25 - 60%, 4 = > 60%

(8) depth augered
mottles
gley
bedrock
carbonates
water table
depth of organics
effective texture
moisture regime
position on slope

(9)

A Soil Analysis was not completed in this ecosite

condition	Management / Disturbance	Intensity	extent	score

Treed Ecosystem
Age (5): ☐ pioneer ☐ young ☐ mid - age ☐ mature ☐ old growth
Substrate Depth (8): ☐ rock (< 5 cm) ☐ very shallow (5 - 15 cm) ☐ shallow (15 - 30 cm) ☐ moderate (30 - 60 cm) ☐ moderately deep (60 - 120 cm) ☐ deep (> 120 cm)

Community Class (11): ☐ still water ☐ flowing water ☐ beach / bar ☐ sand dune ☐ bluff ☐ cliff ☐ talus ☐ rockland ☐ crevice / cave ☐ mineral barren ☐ meadow ☐ prairie ☐ shrubland ☐ treed ☐ treed swamp ☐ shrub swamp ☐ fen ☐ bog ☐ marsh ☐ agriculture ☐ actively managed ☐ constructed

Site Coverages (%) (8)

—	bedrock (rockiness)
—	coarse frag. (stoniness)
—	mineral substrate
50	organic material
—	woody debris
—	moss
50	vegetation
—	vernal pooling

Site (11): ☐ open water ☐ shallow water ☐ parent mineral ☐ mineral soil ☐ coarse fragments ☐ bedrock ☐ organic

Material Family (11): ☐ bedrock ☐ coarse fragments ☐ sandy ☐ coarse loamy ☐ silty ☐ fine loamy ☐ clayey ☐ organic - folic (dry) ☐ organic - peat (wet)

Chemistry (11): ☐ calcareous ☐ non-calcareous ☐ saline

Vegetation Form (5): ☐ lichen ☐ algal ☐ bryophyte ☐ mixed non-vascular ☐ forb ☐ graminoid ☐ mixed herbaceous ☐ floating-lvd aquatic ☐ suberged aquatic ☐ mixed aquatic ☐ coniferous shrub ☐ evergreen shrub ☐ mixed shrub ☐ deciduous shrub ☐ coniferous treed ☐ mixed treed ☐ deciduous treed

Vegetation Cover (5): ☐ not vegetated ☐ non-vascular ☐ sparse herbaceous ☐ herbaceous ☐ sparse low shrub ☐ low shrub ☐ sparse tall shrub ☐ tall shrub ☐ sparse low treed ☐ low treed ☐ sparse tall teed ☐ semi-closed tall treed ☐ closed tall treed

Classification	code	name	2	3	4
(12) Substrate Type					
(13) Vegetation Type					
(14) Ecosite	MASM1-1	Cattail Mineral Shallow Marsh			
(15) Ecoelement					
1st or 2nd Approx					
Inclusion / Complex					
(9) Ecosystem Coverage (%)					

Polygon Code | **Field Descriptions** | Page 26 of 32

plant species list for prevailing (1) ecosystem condition

3 plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5
Broad-leaf Cattail	X	X	A	O			
Narrow leaf Cattail	X	X	A	O			
Canada bluejoint	X	X	O	R			

plant species list for _____ ecosystem condition

3 plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5

10

cond	type	Wildlife Species Code	#

6

size class analysis (cm)	< 10	10 - 25	25 - 50	> 50
live				
standing dead				
deadfall				

codes: N = none R = rare
O = occasional A = abundant

Prism Sweeps | prism factor

7 condition/auger #	__/__	__/__	__/__	__/__	__/__
depth augered					
mottles					
gley					
bedrock					
carbonates					
water table					
organics					
effective texture					
moisture regime					
positiion on slope					
Substrate Type					

tree species code	__/__	__/__	__/__	__/__	__/__	totals	rel avg
totals							100
basal area							
standing dead tally							

ELC Primary Data Card

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(1) Polygon Code	SAS1-1 / SAS1-2
Plot(s)	
Site Name	Pilgrims Rest
Polygon area	
Date	
Time	
Surveyor(s)	CF/RW/SG
Waypoint(s)	
Photo(s)	

Zone 17G
Easting 735531
Northing 4941676

(2) sampling scale: ☐ Plot ☒ Polygon

sampling effort: ☐ verification ☒ survey ☐ research

sampling cards: ☐ Field Desc's ☐ Assoc Desc's ☐ Assoc Desc's 2 ☐ Site+Substrate ☐ Species List ☐ DBH, Age, Ht ☐ Man. / Dist.

size/shape: ☐ 1 m² ☐ 25 m² ☐ 100 m² ☐ 400 m² ☐ circular ☐ square ☐ rectangle

(10) Land Cover: ☒ natural ☐ anthropogenic

Energy: ☐ active ☐ not active

System: ☐ terrestrial ☐ wetland ☒ aquatic ☐ subterranean

Topographic Feature: ☐ lake / pond / wet dep. ☐ river / creek / stream ☐ depression ☐ bottomland ☐ terrace ☐ valley slope ☐ seep ☐ tableland ☐ rolling upland ☐ shoreline ☐ bluff ☐ sand dune ☐ cliff ☐ talus ☐ level rockland ☐ rolling rockland ☐ crevice / cave

(4) Vegetation Summary of prevailing conditions (4 species X 4 layers)

Layer	Cover	species in order of decreasing dominance (">>" much greater than, ">" greater than, "=" equal to) (9) Ecosystem Coverage (%)
> 10 m	—	N/A
2 - 10 m	—	N / A
0.5 - 2 m	—	N / A
< 0.5 m	—	N / A
other	4	Illinois Pondweed = Curly leaved Pondweed = Canada waterweed = Common Hornwort.
< 0.5 m	—	
> 0.5 m	—	

cover codes: 1 = 0 - 10%, 2 = 10 - 25%, 3 = 25 - 60%, 4 = > 60%

(8) depth augered
mottles
gley
bedrock
carbonates
water table
depth of organics
effective texture
moisture regime
position on slope

A Soil Analysis was not completed in this ecosite

(9)

condition	Management / Disturbance	intensity	extent	score
	Boat activity	low	local	

Treed Ecosystem

Age (5): ☐ pioneer ☐ young ☐ mid - age ☐ mature ☐ old growth

Substrate Depth (8): ☐ rock (< 5 cm) ☐ very shallow (5 - 15 cm) ☐ shallow (15 - 30 cm) ☐ moderate (30 - 60 cm) ☐ moderately deep (60 - 120 cm) ☐ deep (> 120 cm)

Community Class (11): ☐ still water ☐ flowing water ☐ beach / bar ☐ sand dune ☐ bluff ☐ cliff ☐ talus ☐ rockland ☐ crevice / cave ☐ mineral barren ☐ meadow ☐ prairie ☐ shrubland ☐ treed ☐ treed swamp ☐ shrub swamp ☐ fen ☐ bog ☐ marsh ☐ agriculture ☐ actively managed ☐ constructed

Site Coverages (%) (8)

—	bedrock (rockiness)
—	coarse frag. (stoniness)
—	mineral substrate
—	organic material
—	woody debris
—	moss
10	vegetation
90	vernal pooling

Site (11): ☐ open water ☐ shallow water ☐ parent mineral ☐ mineral soil ☐ coarse fragments ☐ bedrock ☐ organic

Material Family (11): ☐ bedrock ☐ coarse fragments ☐ sandy ☐ coarse loamy ☐ silty ☐ fine loamy ☐ clayey ☐ organic - folic (dry) ☐ organic - peat (wet)

Chemistry (11): ☐ calcareous ☐ non-calcareous ☐ saline

Vegetation Form (5): ☐ lichen ☐ algal ☐ bryophyte ☐ mixed non-vascular ☐ forb ☐ graminoid ☐ mixed herbaceous ☐ floating-lvd aquatic ☐ suberged aquatic ☐ mixed aquatic ☐ coniferous shrub ☐ evergreen shrub ☐ mixed shrub ☐ deciduous shrub ☐ coniferous treed ☐ mixed treed ☐ deciduous treed

Vegetation Cover (5): ☐ not vegetated ☐ non-vascular ☐ sparse herbaceous ☐ herbaceous ☐ sparse low shrub ☐ low shrub ☐ sparse tall shrub ☐ tall shrub ☐ sparse low treed ☐ low treed ☐ sparse tall teed ☐ semi-closed tall treed ☐ closed tall treed

Classification	code	name	2	3	4
(12) Substrate Type					
(13) Vegetation Type					
(14) Ecosite	SAS1-1	Submerged shallow Aquatic			
(16) Ecoelement					
1st or 2nd Approx					
Inclusion / Complex			SAS1-2		
(9) Ecosystem Coverage (%)			50%		

Polygon Code SAS1-1 | **Field Descriptions** | **Page** 28 **of** 32

plant species list for prevailing (1) ecosystem condition

plant species list for _____ ecosystem condition

(3) plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5	(3) plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5
Illinois Pondweed	X	X	X	X	A										
Curly-leaved Pondweed	X	X	X	X	A										
Canada Waterweed	X	X	X	X	A										
Common Hornwort	X	X	X	X	A										

(10)

cond	type	Wildlife Species Code	#

(6)

size class analysis (cm)	< 10	10 - 25	25 - 50	> 50
live				
standing dead				
deadfall				

codes: **N** = none **R** = rare **O** = occasional **A** = abundant

Prism Sweeps ○ prism factor

(7) condition/auger #	__/__	__/__	__/__	__/__	__/__
depth augered					
mottles					
gley					
bedrock					
carbonates					
water table					
organics					
effective texture					
moisture regime					
positiion on slope					
Substrate Type					

tree species code	__/__	__/__	__/__	__/__	__/__	totals	rel avg
totals							100
basal area							
standing dead tally							

ELC Primary Data Card

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(1) Polygon Code	SAM1-7
Plot(s)	
Site Name	Pilgrims Post
Polygon area	
Date	
Time	
Surveyor(s)	CF/RW/SG
Waypoint(s)	
Photo(s)	

Zone 17t
Easting 735607
Northing 4941772

(2) sampling scale: ☐ Plot ☒ Polygon

sampling effort: ☐ verification ☒ survey ☐ research

sampling cards: ☐ Field Desc's ☐ Assoc Desc's ☐ Assoc Desc's 2 ☐ Site+Substrate ☐ Species List ☐ DBH, Age, Ht ☐ Man. / Dist.

size/shape: ☐ 1 m² ☐ 25 m² ☐ 100 m² ☐ 400 m² ☐ circular ☐ square ☐ rectangle

(10) Land Cover: ☒ natural ☐ anthropogenic

Energy: ☐ active ☐ not active

System: ☐ terrestrial ☐ wetland ☒ aquatic ☐ subterranean

Topographic Feature: ☐ lake / pond / wet dep. ☐ river / creek / stream ☐ depression ☐ bottomland ☐ terrace ☐ valley slope ☐ seep ☐ tableland ☐ rolling upland ☐ shoreline ☐ bluff ☐ sand dune ☐ cliff ☐ talus ☐ level rockland ☐ rolling rockland ☐ crevice / cave

(4) Vegetation Summary of prevailing conditions (4 species X 4 layers)

Layer	Cover	species in order of decreasing dominance (">>" much greater than, ">" greater than, "=" equal to) (9) Ecosystem Coverage (%)
> 10 m		
2 - 10 m		
0.5 - 2 m	1	Cattail
< 0.5 m	1	Cattail
other		White water Lily = Tape Grass > Eurasian milfoil = Coontail
< 0.5 m		
> 0.5 m		

cover codes: 1 = 0 - 10%, 2 = 10 - 25%, 3 = 25 - 60%, 4 = > 60%

(8) depth augered
mottles
gley
bedrock
carbonates
water table
depth of organics
effective texture
moisture regime
position on slope

A Soil Analysis was not completed in this ecosite

condition	Management / Disturbance	intensity	extent	score
	Boating activity	high	local	
	Docks	high	local	
	litter	low	local	
	outlet of Jack creek	low	local	

Site Coverages (%) (8)

	bedrock (rockiness)
	coarse frag. (stoniness)
	mineral substrate
	organic material
	woody debris
	moss
10	vegetation
90	vernal pooling

Site (11): ☐ open water ☐ shallow water ☐ parent mineral ☐ mineral soil ☐ coarse fragments ☐ bedrock ☐ organic

Material Family (11): ☐ bedrock ☐ coarse fragments ☐ sandy ☐ coarse loamy ☐ silty ☐ fine loamy ☐ clayey ☐ organic - folic (dry) ☐ organic - peat (wet)

Treed Ecosystem

Age (5): ☐ pioneer ☐ young ☐ mid - age ☐ mature ☐ old growth

Substrate Depth (8): ☐ rock (< 5 cm) ☐ very shallow (5 - 15 cm) ☐ shallow (15 - 30 cm) ☐ moderate (30 - 60 cm) ☐ moderately deep (60 - 120 cm) ☐ deep (> 120 cm)

Community Class (11): ☐ still water ☐ flowing water ☐ beach / bar ☐ sand dune ☐ bluff ☐ cliff ☐ talus ☐ rockland ☐ crevice / cave ☐ mineral barren ☐ meadow ☐ prairie ☐ shrubland ☐ treed ☐ treed swamp ☐ shrub swamp ☐ fen ☐ bog ☐ marsh ☐ agriculture ☐ actively managed ☐ constructed

Chemistry (11): ☐ calcareous ☐ non-calcareous ☐ saline

Vegetation Cover (5): ☐ not vegetated ☐ non-vascular ☐ sparse herbaceous ☐ herbaceous ☐ sparse low shrub ☐ low shrub ☐ sparse tall shrub ☐ tall shrub ☐ sparse low treed ☐ low treed ☐ sparse tall teed ☐ semi-closed tall treed ☐ closed tall treed

Vegetation Form (5): ☐ lichen ☐ algal ☐ bryophyte ☐ mixed non-vascular ☐ forb ☐ graminoid ☐ mixed herbaceous ☐ floating-lvd aquatic ☐ suberged aquatic ☐ mixed aquatic ☐ coniferous shrub ☐ evergreen shrub ☐ mixed shrub ☐ deciduous shrub ☐ coniferous treed ☐ mixed treed ☐ deciduous treed

Classification	code	name	2	3	4
(12) Substrate Type					
(13) Vegetation Type					
(14) Ecosite	SAM1-7	Water milfoil mixed Shallow Aquatic			
(16) Ecoelement					
1st or 2nd Approx					
Inclusion / Complex					
		(9) Ecosystem Coverage (%)			

Polygon Code SAM1-7 | **Field Descriptions** | Page 30 of 32

plant species list for prevailing (1) ecosystem condition

③ plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5
White water Lily	X	X	Y	Y	A		
Broad leaf cattail	X	X	O	O	—	—	—
Eurasian milfoil	X	X	X	X	O		
Coontail	X	X	X	X	O		
Tall grass	X	X	X	X	A		
Najas Flexis	X	X	X	X	O		

plant species list for _____ ecosystem condition

③ plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5

⑩ cond	type	Wildlife Species Code	#

⑥ size class analysis (cm)	< 10	10 - 25	25 - 50	> 50
live				
standing dead				
deadfall				

codes: **N** = none **R** = rare
O = occasional **A** = abundant

Prism Sweeps ⑪ prism factor

⑦ condition/auger #	__/__	__/__	__/__	__/__	__/__
depth augered					
mottles					
gley					
bedrock					
carbonates					
water table					
organics					
effective texture					
moisture regime					
positiion on slope					
Substrate Type					

tree species code	__/__	__/__	__/__	__/__	__/__	totals	rel avg
totals							100
basal area							
standing dead tally							

ELC Primary Data Card

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Polygon Code	SAF 1-1
Plot(s)	
Site Name	Pilgrim Rest
Polygon area	
Date	
Time	
Surveyor(s)	CF/RW/SG
Waypoint(s)	
Photo(s)	

Zone 176
Easting 735538
Northing 4941657

2 sampling scale: ☐ Plot ☒ Polygon
sampling effort: ☐ verification ☒ survey ☐ research
sampling cards: ☐ Field Desc's ☐ Assoc Desc's ☐ Assoc Desc's 2 ☐ Site+Substrate ☐ Species List ☐ DBH, Age, Ht ☐ Man. / Dist.
size/shape: ☐ 1 m² ☐ 25 m² ☐ 100 m² ☐ 400 m² ☐ circular ☐ square ☐ rectangle

10 Land Cover: ☒ natural ☐ anthropogenic
Energy: ☐ active ☐ not active
System: ☐ terrestrial ☐ wetland ☒ aquatic ☐ subterranean
Topographic Feature: ☐ lake / pond / wet dep. ☐ river / creek / stream ☐ depression ☐ bottomland ☐ terrace ☐ valley slope ☐ seep ☐ tableland ☐ rolling upland ☐ shoreline ☐ bluff ☐ sand dune ☐ cliff ☐ talus ☐ level rockland ☐ rolling rockland ☐ crevice / cave

4 Vegetation Summary of prevailing conditions (4 species X 4 layers)

Layer	Cover	species in order of decreasing dominance (">>" much greater than, ">" greater than, "=" equal to) — 9 Ecosystem Coverage (%)
> 10 m		
2 - 10 m		
0.5 - 2 m		
< 0.5 m		
other	4	White water Lilly > Pondweed (Illinois) > Curly leaved Pondweed = Common Hornwort
< 0.5 m		
> 0.5 m		

cover codes: 1 = 0 - 10%, 2 = 10 - 25%, 3 = 25 - 60%, 4 = > 60%

9

8 depth augered	
mottles	
gley	
bedrock	
carbonates	
water table	
depth of organics	
effective texture	
moisture regime	
position on slope	

A Soil Analysis was not completed in this ecosite

0

condition	Management / Disturbance	Intensity	extent	score
	Shoreline	low	local	-
	Boating Activity	low	local	-
	litter	low	local	-

Site Coverages (%) 8
bedrock (rockiness)
coarse frag. (stoniness)
mineral substrate
organic material
woody debris
moss
20 vegetation
80 vernal pooling

Site 11: ☐ open water ☐ shallow water ☐ parent mineral ☐ mineral soil ☐ coarse fragments ☐ bedrock ☐ organic

Material Family 11: ☐ bedrock ☐ coarse fragments ☐ sandy ☐ coarse loamy ☐ silty ☐ fine loamy ☐ clayey ☐ organic - folic (dry) ☐ organic - peat (wet)

Treed Ecosystem
Age 5: ☐ pioneer ☐ young ☐ mid - age ☐ mature ☐ old growth
Substrate Depth 8: ☐ rock (< 5 cm) ☐ very shallow (5 - 15 cm) ☐ shallow (15 - 30 cm) ☐ moderate (30 - 60 cm) ☐ moderately deep (60 - 120 cm) ☐ deep (> 120 cm)

Community Class 11: ☐ still water ☐ flowing water ☐ beach / bar ☐ sand dune ☐ bluff ☐ cliff ☐ talus ☐ rockland ☐ crevice / cave ☐ mineral barren ☐ meadow ☐ prairie ☐ shrubland ☐ treed ☐ treed swamp ☐ shrub swamp ☐ fen ☐ bog ☐ marsh ☐ agriculture ☐ actively managed ☐ constructed

Chemistry 11: ☐ calcareous ☐ non-calcareous ☐ saline

Vegetation Cover 5: ☐ not vegetated ☐ non-vascular ☐ sparse herbaceous ☐ herbaceous ☐ sparse low shrub ☐ low shrub ☐ sparse tall shrub ☐ tall shrub ☐ sparse low treed ☐ low treed ☐ sparse tall teed ☐ semi-closed tall treed ☐ closed tall treed

Vegetation Form 5: ☐ lichen ☐ algal ☐ bryophyte ☐ mixed non-vascular ☐ forb ☐ graminoid ☐ mixed herbaceous ☐ floating-lvd aquatic ☐ suberged aquatic ☐ mixed aquatic ☐ coniferous shrub ☐ evergreen shrub ☐ mixed shrub ☐ deciduous shrub ☐ coniferous treed ☐ mixed treed ☐ deciduous treed

Classification	code	name	2	3	4
12 Substrate Type					
13 Vegetation Type					
14 Ecosite	SAF 1-1	Water Lily - Bullhead Lily Floating-leaved shallow Aquatic			
16 Ecoelement					
1st or 2nd Approx					
Inclusion / Complex					
	9 Ecosystem Coverage (%)				

Polygon Code SAF1-1 | **Field Descriptions** | Page 32 of 32

plant species list for prevailing (1) ecosystem condition

3 plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5
White Water Lilly	X	X	X	X	A	—	
Illinois Pondweed	X	X	X	X	O	—	
Curly leaved Pondweed	X	X	X	X	R	—	
Common Hornwort	X	X	X	X	R	—	

plant species list for _____ ecosystem condition

3 plant species code	>10	2-10	0.5-2	<0.5	other	<0.5	>0.5

10

cond	type	Wildlife Species Code	#

6

size class analysis (cm)	< 10	10 - 25	25 - 50	> 50
live				
standing dead				
deadfall				

codes: N = none R = rare
O = occasional A = abundant

Prism Sweeps 1 prism factor

7 condition/auger #	__/__	__/__	__/__	__/__	__/__
depth augered					
mottles					
gley					
bedrock					
carbonates					
water table					
organics					
effective texture					
moisture regime					
position on slope					
Substrate Type					

tree species code	__/__	__/__	__/__	__/__	__/__	totals	rel avg
totals							100
basal area							
standing dead tally							

Appendix E

Species List

Species Occurrences

Amphibians

COMMON NAME	SCIENTIFIC NAME	RANK
Western Chorus Frog - Great Lakes / St.	Pseudacris triseriata pop. 2	S3
American Bullfrog	Lithobates catesbeianus	S4
American Toad	Anaxyrus americanus	S5
Green Frog	Lithobates clamitans	S5
Northern Leopard Frog	Lithobates pipiens	S5
Eastern Red-backed Salamander	Plethodon cinereus	S5
Spring Peeper	Pseudacris crucifer	S5
Gray Treefrog	Hyla versicolor	S5

Birds

COMMON NAME	SCIENTIFIC NAME	RANK
Ruffed Grouse	Bonasa umbellus	S4
Red-winged Blackbird	Agelaius phoeniceus	S4
Great Blue Heron	Ardea herodias	S4
Northern Flicker	Colaptes auratus	S4B
Least Flycatcher	Empidonax minimus	S4B
Great Crested Flycatcher	Myiarchus crinitus	S4B
Green Heron	Butorides virescens	S4B
Tree Swallow	Tachycineta bicolor	S4B
Belted Kingfisher	Megaceryle alcyon	S4B
Gray Catbird	Dumetella carolinensis	S4B
Rose-breasted Grosbeak	Pheucticus ludovicianus	S4B
Baltimore Oriole	Icterus galbula	S4B
Indigo Bunting	Passerina cyanea	S4B
American Woodcock	Scolopax minor	S4B
Whip-poor-will	Caprimulgus vociferus	S4B
Sora	Porzana carolina	S4B
Solitary Sandpiper	Tringa solitaria	S4B
Brown Thrasher	Toxostoma rufum	S4B
Veery	Catharus fuscescens	S4B
Pine Grosbeak	Pinicola enucleator	S4B
American Bittern	Botaurus lentiginosus	S4B
Ovenbird	Seiurus aurocapilla	S4B
Eastern Kingbird	Tyrannus tyrannus	S4B
Barred Owl	Strix varia	S5
Common Raven	Corvus corax	S5
Blue Jay	Cyanocitta cristata	S5
Canada Goose	Branta canadensis	S5
Hairy Woodpecker	Picoides villosus	S5
Red-breasted Nuthatch	Sitta canadensis	S5
Northern Cardinal	Cardinalis cardinalis	S5

Mourning Dove	Zenaida macroura	S5
Black-capped Chickadee	Poecile atricapillus	S5
Downy Woodpecker	Picoides pubescens	S5
Ring-necked Duck	Aythya collaris	S5
Red-tailed Hawk	Buteo jamaicensis	S5
Sharp-shinned Hawk	Accipiter striatus	S5
Mallard	Anas platyrhynchos	S5
Red-eyed Vireo	Vireo olivaceus	S5B
Nashville Warbler	Vermivora ruficapilla	S5B
Chestnut-sided Warbler	Dendroica pensylvanica	S5B
Black-throated Blue Warbler	Dendroica caerulescens	S5B
Black-throated Green Warbler	Dendroica virens	S5B
Black-and-white Warbler	Mniotilta varia	S5B
Cedar Waxwing	Bombycilla cedrorum	S5B
Chipping Sparrow	Spizella passerina	S5B
Dark-eyed Junco	Junco hyemalis	S5B
Broad-winged Hawk	Buteo platypterus	S5B
Swamp Sparrow	Melospiza georgiana	S5B
Hermit Thrush	Catharus guttatus	S5B
Northern Waterthrush	Seiurus noveboracensis	S5B
American Redstart	Setophaga ruticilla	S5B
White-throated Sparrow	Zonotrichia albicollis	S5B
Turkey Vulture	Cathartes aura	S5B
American Goldfinch	Carduelis tristis	S5B
Common Yellowthroat	Geothlypis trichas	S5B
Ruby-throated Hummingbird	Archilochus colubris	S5B
American Robin	Turdus migratorius	S5B
American Crow	Corvus brachyrhynchos	S5B
Eastern Phoebe	Sayornis phoebe	S5B
Brown Creeper	Certhia americana	S5B
Winter Wren	Troglodytes troglodytes	S5B
Golden-crowned Kinglet	Regulus satrapa	S5B
Ring-billed Gull	Larus delawarensis	S5B,S4N
Common Loon	Gavia immer	S5B,S5N
Hooded Merganser	Lophodytes cucullatus	S5B,S5N
Herring Gull	Larus argentatus	S5B,S5N
European Starling	Sturnus vulgaris	SNA

Fish

COMMON NAME	SCIENTIFIC NAME	RANK
Walleye	Sander vitreus vitreus	S5
Smallmouth Bass	Micropterus dolomieu	S5
White Sucker	Catostomus commersoni	S5
Pumpkinseed	Lepomis gibbosus	S5
Logperch	Percina caprodes	S5

Yellow Perch	Perca flavescens	S5
Bluegill	Lepomis macrochirus	S5
Rock Bass	Ambloplites rupestris	S5
Brown Bullhead	Ameiurus nebulosus	S5
Common Shiner	Luxilus cornutus	S5
Spottail Shiner	Notropis hudsonius	S5
Creek Chub	Semotilus atromaculatus	S5
Common Carp	Cyprinus carpio	SNA

Insects

COMMON NAME	SCIENTIFIC NAME	RANK
Luna Moth	Actias luna	S4
Chalk-fronted Corporal	Ladona julia	S5
Widow Skimmer	Libellula luctuosa	S5
Twelve-spotted Skimmer	Libellula pulchella	S5
Eastern Comma	Polygonia comma	S5
Orange Sulphur	Colias eurytheme	S5
Juvenal's Duskywing	Erynnis juvenalis	S5
Common Green Darner	Anax junius	S5
Hummingbird Clearwing	Hemaris thysbe	S5
Northern Pearly-Eye	Enodia anthedon	S5
Spring Azure	Celastrina ladon	S5
Eastern Tailed Blue	Cupido (Everes) comyntas	S5
Eyed Brown	Lethe eurydice	S5
Cabbage White	Pieris rapae	SNA

Mammals

COMMON NAME	SCIENTIFIC NAME	RANK
American Mink	Mustela vison	S4
Muskrat	Ondatra zibethicus	S5
Northern Raccoon	Procyon lotor	S5
Red Fox	Vulpes vulpes	S5
Coyote	Canis latrans	S5
Eastern Cottontail	Sylvilagus floridanus	S5
White-tailed Deer	Odocoileus virginianus	S5
Star-nosed Mole	Condylura cristata	S5
Red Squirrel	Tamiasciurus hudsonicus	S5
European Hare	Lepus europaeus	SNA

Reptiles and Turtles

COMMON NAME	SCIENTIFIC NAME	RANK
Snapping Turtle	Chelydra serpentina	S3
Western Painted Turtle	Chrysemys picta bellii	S4
Eastern Gartersnake	Thamnophis sirtalis sirtalis	S5
Common Watersnake	Nerodia sipedon sipedon	S5

Vascular Plants

COMMON NAME	SCIENTIFIC NAME	RANK
Butternut	Juglans cinerea	S3?
Illinois Pondweed	Potamogeton illinoensis	S4
Northern Dewberry	Rubus flagellaris	S4
Early Lowbush Blueberry	Vaccinium pallidum	S4
Field Mouse-ear Chickweed	Cerastium arvense ssp. strictum	S4
Philadelphia Panic Grass	Panicum philadelphicum	S4
American Bur-reed	Sparganium americanum	S4?
White Ash	Fraxinus americana	S4?
Virginia Creeper	Parthenocissus quinquefolia	S4?
Ribbon-leaf Pondweed	Potamogeton epihydrus	S4S5
Tufted Hairgrass	Deschampsia cespitosa ssp. cespitosa	S4S5
New York Fern	Thelypteris noveboracensis	S4S5
Balsam Fir	Abies balsamea	S5
Red Pine	Pinus resinosa	S5
White Spruce	Picea glauca	S5
Eastern White Pine	Pinus strobus	S5
Eastern White Cedar	Thuja occidentalis	S5
Broad-leaf Cattail	Typha latifolia	S5
Canada Blue-joint	Calamagrostis canadensis	S5
Sensitive Fern	Onoclea sensibilis	S5
Eastern Hemlock	Tsuga canadensis	S5
Brownish Sedge	Carex brunnescens	S5
Bebb's Sedge	Carex bebbii	S5
Bracken Fern	Pteridium aquilinum	S5
Royal Fern	Osmunda regalis	S5
White-grained Mountain-ricegrass	Oryzopsis asperifolia	S5
Floating Pondweed	Potamogeton natans	S5
Woodland Horsetail	Equisetum sylvaticum	S5
Dwarf Scouring Rush	Equisetum scirpoides	S5
Field Horsetail	Equisetum arvense	S5
Spinulose Shield Fern	Dryopteris carthusiana	S5
Eel-grass	Vallisneria americana	S5
Marsh Horsetail	Equisetum palustre	S5
Self-heal	Prunella vulgaris ssp. lanceolata	S5
Purple Flowering Raspberry	Rubus odoratus	S5
White Heath Aster	Symphyotrichum ericoides var. ericoides	S5
American Fly-honeysuckle	Lonicera canadensis	S5
Flat-top White Aster	Doellingeria umbellata var. pubens	S5
New England Aster	Symphyotrichum novae-angliae	S5
Downy Arrowwood	Viburnum rafinesquianum	S5
Marsh Bedstraw	Galium palustre	S5
Spreading Dogbane	Apocynum androsaemifolium	S5

Fleabane	Conyza canadensis	S5
Green Ash	Fraxinus pennsylvanica	S5
Wild Sarsaparilla	Aralia nudicaulis	S5
Common Water-milfoil	Myriophyllum sibiricum	S5
Red-osier Dogwood	Cornus sericea	S5
Philadelphia Fleabane	Erigeron philadelphicus	S5
Slender Naiad	Najas flexilis	S5
American Mountain-ash	Sorbus americana	S5
Gay-wing Milkwort	Polygaloides paucifolia	S5
Wild Black Cherry	Prunus serotina	S5
Choke Cherry	Prunus virginiana	S5
Hairy Willow-herb	Epilobium ciliatum	S5
Pale St. John's-wort	Hypericum ellipticum	S5
Common Labrador Tea	Rhododendron groenlandicum	S5
Nipple-seed Plantain	Plantago major	S5
Staghorn Sumac	Rhus typhina	S5
Red Maple	Acer rubrum	S5
Sugar Maple	Acer saccharum var. saccharum	S5
Spotted Jewel-weed	Impatiens capensis	S5
American Basswood	Tilia americana	S5
Common Boneset	Eupatorium perfoliatum	S5
Broad Waterweed	Elodea canadensis	S5
Large-tooth Aspen	Populus grandidentata	S5
Bebb's Willow	Salix bebbiana	S5
Wild-lily-of-the-valley	Maianthemum canadense	S5
Partridge-berry	Mitchella repens	S5
Pearly Everlasting	Anaphalis margaritacea	S5
Virginia Strawberry	Fragaria virginiana	S5
Silver Maple	Acer saccharinum	S5
Nannyberry	Viburnum lentago	S5
Yellow Birch	Betula alleghaniensis	S5
Sago Pondweed	Stuckenia pectinata	S5
Eastern Ninebark	Physocarpus opulifolius	S5
Kansas Milkweed	Asclepias syriaca	S5
Jack Pine	Pinus banksiana	S5
Shinleaf	Pyrola elliptica	S5
Starved Aster	Symphyotrichum lateriflorum	S5
Virginia Creeper	Parthenocissus inserta	S5
Yarrow	Achillea millefolium	S5
Annual Ragweed	Ambrosia artemisiifolia	S5
Field Pussytoes	Antennaria neglecta	S5
Broad-leaved Goldenrod	Solidago flexicaulis	S5
Early Goldenrod	Solidago juncea	S5
Reed Canary Grass	Phalaris arundinacea	S5

Spotted Joe-pye Weed	Eutrochium maculatum var. maculatum	S5
Blueflag	Iris versicolor	S5
Fringed Loosestrife	Lysimachia ciliata	S5
Virginia Saxifrage	Micranthes virginiensis	S5
Common St. John's-wort	Hypericum punctatum	S5
Pickerel Weed	Pontederia cordata	S5
Northern Wild-raisin	Viburnum nudum	S5
Bearberry	Arctostaphylos uva-ursi	S5
Canada Goldenrod	Solidago canadensis var. canadensis	S5
Black Raspberry	Rubus occidentalis	S5
Pointed Broom Sedge	Carex scoparia	S5
Meadow Willow	Salix petiolaris	S5
Northern Red Oak	Quercus rubra	S5
Sweet Bayberry	Myrica gale	S5
Sweet Fern	Comptonia peregrina	S5
Common Hornwort	Ceratophyllum demersum	S5
Balsam Poplar	Populus balsamifera	S5
Large-flowered Bellwort	Uvularia grandiflora	S5
White Trillium	Trillium grandiflorum	S5
False Nettle	Boehmeria cylindrica	S5
Starflower False Solomon's-seal	Maianthemum stellatum	S5
American Elm	Ulmus americana	S5
Pussy Willow	Salix discolor	S5
Trembling Aspen	Populus tremuloides	S5
False Solomon's-seal	Maianthemum racemosum	S5
Wild Columbine	Aquilegia canadensis	S5
White Oak	Quercus alba	S5
Eastern Hop-hornbeam	Ostrya virginiana	S5
Fox Sedge	Carex vulpinoidea	S5
Speckled Alder	Alnus incana	S5
Ebony Sedge	Carex eburnea	S5
Paper Birch	Betula papyrifera	S5
Downy Solomon's-seal	Polygonatum pubescens	S5
Early Meadowrue	Thalictrum dioicum	S5
Marginal Wood-fern	Dryopteris marginalis	S5
Poverty Oatgrass	Danthonia spicata	S5
Fowl Manna-grass	Glyceria striata	S5
Graceful Sedge	Carex gracillima	S5
Porcupine Sedge	Carex hystericina	S5
Small Cranberry	Vaccinium oxycoccos	S5
Northern Starflower	Trientalis borealis	S5
Blue Cohosh	Caulophyllum thalictroides	S5
Norwegian Cinquefoil	Potentilla norvegica	S5
Longstalk Sedge	Carex pedunculata	S5

American Witch-hazel	Hamamelis virginiana	S5
Smooth Gooseberry	Ribes hirtellum	S5
Dark-green Bulrush	Scirpus atrovirens	S5
Downy Serviceberry	Amelanchier arborea	S5
White Water-lily	Nymphaea odorata ssp. odorata	S5?
Black Ash	Fraxinus nigra	S5?
Blue Spruce	Picea pungens	SNA
Field Brome	Bromus arvensis	SNA
Orchard Grass	Dactylis glomerata	SNA
Meadow Brome	Bromus erectus	SNA
Smooth Crabgrass	Digitaria ischaemum	SNA
Chicory	Cichorium intybus	SNA
Colt's Foot	Tussilago farfara	SNA
Annual Bluegrass	Poa annua	SNA
Narrow-leaved Cattail	Typha angustifolia	SNA
Meadow Timothy	Phleum pratense	SNA
European Lily-of-the-valley	Convallaria majalis	SNA
Common Canary Grass	Phalaris canariensis	SNA
Lesser Chickweed	Stellaria pallida	SNA
Sheep Sorrel	Rumex acetosella	SNA
Eastern Helleborine	Epipactis helleborine	SNA
English Plantain	Plantago lanceolata	SNA
Common Red Raspberry	Rubus idaeus ssp. idaeus	SNA
Corymbed Meadowsweet	Spiraea corymbosa	SNA
Birds-foot Trefoil	Lotus corniculatus	SNA
White Sweet Clover	Melilotus albus	SNA
Herb-robert	Geranium robertianum	SNA
Alsike Clover	Trifolium hybridum	SNA
Creeping Woodsorrel	Oxalis corniculata	SNA
Purple Loosestrife	Lythrum salicaria	SNA
Tufted Vetch	Vicia cracca	SNA
Low Hop Clover	Trifolium campestre	SNA
Red Clover	Trifolium pratense	SNA
Tall Butter-cup	Ranunculus acris	SNA
Russian-pigweed	Axyris amaranthoides	SNA
Greater Burdock	Arctium lappa	SNA
Common Lilac	Syringa vulgaris	SNA
Common Sowthistle	Sonchus oleraceus	SNA
Curly Pondweed	Potamogeton crispus	SNA
Oxeye Daisy	Leucanthemum vulgare	SNA
Spotted Cat's-ear	Hypochaeris radicata	SNA
Wild Carrot	Daucus carota	SNA
Buckthorn	Rhamnus cathartica	SNA
Butter-and-eggs	Linaria vulgaris	SNA

Creeping Cinquefoil	Potentilla reptans	SNA
Maiden's Tears	Silene vulgaris	SNA
Bull Thistle	Cirsium vulgare	SNA
Canada Thistle	Cirsium arvense	SNA
Eurasian Water-milfoil	Myriophyllum spicatum	SNA
A St. John's-wort	Hypericum perforatum	SNA
Brown-seed Dandelion	Taraxacum officinale	SNA
Black Bindweed	Fallopia convolvulus	SNA