

Region of Peel Schedule B Class EA - Inglewood Well Natural Environment Report

Issue and Revision Record					
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1. Introduction

Peel Region retained Hatch Mott MacDonald (HMM) to carry out a natural environment assessment (NEA) to characterize the terrestrial and aquatic environmental features to support the Schedule B, Class Environmental Assessment (EA) for the new Inglewood Well. It is understood that a well exploration program was previously completed, which identified two potential areas for siting a new pump-house. As part of this EA, a NEA was completed for the study area identified as Site N and Site K. Refer to Figure 1a and 1b, for Site location and boundary of the study area assessed as part of this report.

It is important to note that the watermain extension required for Site K, was not part of the NEA, and as such is not considered as part of the study area for this evaluation. It will however, be located within the ROW either along the north or south side of Forks of the Credit Road up to, and south along Hurontario Street before connecting to the existing pump-house south of KWRMA.

1.1 Scope of Work

As part of this NEA the following scope of work was undertaken:

- Conduct a literature review of background information (e.g. key natural heritage features);
- Consult with the Ontario Ministry of Natural Resources and Forestry (MNRF) and Credit Valley Conservation (CVC);
- Conduct a site visit to collect baseline data on natural features not limited to the following:
 - Terrestrial through Ecological Land Classification (ELC);
 - Assess the impacts associated with the two alternative sites; and,
 - Prepare a report which outlines the above noted information to be included as part of the EA.

2. Methodology

The methodology used for this NEA is based on existing information collected at the time of the investigation, along with a review of available literature and background information provided by relevant regulatory agencies.

2.1 Literature Review

Background information was gathered and reviewed. The following is a list of information and documentation reviewed as part of this NEA:

- Region of Peel Official Plan;
- Town of Caledon Official Plan;
- MNRF Aurora District Office Endangered Species Screening information request;
- CVC information request;
- Provincial Policy Statement (2014);

- Niagara Escarpment Plan (2005);
- Greenbelt Plan (2005);
- Aerial photos; and,
- Topographic maps.

2.2 Agency Correspondence

An Endangered Species Screening information request form was sent to the MNRF Aurora District Office on October 19, 2015 to request information on species-at-risk (SAR) and additional natural heritage features. Information was provided by MNRF on November 3 and November 6 and is included within Appendix A of this report. Subsequently, CVC was contacted at the start of the study in relation to the pump tests for the proposed well locations. Additional follow-up with the Manager of Planning Ecology (Mr. Liam Marray) occurred on November 5 via telephone and summarized via email. This correspondence is also reflected in Appendix A. A data request for information was sent to CVC on November 2, with Site maps provided by CVC on November 20. Additional natural heritage data is still pending from CVC.

2.3 Field Investigations

A field investigation was completed on October 16 between 12:30PM to 2:00PM at Site N, and from 2:00PM to 3:30PM for Site K. Conditions during the Site investigation were cloudy with sunny breaks, with temperatures between 8 and 9°C. Vegetation communities were identified and delineated with the use of aerial photographs and during the Site visit by applying the Ecological Land Classification for Southern Ontario: First Approximation and Its Application (ELC) (Lee et al., 1998). This information was collectively used to classify and describe vegetation communities at each Site. Observations on natural and anthropogenic disturbances were also made.

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Figure 1a: Proposed Site Location – Site N

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Figure 1b: Proposed Site Location – Site K

3. Policy Context

The following section provides the provincial, regional and local policy context for this assessment.

3.1 Regional and Town

3.1.1 *Region of Peel*

The Region of Peel Official Plan was adopted by Regional Council on July 11, 1996 through By-law 54-96. It has been amended over the years, with the most current version consolidated in 2014. The policies that pertain to natural heritage features are contained mainly in Section 2 of the Plan (Natural Environment), whereby the policies outlined in the Plan are identified in Section 2.1.3. Specific policies as they relate to certain features and jurisdictions (e.g., groundwater, Oak Ridges Moraine, and Lake Ontario) are identified within their respective sections.

The Region of Peel's definition of key natural heritage features and sensitive features is in accordance with the Niagara Escarpment Plan, Oak Ridges Moraine Conservation Plan, the Greenbelt Plan (e.g., Natural Heritage Systems), in addition to their own Greenlands System. The Greenlands System in Peel consists of Core Areas, Natural Areas, Corridors and Potential Natural Areas Corridors. The elements of the Greenland System include:

- Areas of Natural and Scientific Interest (ANSIs);
- Environmentally Sensitive or Significant Areas;
- Escarpment Natural Areas;
- Fish Habitat and Wildlife Habitat;
- Habitats of Threatened and Endangered Species;
- Natural Corridors;
- Shorelines;
- Valley and Stream Corridors;
- Wetlands; and,
- Woodlands.

3.1.2 *Town of Caledon*

The Town of Caledon Official Plan came into effect in 1979, and has since been amended and further consolidated in June 2015. The policies that pertain to natural heritage features are contained mainly in Section 3.2 of the Plan (Ecosystem Planning and Management), whereby the policies outlined in the Plan are identified in Section 2.1.3. Specific policies as they relate to certain features and jurisdictions (e.g., groundwater, Oak Ridges Moraine, and Lake Ontario) are identified within their respective sections. The ecosystem framework of the Plan organizes components into four categories:

- Natural Core Areas;
- Natural Corridors;

- Supportive Natural Systems; and,
- Natural Linkages.

According to Schedules (A, A-1, M, O, S, Figure (1), and Appendix I within the Official Plan:

- Both Site N and K are mapped within the Greenbelt Plan area and Niagara Escarpment plan area;
- Part of Site N is mapped within a 5 and 10 Year Well Head Protection Area; and,
- Site N is mapped within an Environmental Policy Area, and Site K is mapped for the most part in what is identified as a Rural Area, with Environmental Policy Areas to the east and west within the woodlands. Environmental Policy Areas are comprised of both Natural Core Areas and Natural Corridors.

3.2 Provincial Policy Statement – Planning Act

Natural Heritage Policy 2.1 of the *Provincial Policy Statement* (PPS) (Ministry of Municipal Affairs and Housing (MMAH) 2014) provides direction to regional and local municipalities regarding planning policies for the protection and management of natural heritage features and resources for applications pursuant to the *Planning Act*. The PPS defines seven natural heritage features and provides planning policies for each. The *Natural Heritage Reference Manual* (MNR, 2005), is a technical document used to help assess the natural heritage features listed below, in addition to the province’s Significant Wildlife Habitat Criteria Schedules for respective Ecoregions (2015):

- significant wetlands;
- significant habitat of endangered and threatened species;
- fish habitat;
- significant woodlands;
- significant valleylands;
- significant ANSIs; and,
- significant wildlife habitat.

Each of these features is afforded varying levels of protection subject to guidelines, and in some cases, regulations. Significant Woodlands and valleylands and even wetlands can be designated by municipalities and/or the MNR (e.g., Ontario Wetland Evaluation System). Fish habitat information can be identified by Conservation Authorities, the MNR and the Department of Fisheries and Oceans Canada (DFO), however the management of fish habitat is governed by DFO. Significant wildlife habitat, habitat of endangered and threatened species and ANSIs is designated by MNR.

Based on a review of available mapping from the MNR Make a Natural Heritage Mapping Tool (2015a), both Site N and Site K are mapped as being adjacent to provincially significant wetlands (PSWs), unevaluated wetlands, fish habitat, woodlands and ANSIs.

3.3 Conservation Authority

The CVC regulates watercourses, wetlands, and hazard lands (valleylands, shorelines, floodplains) through application of Ontario Regulation 160/06, as made under Section 28 of the *Conservation Authorities Act*. The main purpose of this regulation is to ensure public health and safety and protection of life and property in relation to natural hazards. This regulation establishes guidelines for development, interference with wetlands and alterations to shorelines and watercourses.

Based on the project Site locations, both Site N and Site K are situated within regulated areas, within the Credit River Watershed in accordance with available regulation mapping provided by CVC. Site N is also partially located within the Ken Whillans Resource Management Area, which too is managed by the CVC.

3.4 Niagara Escarpment Commission

The Niagara Escarpment extends 725 km from Queenston on the Niagara River to the islands off Tobermory on the Bruce Peninsula (Niagara Escarpment Commission (NEC), 2012). It is considered a significant geological and ecological feature housing some of Southern Ontario's prime rivers and streams (NEC, 2012). The *Niagara Escarpment Planning and Development Act* established a planning process, out of which came the Niagara Escarpment Plan in June 2005. It has since been updated on October 25, 2012 (NEC, 2012).

According to the MNRF Make a Natural Heritage Mapping Tool (2015a), both Site N and Site K are mapped within the Niagara Escarpment Plan Area.

3.5 Greenbelt Plan

The Greenbelt Plan provides policy direction for an area that extends from Niagara Falls to Durham Region also referred to as the Golden Horseshoe. This Plan was created under the *Greenbelt Act, 2005* in order to provide protection to agricultural and ecological features and functions within the Province. The Greenbelt Plan includes areas of Protected Countryside and those areas within the Niagara Escarpment Plan Area, Oak Ridges Moraine Area, and the Parkway Belt West Plan Area (Region of Peel Official Plan, 2014).

According to the MNRF Make a Natural Heritage Mapping Tool (2015a), both Site N and Site K are mapped within the Greenbelt Plan Area. Specifically, the study area associated with Site K is mapped as being fully within the Natural Heritage System of the Greenbelt Plan, while Site N, is only partially situated within the Natural Heritage System where the existing pump-house is located (Refer to Figure 1a).

3.6 Provincial Endangered Species Act

Ontario's *Endangered Species Act, 2007* (ESA) was passed into law in 2007 and came into effect on June 30, 2008. Under the ESA there are more than 200 species in Ontario that are identified as extirpated, endangered, threatened, or of special concern. Section 9 of the ESA

generally prohibits the killing or harming of a threatened or endangered species, as well as the destruction of its habitat. Section 10 of the ESA prohibits the damage or destruction of the habitat of all endangered and threatened species.

The MNRF provided a list of SAR that are known to what, and within the vicinity of both Site N and Site K. This list is provided in Appendix A, and further in Table 8 and 9 of this report.

3.7 Federal Fisheries Act

The Federal *Fisheries Act* was established in 1985 with amendments made and coming into effect on November 25, 2013. This Act provides protection to fish and fish habitat such that:

“No person shall carry on any work, undertaking or activity that results in serious harm to fish that are part of a commercial, recreational, or Aboriginal fishery, or to fish that support such a fishery” (Section 35 (1)).

Fish habitat is defined by the Act as *“spawning grounds, and any other areas, including nursery, rearing food supply and migration areas, on which fish depend directly or indirectly in order to carry out their life processes”*.

If mitigation measures cannot be applied, and residual effects will cause serious harm to fish than a request for review by DFO must be submitted. If DFO identifies that approval for the project is needed, offsetting measures may be required.

4. Existing Conditions

There are two potential locations for siting the new Inglewood Well: Site N and Site K. Site N is within the right-of-way (ROW) easement along Hurontario Street and adjacent to the Ken Whillans Resource Management Area (KWRMA). The study area for Site K as assessed as part of the NEA is located within a hydro transmission line corridor adjacent to natural woodlands (Refer to Figure 1a and 1b for study area and Site location).

4.1 Topography and Soils

The north section of Site N slopes west towards Orchard Pond and the Credit Forks Wetland Complex (PSW), and east along the Hurontario Street ROW (Refer to Figure 1a) (MNRF, 2015b).

For Site K, the Site is located on a hill, which gradually slopes east and west into the woodlands, north into the existing Credit Forks Wetland Complex (PSW), and south into the Forks of the Credit Road (Refer to Figure 1b) (MNRF, 2015b).

Based on the Peel County Soil Map (1953), Site N is dominantly characterized by good drainage soils that are considered medium textured till with few stones (Hoffman et al., 1953). Soils in this group are classified as loam and are part of the Grey-Brown Podzolic Great Soil Group (Hoffman et al., 1953). Additional pockets are characterized as wet sorted outwash material that are classified as loam with poor drainage (Hoffman et al., 1953). These sections contain few stones and are part of the Dark Grey Gleisolic Great Soil Group (Hoffman et al.,

1953). Site K is characterized as poorly sorted outwash with good natural drainage. Soils in this area are classified as sandy loam and part of the Grey-Brown Podzolic Great Soil Group (Hoffman et al., 1953).

4.2 Terrestrial

The organizational framework contained within the ELC protocol (Lee et al., 1998) describes communities according to six (6) nested levels: Site Region, System, Community Class, Community Series, Ecosite, and Vegetation Type. These nested levels vary in spatial scale, with the Site Region classifying communities at the largest spatial scale, and Vegetation Type describing communities at the finest spatial scale (Lee et al., 1998).

There are two (2) Site Regions in Southern Ontario: 6E and 7E (after Lee et al., 1998). The two Site locations are situated within Site Region 6E, the Lakes Simcoe-Rideau Site Region, which occupies the northern portion of Southern Ontario.

An Ecological Classification map was prepared for both study areas associated with Site N and Site K (Refer to Figure 2a and 2b). Due to the project scope and screening process, an ELC map was prepared for the entire study area for Site N including the watermain connection location, but was only prepared for the location of the proposed pump-house and well at Site K. The assessment of the watermain installation along Forks of the Credit Road and its connection along Hurontario Street was not completed in the field and would be required if the screening and current pump testing for Site N deems the Site non-optional.

4.2.1 Vegetation Communities

Characterization of the vegetation observed was undertaken by compiling a generalized botanical inventory then using that information to classify and characterize the vegetation communities according to the ELC protocol (Lee et al., 1998). Identifying a vegetation community within an area is necessary to determine the type of environment present (e.g., shade-tolerant area) and to identify the type(s) of habitat that may be present, which may lead to the identification of sensitive habitat area(s). This information will also aid in the identification of any SAR that may potentially occur in the area. It is noted that this assessment was conducted outside of suitable seasonal conditions, and therefore only dominant species associated with each community as observed were noted.

4.2.1.1 Site N

A summary of the vegetation communities observed within the Site N boundary is provided in the following sections. Areas that could not be classified as they are either maintained (e.g., Manicured Lawn), or comprised of parking lots and/or driveways (Transportation & Utilities (CVI)) are illustrated on the ELC figure for this Site (Figure 2a).

4.2.1.1.1 Dry - Fresh Graminoid Meadow Ecosite (MEGM4)

This community has limited diversity. During the site investigation the dominated species observed in this area was identified as Fall Panic Grass (*Panicum dichotomiflorum*).

4.2.1.1.2 Dry-Fresh Deciduous Woodland Ecosite (WODM4)

This woodland community is comprised of species that are typically associated with the edges of forests and woodlands, as they exhibit a higher tolerance to stresses (e.g., wind). This community connects with extensive woodland to the west, which is identified as wetland by the CVC, and the MNRF Make a Map tool (2015a). Dominant species associated with this community are provided in Table 1.

Table 1: Dominant vegetation species observed in WODM4

Scientific Name	Common Name	Native Status	COSEWIC/ Ontario Rank	Found within the Credit River Watershed
Herbaceous Plant				
<i>Panicum dichotomiflorum</i>	Fall Panic Grass	Non-Native	G5/SE5	Yes
<i>Typha latifolia</i>	Common Cattail	Native	G5/S5	Yes
<i>Phragmites australis</i>	Common Reed	Native	G5/S5	Yes
<i>Daucus carota</i>	Wild Carrot	Non-Native	G?/SE5	Yes
<i>Solidago canadensis</i>	Canada Goldenrod	Native	G5/S5	Yes
<i>Symphotrichum novae-angliae</i>	New England Aster	Native	G5/S5	Yes
Shrub				
<i>Cornus sericea</i>	Red Osier Dogwood	Native	G5/S5	Yes
<i>Rhamnus carthartica</i>	Common Buckthorn	Non-Native	G?SE5	Yes
Tree				
<i>Acer negundo</i>	Manitoba Maple	Native	G5/S5	Yes
<i>Salix spp.</i>	Willow	Native		
<i>Ulmus rubra</i>	Red Elm	Native	G5/S5	Yes
<i>Populus deltoides</i>	Eastern Cottonwood	Native	G5/S5	Yes
<i>Acer saccharinum</i>	Silver Maple	Native	G5/S5	Yes
<i>Pinus strobus</i>	White Pine	Native	G5/S5	Yes

Source: CVC, 2002; COSEWIC: Committee on the Status of Endangered Wildlife in Canada; G5: Very common; demonstrable secure under present conditions; G?: G? Unranked; or, if following a ranking, rank tentatively assigned; S5: Very Common; demonstrably secure under present conditions.

4.2.1.2 Fresh-Moist Deciduous Woodland Ecosite (WODM5)

This community is located adjacent to Orchard Pond on the KWRMA. During the Site investigation conducted on October 16, 2016 the central portion of this community was inundated with water. Dominant vegetation observed during this Site investigation is compiled in Table 2.

Table 2: Dominant vegetation species observed in WODM5

Scientific Name	Common Name	Native Status	COSEWIC/ Ontario Rank	Found within the Credit River Watershed
Herbaceous Plant				
<i>Solidago canadensis</i>	Canada Goldenrod	Native	G5/S5	Yes
<i>Asclepias syriaca</i>	Common Milkweed	Native	G5/S5	Yes
<i>Vitis riparia</i>	Wild Grape	Native	G5/S5	Yes
<i>Daucus carota</i>	Wild Carrot	Non-Native	G7/SE5	Yes
<i>Cirsium vulgare</i>	Bull Thistle	Non-Native	G5/SE5	Yes
<i>Centaurea spp.</i>	Knapweed	Non-Native		
Shrub				
<i>Cornus sericea</i>	Red Osier Dogwood	Native	G5/S5	Yes
<i>Rubus idaeus ssp. Melanolasius</i>	Wild Red Raspberry	Native	G5T5/S5	Yes
<i>Rhus typhina</i>	Staghorn Sumac	Native	G5/S5	Yes
Tree				
<i>Acer negundo</i>	Manitoba Maple	Native	G5/S5	Yes
<i>Tilia americana</i>	Basswood	Native	G5/S5	Yes
<i>Fraxinus spp.</i>	White Ash	Native	G5/S5	Yes
<i>Juglans nigra</i>	Black Walnut	Native	G5/S4	Yes

Source: CVC, 2002; COSEWIC: Committee on the Status of Endangered Wildlife in Canada; G5: Very common; demonstrable secure under present conditions; G?: G? Unranked; or, if following a ranking, rank tentatively assigned; GT: Denotes that the rank applies to a subspecies or variety; S5: Very Common; demonstrably secure under present conditions; SE: Exotic. Not believed to be a part of Ontario's natural flora; S4: Common; usually more than 100 occurrences; usually not susceptible to immediate threats.

4.2.1.3 Mineral Meadow Marsh Ecosite (MAM2)

This community is located within the roadside ditches along Hurontario Street. A summary of the dominant species observed is provided in Table 3 below.

Table 3: Dominant vegetation species observed in MAM2

Scientific Name	Common Name	Native Status	COSEWIC/ Ontario Rank	Found within the Credit River Watershed
Herbaceous Plant				
<i>Phragmites australis</i>	Common Reed	Native	G5/S5	Yes
<i>Typha latifolia</i>	Common Cattail	Native	G5/S5	Yes
<i>Solidago canadensis</i>	Canada Goldenrod	Native	G5/S5	Yes
<i>Daucus carota</i>	Wild Carrot	Non-Native	G7/SE5	Yes
<i>Cirsium vulgare</i>	Bull Thistle	Non-Native	G5/SE5	Yes
<i>Bromus inermis</i>	Smooth Brome	Non-Native	G4G5T7/SE5	Yes
<i>Dipsacus fullonum</i>	Common Teasel	Non-Native	G7/SE5	
<i>Panicum dichotomiflorum</i>	Fall Panic Grass	Non-Native	G5/SE5	Yes
Shrub				
<i>Rhus typhina</i>	Staghorn Sumac	Native	G5/S5	Yes

Scientific Name	Common Name	Native Status	COSEWIC/ Ontario Rank	Found within the Credit River Watershed
Tree				
<i>Acer rubrum</i>	Red Maple	Native	G5/S5	Yes
<i>Fraxinus americana</i>	White Ash	Native	G5/S5	Yes
<i>Populus deltoides</i>	Eastern Cottonwood	Native	G5/S5	Yes
<i>Acer negundo</i>	Manitoba Maple	Native	G5/S5	Yes

Source: CVC, 2002; COSEWIC: Committee on the Status of Endangered Wildlife in Canada; G5: Very common; demonstrable secure under present conditions; G4: Common; usually more than 100 occurrences; usually not susceptible to immediate threats. G?: G? Unranked; or, if following a ranking, rank tentatively assigned; GT: Denotes that the rank applies to a subspecies or variety; S5: Very Common; demonstrably secure under present conditions; SE: Exotic. Not believed to be a part of Ontario's natural flora; S4: Common; usually more than 100 occurrences; usually not susceptible to immediate threats.

4.2.1.4 Dry-Fresh Deciduous Regeneration Thicket Ecosite (THDM4)

This community is adjacent to the driveway access to the existing house at the north end of the study area (where the proposed well is to be located). A summary of dominant vegetation species observed during the Site investigation is provided in Table 4.

Table 4: Dominant vegetation species observed in THDM4

Scientific Name	Common Name	Native Status	COSEWIC/ Ontario Rank	Found within the Credit River Watershed
Herbaceous Plant				
<i>Daucus carota</i>	Wild Carrot	Non-Native	G?/SE5	Yes
<i>Bromus inermis</i>	Smooth Brome	Non-Native	G4G5T?/SE5	Yes
<i>Solidago canadensis</i>	Canada Goldenrod	Native	G5/S5	Yes
Shrub				
<i>Rhamnus carthartica</i>	Common Buckthorn	Non-Native	G?SE5	Yes
Tree				
<i>Populus deltoides</i>	Eastern Cottonwood	Native	G5/S5	Yes

Source: CVC, 2002; COSEWIC: Committee on the Status of Endangered Wildlife in Canada; G5: Very common; demonstrable secure under present conditions; G4: Common; usually more than 100 occurrences; usually not susceptible to immediate threats. G?: G? Unranked; or, if following a ranking, rank tentatively assigned; GT: Denotes that the rank applies to a subspecies or variety; S5: Very Common; demonstrably secure under present conditions; SE: Exotic. Not believed to be a part of Ontario's natural flora.

4.2.1.5 Mineral Cultural Meadow Ecosite (CUM1)

Adjacent to the proposed well is a field that is comprised of various herbaceous plants, with occasional small shrubs to the far west (outside of the study area). This meadow community exhibited a higher forb to grass ratio. A summary of dominant species observed within the community as it relates to the study area is provided in Table 5.

Table 5: Dominant vegetation species observed in CUM1

Scientific Name	Common Name	Native Status	COSEWIC/ Ontario Rank	Found within the Credit River Watershed
<i>Herbaceous Plant</i>				
<i>Poa spp.</i>	Grasses	-	-	-
<i>Bromus inermis</i>	Smooth Brome	Non-Native	G4G5T?/SE5	Yes
<i>Solidago canadensis</i>	Canada Goldenrod	Native	G5/S5	Yes
<i>Daucus carota</i>	Wild Carrot	Non-Native	G?/SE5	Yes
<i>Dipsacus fullonum</i>	Common Teasel	Non-Native	G?/SE5	Yes

Source: CVC, 2002; COSEWIC: Committee on the Status of Endangered Wildlife in Canada; G5: Very common; demonstrable secure under present conditions; G4: Common; usually more than 100 occurrences; usually not susceptible to immediate threats. G?: G? Unranked; or, if following a ranking, rank tentatively assigned; GT: Denotes that the rank applies to a subspecies or variety; S5: Very Common; demonstrably secure under present conditions; SE: Exotic. Not believed to be a part of Ontario's natural flora.

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Figure 2a: Ecological Land Classification – Site N

4.2.1.6 Site K

A summary of the vegetation communities observed within the Site K boundary is provided in the following sections and illustrated on the ELC figure for this Site (Figure 2b).

4.2.1.6.1 Fresh-Moist Cedar-Hardwood Mixed Forest Ecosite (FOMM7)

This community is located both on the east and west sides of the study area. This Forest community is comprised of both deciduous and coniferous tree species, with the majority of trees within the 10 m to 25 m height range (Lee et al., 1998). A list of dominant vegetation species observed is provided in Table 6.

Table 6: Dominant vegetation species observed in FOMM7

Scientific Name	Common Name	Native Status	COSEWIC/ Ontario Rank	Found within the Credit River Watershed
Herbaceous Plant				
<i>Dryopteris carthusiana</i>	Spinulose Wood Fern	Native	G5/S5	Yes
Shrub				
<i>Cornus racemosa</i>	Gray Dogwood	Native	G5?/S5	Yes
<i>Rhamnus carthartica</i>	Common Buckthorn	Non-Native	G?SE5	Yes
Tree				
<i>Thuja occidentalis</i>	Eastern White Cedar	Native	G5/S5	Yes
<i>Populus deltoides</i>	Eastern Cottonwood	Native	G5/S5	Yes
<i>Pinus strobus</i>	White Pine	Native	G5/S5	Yes
<i>Acer rubrum</i>	Red Maple	Native	G5/S5	Yes
<i>Acer saccharum</i>	Sugar Maple	Native	G5T?/S5	Yes
<i>Betula alleghaniensis</i>	Yellow Birch	Native	G5/S5	Yes

Source: CVC, 2002; COSEWIC: Committee on the Status of Endangered Wildlife in Canada; G5: Very common; demonstrable secure under present conditions; G?: G? Unranked; or, if following a ranking, rank tentatively assigned; GT: Denotes that the rank applies to a subspecies or variety; S5: Very Common; demonstrably secure under present conditions.

4.2.1.6.2 Dry-Fresh Deciduous Regeneration Thicket Ecosite (THDM4)

This community is located within the hydro corridor portion of the study area. This community has been previously disturbed as only shrubs and herbaceous plants are present. Observations of new-growth of Eastern Cottonwood were observed in the area (a known early successional colonizer species). A list of dominant vegetation species observed is provided in Table 7.

Table 7: Dominant vegetation species observed in THDM4

Scientific Name	Common Name	Native Status	COSEWIC/ Ontario Rank	Found within the Credit River Watershed
Herbaceous Plant				
<i>Solidago canadensis</i>	Canada Goldenrod	Native	G5/S5	Yes
<i>Dryopteris carthusiana</i>	Spinulose Wood Fern	Native	G5/S5	Yes
<i>Verbascum thapus</i>	Common Mullein	Non-Native	G?/SE5	Yes
Woody Shrub / Tree regrowth (<2m)				

Scientific Name	Common Name	Native Status	COSEWIC/ Ontario Rank	Found within the Credit River Watershed
<i>Rubus idaeus ssp. Melanolasius</i>	Wild Red Raspberry	Native	G5T5/S5	Yes
<i>Populus deltoides</i>	Eastern Cottonwood	Native	G5/S5	Yes
<i>Rhus typhina</i>	Staghorn Sumac	Native	G5/S5	Yes
<i>Cornus racemosa</i>	Gray Dogwood	Native	G5?/S5	Yes

Source: CVC, 2002; COSEWIC: Committee on the Status of Endangered Wildlife in Canada; G5: Very common; demonstrable secure under present conditions; G?: G? Unranked; or, if following a ranking, rank tentatively assigned; GT: Denotes that the rank applies to a subspecies or variety; S5: Very Common; demonstrably secure under present conditions; SE: Exotic. Not believed to be a part of Ontario's natural flora.

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Figure 2b: Ecological Land Classification – Site K

4.3 Aquatic

There are no watercourses that traverse through and are situated within Site N or Site K. The Little Credit River runs in proximity to Site N (~600 m to the west). The Little Credit River is an extension of the Credit River, which contains 79 different species of fish (CVC, 2015a). The two ponds located just west of the Site N study area (Kidd Pond and Orchard Pond) are stocked with Large Mouth Bass (*Micropterus salmoides*), Perch (*Perca* spp.) and most recently Trout (*Salvelinus* spp.) (CVC, 2015b).

Black Creek is located approximately 200 m west of the Site K study area. The new watermain installation for Site K will require the crossing of a tributary of Black Creek approximately 640 m to the east along Forks of the Credit Road, and five crossings of Silver Creek along Hurontario Street towards the existing pump-house south of KWRMA. Another un-named tributary is located to the east of Site K, and will also need to be crossed. This tributary is approximately 100 m west of Hurontario Street along Forks of the Credit Road.

4.4 Wildlife

During the Site investigation no wildlife were observed or heard at both Sites aside from one Black capped Chickadee (*Poecile atricapillus*) at Site N. The lack of observations might be due to the fact both Sites had just experienced heavy rains prior to the Site investigation.

4.5 Species-at-Risk

An Endangered Species Screening information request was submitted to the Aurora District Office on October 18, 2015, with follow-up information provided on October 30. Information was received on November 3, 2015 and again on November 6 in relation to the project (Refer to Appendix A for consultation). Several SAR were identified within the vicinity of the study area for both Sites. Tables 8 and 9 below provide the species identified, their preferred habitat, and whether that habitat is present within the study area for both Sites, respectively.

Table 8: Species at Risk identified within the vicinity of Site N

Scientific Name	Common Name	ESA Listing	Preferred Habitat	Habitat Present within the Study Area
Recorded for the study area				
<i>Juglans cinerea</i>	Butternut ¹	END	Commonly associated with riparian habitat with rich moist, well-drained soils. They are intolerant to shade.	Potential habitat within the study area. During the site investigation conducted on October 16, no Butternut were observed.
<i>Sturnella magna</i>	Eastern Meadowlark ¹	THR	The Meadowlark generally prefers habitats with abundant grass and litter cover with less than five (5) percent low shrub or woody vegetation cover. It generally prefers areas that are 2.1 to 3.8 hectares in size.	The portion within the study area is too small to serve as Meadowlark habitat. There is quite a bit of shrub and tree cover that separates this small grass patch from a larger meadow patch to the west. The area close to the road would be considered low quality habitat, with a dense forb cover. In addition, this patch is in close proximity to Hurontario Street which received moderate levels of noise on a regular basis. This may deter birds from using this patch, especially as breeding habitat.

Scientific Name	Common Name	ESA Listing	Preferred Habitat	Habitat Present within the Study Area
<i>Dolichonyx oryzivorus</i>	Bobolink	THR	Prefers fields with a high proportion of grasses, particularly those commonly associated with hayfields and/or pastures. They tend to avoid forest edges with habitat ranges between 0.7 and 2.0 ha depending on quality of habitat.	Similarly to the Meadowlark, the portion within the study area is too small to serve as Bobolink habitat. There is quite a bit of shrub and tree cover that separates this small grass patch from a larger meadow patch to the west. The area close to the road would be considered low quality habitat, with a dense forb cover. In addition, this patch is in close proximity to Hurontario Street which received moderate levels of noise on a regular basis. This may deter birds from using this patch, especially as breeding habitat.
<i>Cardellina Canadensis</i>	Canada Warbler	SC	Breeds in a range of coniferous and deciduous, usually wet forest types that exhibit a well-developed dense shrub layer.	No suitable habitat within the study area.
<i>Chelydra serpentina</i>	Snapping Turtle ¹	SC	Snapping Turtles prefer shallow waters so they can bury themselves in the soft substrate and/or leaf litter.	No suitable habitat within the study area.
<i>Lampropeltis triangulum</i>	Milksnake ¹	SC	Prefers a variety of habitats including rocky outcrops, fields, forest edges. It is also typically found in old farm fields and barns within Southern Ontario	Potential habitat within the study area.
<i>Graptemys geographica</i>	Northern Map Turtle ¹	SC	Prefers rivers and lakeshores where it can bask on emergent rocks and fallen logs. In the winter it tends to hibernate in deep slow moving sections of rivers.	No suitable habitat within the study area.

Scientific Name	Common Name	ESA Listing	Preferred Habitat	Habitat Present within the Study Area
<i>Hirundo rustica</i>	Barn Swallow	THR	Prefer to build their nest cups almost exclusively on man-made structures such as open bards, bridges and culverts.	Potential habitat within the study area.
Records within the vicinity of the study area (~1km)				
<i>Clinostomus elongatus</i>	Redside Dace	END	Prefers pools and slow-moving areas of small streams and headwaters with a gravel bottom, and those areas associated with overhanging shrubs and grasses.	No suitable habitat within the study area. No watercourses run through the area.
<i>Ambystoma jeffersonianum</i>	Jefferson Salamander	END	Adults live in moist, loose soil under logs or leaf litter. The breed in woodland ponds. Once larvae leave the ponds they spend most of their time in burrows within the forest floor, and under rocks and stumps.	No suitable habitat within the study area.
<i>Myotis leibii</i>	Eastern Small-footed Myotis	END	In spring and summer they prefer to roost in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines or hollow trees. In the winter they hibernate mostly in caves and abandoned mines.	No suitable habitat within the study area.
<i>Myotis lucifugus</i>	Little Brown Myotis	END	Little Brown Bats tend to roost in trees and buildings, and hibernate most often in caves or abandoned mines that are humid and remain above freezing.	No suitable habitat within the study area.

Scientific Name	Common Name	ESA Listing	Preferred Habitat	Habitat Present within the Study Area
<i>Myotis septentrionalis</i>	Northern Myotis	END	Northern long-eared bat is typically associated with boreal forests choosing to roost under loose bark and in cavities of trees. They tend to hibernate mostly in caves or abandoned mines.	No suitable habitat within the study area.
<i>Hirundo rustica</i>	Barn Swallow	THR	Prefer to build their nest cups almost exclusively on man-made structures such as open bards, bridges and culverts.	Potential habitat within the study area.
<i>Chelydra serpentina</i>	Snapping Turtle	SC	Snapping Turtles prefer shallow waters so they can bury themselves in the soft substrate and/or leaf litter.	No suitable habitat within the study area.

¹ Additional information provided by MNRF on November 6th indicated that records note these species are recorded within 600 m of the study area, in addition to being within 1 km (Refer to Appendix A)

Source: Ministry of Natural Resources and Forestry Endangered Species Screening results November 3, 2015 (Refer to Appendix A); personal communication November 6, 2015 (Refer to Appendix A);

Government of Ontario: <https://www.ontario.ca/page/species-risk> (MNRF, 2015c)

Table 9: Species at Risk identified within the vicinity of Site K

Scientific Name	Common Name	ESA Listing	Preferred Habitat	Habitat Present within the Study Area
Recorded for the study area				
<i>Clinostomus elongatus</i>	Redside Dace	END	Prefers pools and slow-moving areas of small streams and headwaters with a gravel bottom, and those areas associated with overhanging shrubs and grasses.	No suitable habitat within the study area. No watercourses run through the area.
<i>Juglans cinerea</i>	Butternut ¹	END	Commonly associated with riparian habitat with rich moist, well-drained soils. They are intolerant to shade.	Potential habitat within the study area. During the site investigation conducted on October 16, no Butternut were observed.
<i>Sturnella magna</i>	Eastern Meadowlark	THR	The Meadowlark generally prefers habitats with abundant grass and litter cover with less than five (5) percent low shrub or woody vegetation cover. It generally prefers areas that are 2.1 to 3.8 hectares in size.	No suitable habitat within the study area.
<i>Dolichonyx oryzivorus</i>	Bobolink	THR	Prefers fields with a high proportion of grasses, particularly those commonly associated with hayfields and/or pastures. They tend to avoid forest edges with habitat ranges between 0.7 and 2.0 ha depending on quality of habitat.	No suitable habitat within the study area.
<i>Vermivora chrysoptera</i>	Golden-winged ¹ Warbler	SC	Prefers to nest in areas comprised of young shrubs (e.g. thickets, recent clearings, field edges, hydro corridors) surrounded by mature forest.	Potential habitat within the study area.
Records within the vicinity of the study area (~1km)				

Scientific Name	Common Name	ESA Listing	Preferred Habitat	Habitat Present within the Study Area
<i>Ambystoma jeffersonianum</i>	Jefferson Salamander	END	Adults live in moist, loose soil under logs or leaf litter. The breed in woodland ponds. Once larvae leave the ponds they spend most of their time in burrows within the forest floor, and under rocks and stumps.	No suitable habitat within the study area.
<i>Myotis leibii</i>	Eastern Small-footed Myotis	END	In spring and summer they prefer to roost in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines or hollow trees. In the winter they hibernate mostly in caves and abandoned mines.	No suitable habitat within the study area. No roost trees observed within proximity to the hydro corridor.
<i>Myotis lucifugus</i>	Little Brown Myotis	END	Little Brown Bats tend to roost in trees and buildings, and hibernate most often in caves or abandoned mines that are humid and remain above freezing.	No suitable habitat within the study area. No roost trees observed within proximity to the hydro corridor.
<i>Myotis septentrionalis</i>	Northern Myotis	END	Northern long-eared bat is typically associated with boreal forests choosing to roost under loose bark and in cavities of trees. They tend to hibernate mostly in caves or abandoned mines.	No suitable habitat within the study area. No roost trees observed within proximity to the hydro corridor.
<i>Chelydra serpentina</i>	Snapping Turtle ¹	SC	Snapping Turtles prefer shallow waters so they can bury themselves in the soft substrate and/or leaf litter.	No suitable habitat within the study area.

¹ Additional information provided by MNRF on November 6th indicated that records note these species are recorded within 500 m of the study area in addition to 1km (Refer to Appendix A)

Source: Ministry of Natural Resources and Forestry Endangered Species Screening results November 3, 2015 (Refer to Appendix A); personal communication November 6, 2015 (Refer to Appendix A);

Government of Ontario: <https://www.ontario.ca/page/species-risk> (MNRF, 2015c)

5. Key Natural Heritage Features

Key natural heritage features are defined as those that contain wetlands, fish habitat, woodlands, valleylands, habitat for endangered and threatened species, wildlife habitat, and ANSIs. All of these features are important for their environmental and social values as a legacy of the natural landscapes of an area as defined within the *Planning Act* and explained within the PPS (MMAH, 2014). A map of the key natural heritage features associated with Site N and Site K is illustrated on Figure 3a and 3b, respectively.

5.1 Surface Water Features, Wetlands and Fish Habitat

Wetlands are defined as areas that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface (Lee et al., 1998). A significant wetland is an area identified as provincially significant by the MNRF using evaluation procedures established by the province, as amended from time to time (Lee et al., 1998).

Fish habitats are identified as spawning grounds and nursery, rearing, food supply, and migration areas on which fish depend directly and or indirectly in order to carry out their life processes (Lee et al., 1998). Fish habitats commonly occur in many other natural heritage areas such as wetlands, valleylands, woodlands and ANSIs.

According to the MNRF Make a Natural Heritage Map two PSWs are located in proximity to Site N. The Credit Forks Wetland Complex is approximately 650 m to the west and the Little Credit River Wetland Complex is approximately 50 m to the south. An unevaluated wetland is also situated approximately 30 m to the west of Site N. Please refer to Figure 3a for the above wetland locations.

In addition, a PSW is located north (within 10 m) and east (within 100m) of the Site K study area. This PSW is also part of the Credit Forks Wetland Complex.

Please note a hydrological study is being conducted on Site N by Geo Kamp Limited and will be provided under a separate cover. It is understood that pump tests were to be conducted one at a time as defined by the hydrological scope of the project. This hydrological study involves conducting a pump test in order to assess draw down effects on nearby hydrological features (i.e., Little Credit River Wetland Complex). Additionally, a series of piezometers have also been installed to monitor groundwater levels in the area. The results of this pump test will reveal whether or not Site N is a viable solution and/or the preferred location. If it turns out that it is not viable, a pump test will be initiated at Site K to assesses whether it is a viable solution.

According to information provided by the MNRF in their Endangered Species Screening information request record received on November 3 (Appendix A) the following key natural heritage features as they pertain to surface water, wetlands and fish habitat within the vicinity of both Site N and K include:

- Contributing Redside Dace (END) Habitat (Credit River);
- Provincially Significant Little Credit River Wetland Complex;
- Provincially Significant Credit Forks Wetland Complex;
- Provincially Significant Credit Forks Lowland Life Science ANSI; and,
- Other Identified Wetlands.

These features are illustrated on Figure 3a and 3b for the respective study areas for each Site (N & K).

As noted in Section 4.3 there are no watercourses within the boundaries of Site N or Site K, but fish habitat is located as close proximity (within 1km) of both Site N and Site K. Although it was not part of the scope of this NEA, Site K will require the crossing of six watercourses in order to complete the watermain extension.

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Figure 3a: Natural Heritage Features – Site K

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Figure 3b: Natural Heritage Features – Site K

5.2 Woodlands

Woodlands are treed areas that provide environmental or economic benefits such as erosion prevention, water retention, recreation and the sustainable harvest of woodland products. Woodlands include treed areas, woodlots or forested areas, and vary in their level of significance (MMAH, 2014). Woodland significance is typically determined by evaluating key criteria which relate to woodland size, ecological function, uncommon woodland species, and economic and social value.

Larger woodlands are more likely to contain a greater diversity of plant and animal species and communities than smaller woodlands, and are better buffered against edge effects or agricultural and urban activities.

Woodlands are adjacent to Site N and are within the study area for Site K. Both of these woodlands are quite large and contain areas of interior woodland. According to criteria outlined in the Peel-Caledon Significant Woodlands and Significant Wildlife Habitat Study (2009), these woodlands would be considered significant as each is within 100 m to a significant feature (i.e., name the PSW Provincially Significant Wetland and/or ANSI).

According to information provided by the MNR in their ESA Screening Record received on November 3 (Appendix A) the following key natural heritage features as they pertain to significant woodlands within the vicinity of both Site N and K include:

- Regionally Significant Inglewood Forest

5.3 Valleylands

The PPS (MMAH, 2014) identifies significant valleylands as a “natural area that occurs in a valley or landform depression that has water” for some period of the year.

According to the Official Plans for both the Region and Town, there are no valleylands mapped within Site N or Site K.

5.4 Areas of Natural and Scientific Interest

Provincially significant ANSIs are defined as areas of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education. The ANSIs are divided into two (2) types: life science ANSI and earth science ANSI. Specifically, a life science ANSI can contain specific types of forests, valleys, prairies and wetlands of ecological importance. That is, they represent examples that are relatively undisturbed in terms of vegetation community and/or landforms associated with that vegetation. Those listed as provincially significant life science ANSIs are the best examples of the particular natural heritage features in the province. In contrast, earth science ANSIs are representative examples of geological processes in Ontario (i.e., exposed bedrock on road cuts, fossils and landforms).

The Credit Forks Lowland Life Science ANSI is located approximately 1.3 km north west of Site N. This same ANSI is located east, west, north and south of Site K at the respective distances (~100km east), (~360km west), (~240km north) and (~140km south). In addition,

according to information provided by the MNRF on November 6 (Appendix A) and CVC on November 20, 2015 (Appendix A), the Site N survey area just crosses into the candidate ANSI at the Caledon Trailway identified as Little Credit Headwaters Candidate ANSI.

5.5 Wildlife Habitat

Wildlife habitat is defined as areas where plants, animals and other organisms live and are able to find adequate amounts of food, water, shelter and space needed to sustain their populations. Specific wildlife habitat of concern may include areas where species concentrate at a point in their annual life cycle, and those areas which are important to migratory and non-migratory species.

A wildlife habitat is referred to as significant if it is deemed ecologically important in terms of feature, function, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or Natural Heritage System (MMAH, 2014). According to the eco criterion schedules for 6E (2015) significant wildlife habitat may consist of:

- Seasonal concentration areas;
- Rare vegetation communities;
- Specialized habitat; and,
- Habitat for species of special conservation.

Seasonal Concentration Areas may consist of Waterfowl Stopover and Staging Areas, Bat Hibernacula, Reptile Hibernacula.

Due to the high level of disturbance (i.e., noise due to its close proximity to the road) seasonal concentration areas associated with Site N were observed to be absent. Although the Site visit was conducted out-of-season, and ELC communities for some concentration areas were present, they would likely be too small to provide sufficient area.

Due to the location of Site N relative to undisturbed woodland, and PSWs, the woodland portion of the study area may be connected to those associated with seasonal concentration areas such as bat roosting, or raptor wintering areas (Refer to Figure 1a for study area).

Rare Vegetation Communities are those that contain provincially rare vegetation communities, or those which are rare to the area. Based on a review of the vegetation observed, none were considered rare to the Region of Pee, CVC or the GTA (CVC, 2002). Based on the Site investigation and information review, Site N does not contain any rare vegetation communities.

Due to the location of Site K and its association with expansive woodlands (forests), it is associated with old growth forests, which are deemed rare vegetation communities.

Specialized Habitats consist of those which support wildlife that have highly specific habitat requirements (e.g., interior forest habitat), those areas that contain high species and community diversity and those which provide habitat that can greatly enhance species survival (MNRF, 2000).

No specialized habitats are associated with Site N due to its proximity to the ROW, and the notion that it is already associated with disturbed areas of the existing pump-hose and ditches. It is expected that due to the Sites location relative to the KWRMA, Life Science ANSIs, and PSWs, that specialized habitat is located within 100 m. However implementation of proper mitigation measures will limit negative effects.

Given the characteristics of Site K, specialized habitats may consist of woodland raptor nesting habitat, amphibian breeding (woodland), and seeps and springs. Additional field work would be required to ascertain presence absence of these habitats if Site K is chosen as the preferred option.

Habitats for Species of Conservation Concern are those that contain species that are rare or substantially declining, or have high percentage of their global population in Ontario and are rare or uncommon in the planning area. These habitats are often associated with special concern species as identified under the ESA or the Species-at-Risk Ontario list.

Due to the location of Site N, it does not contain habitat for species of conservation concern. It is expected that due to its location relative to the KWRMA, Life Science ANSIs, and PSWs (within 100m) it is expected that habitat for species of conservation concern may be within these noted areas. However implementation of proper mitigation measures will limit negative effects.

Site K is likely associated with woodland area-sensitive bird breeding habitat, however it is noted that no formal bird surveys were conducted as part of this investigation. The woodland portion within the study area is part of the edge, and is not directly considered interior woodland habitat. However, the loss of this edge, will contribute to a loss of interior forest habitat that these bird species may depend on if present. Again as no formal surveys were conducted, however, based upon information provided by the MNRF, special concern species are known to occur within 1km of the Site. As such, it is inferred that these ecosites exist.

5.5.1 Wildlife Movement Corridors

Wildlife movement corridors are habitats that link two (2) or more other wildlife habitats that are critical to the maintenance of a population of a particular species or group of species. The key ecological function of wildlife movement corridors is to enable wildlife to move to and between areas of significant habitat or core natural areas with minimum mortality. Wildlife movement corridors can provide critical links between shelter, feeding, watering, growing and nesting locations (Lee *et al.*, 1998).

Wildlife and/or habitat corridors can help increase genetic diversity and aid in the re-establishment of populations after random events such as fires or disease outbreaks. These corridors can help to increase biodiversity and population stabilization (Lee *et al.*, 1998).

According to the Significant Wildlife Habitat Ecoregion 6E Criterion Schedule animal movement corridors to be considered for both Site N and Site K include amphibian and deer movement corridors (MNRF, 2012).

Based upon Site N's existing characteristics, it likely does not serve as an amphibian or deer movement corridor. Site K however, is situated adjacent to wetlands and woodlands containing mixed deciduous and coniferous species. As such, it may serve as an amphibian and deer movement corridor. However, it is noted that no information on deer corridors was received from the MNRF in relation to Site K.

6. Identification and Assessment of Potential Impacts

As noted previously, two site alternatives (Site N and Site K) are being assessed to confirm the preferred location to for the design, construction and operation of the new Inglewood Well. A summary of the potential impacts associated with the two sites from a Natural Environment perspective is provided in Table 10.

Table 10: Comparison of potential natural environment impacts associated with the evaluation of alternatives for the new Inglewood Well

Proposed Options	EA Proposed Works	Natural Heritage Features	Potential Impacts	EA Recommendations
Site N	Installation of a well and watermain connection to existing pump-house.	<ul style="list-style-type: none"> Greenbelt Natural Heritage System Niagara Escarpment Little Credit River Candidate ANSI 	<ul style="list-style-type: none"> Tree and shrub loss Loss of vegetation (CUM1; MAM2, MEGM3, WODM4-5, THDM4) Breeding birds using surrounding trees and vegetation for nesting may be disturbed 	<ul style="list-style-type: none"> Restoration of the Site to equal or better condition as existing. Loss of trees and shrubs within woodlands should be compensated on a 3:1 area ratio. Avoid vegetation clearing during the Migratory Breeding Bird window (April 1st to August 31st). Implement methods to avoid serious impacts to watercourses (e.g., using trenchless methodology for watermain installation). Implement erosion and sediment control plan. Proper erosion and sediment control fencing to protect adjacent hydrological features (ponds and wetlands), woodlands and life science ANSIs.
Site K (a)	Installation of a well and construction of a pump-house. Installation of a new watermain that will run along the north portion of the Forks of the Credit Road, down Hurontario Street to the pump-house at 15964 Hurontario Street just south of the Ken Whillans Resource Management Area.	<ul style="list-style-type: none"> Greenbelt Natural Heritage System Niagara Escarpment Provincially Significant Credit Forks Wetland Complex Provincially Significant Credit Forks Lowland ANSI Regionally significant woodlands Potential wildlife and significant wildlife habitat Black Creek and Silver Creek Crossings Fish habitat (watermain portion). 	<ul style="list-style-type: none"> Tree and shrub loss Loss of vegetation (FOMM7 and THDM4 – only for the proposed location of the new well and pump-house; additional impact to other vegetation communities associated with the ROW along Forks of the Credit Road, and Hurontario Street) Breeding birds using surrounding trees and vegetation for nesting may be disturbed Potential bat habitat may be impacted due to construction 	<ul style="list-style-type: none"> Restoration of the Site to equal or better condition as existing. Loss of trees within the ROW should be compensated at a 3:1 ratio. Those trees and shrubs within woodlands should be compensated on a 3:1 area ratio. Avoid vegetation clearing during the Migratory Breeding Bird window (April 1st to August 31st). Implement methods to avoid serious impacts to watercourses (e.g. using trenchless methodology for watermain installation). Implement erosion and sediment control plan. Proper erosion and sediment control fencing to protect adjacent hydrological features (ponds and wetlands), woodlands.

Proposed Options	EA Proposed Works	Natural Heritage Features	Potential Impacts	EA Recommendations
Site K (b)	Installation of a well and construction of a pump-house. Installation of a new watermain that will run along the south portion of the Forks of the Credit Road, down Hurontario Street to the pump-house at 15964 Hurontario Street just south of the Ken Whillans Resource Management Area.	<ul style="list-style-type: none"> • Greenbelt Protected Countryside • Niagara Escarpment • Provincially Significant Credit Forks Wetland Complex • Provincially Significant Credit Forks Lowland ANSI • Regionally significant woodlands • Potential wildlife and significant wildlife habitat • Black Creek and Silver Creek Crossings • Fish habitat (watermain portion). 	<ul style="list-style-type: none"> • Tree and shrub loss • Loss of vegetation (FOMM7 & THDM4 – only for the proposed location of the new well and pump-house; additional impact to other vegetation communities associated with the ROW along Forks of the Credit Road, and Hurontario Street) • Breeding birds using surrounding trees and vegetation for nesting may be disturbed • Potential bat habitat may be impacted due to construction 	<ul style="list-style-type: none"> • Restoration of the Site to equal or better condition as existing. • Loss of trees within the ROW should be compensated at a 3:1 ratio. Those trees and shrubs within woodlands should be compensated on a 3:1 area ratio. • Avoid vegetation clearing during the Migratory Breeding Bird window (April 1st to August 31st). • Implement methods to avoid serious impacts to watercourses (e.g. using trenchless methodology for watermain installation). • Implement erosion and sediment control plan. • Proper erosion and sediment control fencing to protect adjacent hydrological features (ponds and wetlands), woodlands.

6.1 Recommended Alternative

Based on the evaluation and assessment of alternatives utilizing natural features criteria, impacts associated with Site N can be avoided using Best Management Practices (BMPs), pending the results of the current pump test. Depending on methods used to install the new watermain, if trenchless, vegetation loss can be minimal, and there is no requirement for building a new pump house.

For Site K however, both a and b will have moderate-major impacts to the environment, as it will require partial clearing of significant woodlands (forests), and may have potential impact to wetlands, watercourses and wildlife habitat.

Therefore, pending the results of the current pump test, Site N is the preferred option for the location of the new Inglewood Well. This is due to the notion that the majority of this area is located within the road easement (previously disturbed), the watermain installation will be shorter (and potentially trenchless), and the area of impact is situated in an area that is susceptible to higher disturbance (i.e., within an existing road ROW – higher winds).

7. Mitigation Measures

This study has identified key natural features at and around both Site N and Site K. As the project progresses to detailed design, mitigation measures that are site-specific should be developed in order to protect both terrestrial and aquatic environments and their respective ecological function. Where possible, avoidance measures should be implemented before resorting to mitigation and lastly rehabilitation to minimize negative effects on natural features. If the mitigation measures and/or BMPs are implemented, they will likely reduce the possible effects from the proposed development.

7.1 Construction Timing

Construction timing should take into consideration natural features, more specifically wildlife. The federal *Migratory Bird Convention Act (MBCA)* protects migratory bird populations by regulating potentially harmful anthropogenic activities. Bird species that are protected are listed under Article I of the *MBCA*, are native or naturally occurring in Canada, and are species that are known to occur regularly in Canada. This includes most native bird species in Canada. The *MBCA* prohibits harming and/or killing of listed bird species under the *MBCA* and/or destroying or collecting their eggs, nests or nest shelters.

Vegetation removal should not take place during the core local breeding bird season which is established from April 1st to August 31st, as protected by the *Migratory Birds Convention Act, 1994*. If clearing should take place within this timeframe, a qualified avian biologist should conduct nest searches prior to removal.

7.2 Erosion and Sediment Control

No development, construction or grading should occur outside of the development envelope once it is confirmed during the detailed design. Specifically for Site K, impact to the wetland which is in close vicinity (~50 m or less) of the study area should be limited as this wetland is part of the Provincially Significant Credit Forks Wetland Complex.

For Site N, erosion and sediment control measures (ESC) measures should be implemented to avoid impacts to the Little Credit Headwaters Candidate ANSI, as the Site area just crosses into the ANSI at the Caledon Trailway.

Efforts should be made to reduce areas of exposed soils, and all types of erosion and sediment transport during staging and construction. Erosion and sediment controls should be installed prior to construction activities, remain through the entire duration, and monitored in order to ensure sufficient controls are in place. All ESC measures (e.g. heavy-duty silt fence, coir logs etc.) should be reflected on all construction drawings with notes on requirements.

7.3 Tree Clearing Protection and Replacement

To address impacts to trees in the project area, a tree inventory and preservation plan is recommended at the detailed design stage for Site K.

It is expected that tree loss can be limited and/or avoided at Site N if trenchless methods are used.

The removal of trees and/or vegetation can be mitigated by planting trees in a suitable location, preferably within the same forest and/or woodland community. Tree and vegetation clearing should be limited as much as possible and follow the Town of Caledon Woodland By-Law No. 2000-100, which prohibits or regulates the destruction of trees in woodlands.

All vegetation loss, including woodlands / forests should be compensated at a 3:1 ratio. Specifically, removal of street trees should be replaced at a 3:1 ratio, while forested areas should be replaced at a 3:1 ratio based on the area lost. Additional recommendations are as follows:

- The Contractor should be made aware of tree protection measures and no-go zones for material placement and vehicle use;
- Tree removal should not take place during the core local breeding bird season which is established from April 1st to August 31st, as protected by the MBCA (1994). If clearing should take place within this timeframe, a qualified avian biologist should conduct nest searches prior to removal;
- Transportation, handling, and storing of petroleum products and other chemicals should not take place within the areas of the new edge;
- Temporary lay-down areas and storage of materials should not be within the areas of the new edge.

7.4 Wildlife Protection Measures

Efforts should be made for the protection of wildlife during construction, using erosion fencing. Reference should be made to the MNR *Best Practices Technical Note on Reptile and Amphibian Exclusion Fencing* (2013), and the MNR *Species at Risk Handling Manual* (2011).

All fencing should be periodically monitored by an environmental monitor who is trained in proper handling of these species should they be encountered in the work area. If a migratory bird happens to nest within the work area, measures should be taken to ensure protection of nest is established such that the fledglings can successfully hatch and requirements under the *MBCA* are met. Additional guidance on the species observed should be sought from the Canadian Wildlife Service.

8. Permits and Approvals

Based on a preliminary assessment, it is expected that the following permits and approvals will be warranted for this project for both Site locations:

- Credit Valley Conservation Permit under Ontario Regulation 160/06;
- Niagara Escarpment Development Permit;
- Ministry of the Environment and Climate Change Permit-to-take-Water;
- Municipal Permits and Approvals relating to Site Plans and Buildings etc.; and,
- Approval and/or Permitting under the ESA.

Please note this list is not exhaustive, and additional permits and approvals may be required depending on actual design (e.g. DFO self-assessment and potential approval, and/or wildlife scientific collectors permit for Site K). Also, additional work may be required during detailed design to ascertain specific permit/approval requirements. This relates more specifically to SAR through the submission of an Information Gathering Form. It is expected that due to the abundance of natural features in close proximity to Site K, additional site surveys will be required to address impacts to the environment and any potential wildlife habitat and SAR.

9. Summary

A summary of key recommendations and environmental constraints are provided below.

- Based upon the information collected and reviewed, coupled with the Site investigations, Site N is the preferred option for siting the new Inglewood Well from a Natural Environment perspective;
- Vegetation and tree clearing should be kept to a minimum in order to reduce impacts to natural heritage features at both Sites N and K, more specifically at Site K;
- All vegetation clearing should be mindful of and aim to avoid breeding bird, and fisheries timing windows;
- The watermain should be installed using methods that help to mitigate negative impacts (e.g., trenchless technology);



- Every effort should be taken to implement the mitigation measures and EA recommendations outlined in this report (e.g., ESC measures); and,
- Due to the lack of dedicated surveys as part of this study and seasonal constraints, it is recommended that due to the sensitivity of Site K, that dedicated wildlife surveys be conducted during detailed design.

10. References

- Credit Valley Conservation (CVC). 2015a. Fish of the Credit. Accessed November 16, 2015.
<http://www.creditvalleyca.ca/watershed-science/plants-animals-communities/plants-and-animals-of-the-credit/fish-of-the-credit-profiles/>
- Credit Valley Conservation (CVC). 2015b. More about Ken Whillans Resource Management Area. Accessed November 16, 2015.
<http://www.creditvalleyca.ca/enjoy-the-outdoors/conservation-areas/ken-whillans-resource-management-area/more-about-ken-whillans-resource-management-area/>
- Credit Valley Conservation (CVC). 2014. Regulation Mapping. Accessed October 12, 2015. Sourced from CVC, Google Maps and © Queen's Printer for Ontario and its licensors.
<http://www.creditvalleyca.ca/planning-permits/regulation-mapping/>
- Credit Valley Conservation (CVC). 2002. Plants of the Credit River Watershed.
- Hoffman, D.W. and N.R. Richards. 1953. Soil Survey of Peel County. Report No. 18 of the Ontario Soil Survey. November 1953. Experimental Farms Services, Canada Department of Agriculture and the Ontario Agricultural College
- Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. Ecological Land Classification for Southern Ontario: First Approximation and Its Application. Ontario Ministry of Natural Resources, Southcentral Science Section, Science Development and Transfer Branch. SCSS Field Guide FG-02.
- Ministry of Municipal Affairs and Housing (MMAH). 2014. Provincial Policy Statement.
- Ministry of Natural Resources and Forestry (MNRF). 2015a. Make a Natural Heritage Map. Accessed November 2, 2015. Available online:
<https://www.ontario.ca/environment-and-energy/make-natural-heritage-area-map>
- Ministry of Natural Resources and Forestry (MNRF). 2015b. Make a Topographic Map. Accessed November 2, 2015. Available online:
<https://www.ontario.ca/environment-and-energy/make-natural-heritage-area-map>
http://www.gisoeapp.lrc.gov.on.ca/matm/Index.html?site=Make_A_Topographic_Map&viewer=MATM&locale=en-US
- Ministry of Natural Resources and Forestry. 2015c. How to get an Endangered Species Act permit or authorization. Last updated October 2, 2015. Accessed November 16, 2015.
<http://www.ontario.ca/page/how-get-endangered-species-act-permit-or-authorization>
- Ministry of Natural Resources and Forestry. 2013. Reptile and Amphibian Exclusion Fencing: Best Practices, Version 1.0. Species at Risk Branch Technical Note. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. 11 pp.
- Ministry of Natural Resources and Forestry. 2012. Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E. January 2015.

- Ministry of Natural Resources and Forestry. 2011. Ontario Species at Risk Handling Manual: For Endangered Species Act Authorization Holders. 34pp.
- Ministry of Natural Resources and Forestry. 2010. Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second Edition. Toronto: Queen's Printer for Ontario. 248 pp.
- Ministry of Natural Resources and Forestry. 2000. Significant wildlife habitat technical guide. 151p.
- Niagara Escarpment Commission (Ontario). 2012. Niagara Escarpment Plan. Accessed November 16, 2015.
<http://www.escarpment.org/landplanning/plan/index.php>
- North-South Environmental Inc., Dougan & Associates and Sorensen Gravely Lowes. 2009. *Peel-Caledon Significant Woodlands and Significant Wildlife Habitat Study*. Report prepared for the Region of Peel and the Town of Caledon, Ontario. xi + 187 pp +ap
- Region of Peel Official Plan. 2014. Accessed November 2, 2015.
<https://www.peelregion.ca/planning/officialplan/download.htm>
- Town of Caledon Official Plan. 2015. Accessed November 2, 2015
http://www.caledon.ca/en/townhall/officialplan.asp?_mid_=15715



Figure 1a. Project Study Area - Site N

Key

- Site N Project Study Area
- Site N Proposed Watermain
- Site N Proposed Well
- Waterbody



*The information displayed is derived from sources with varying accuracies and all boundaries should therefore be considered approximate

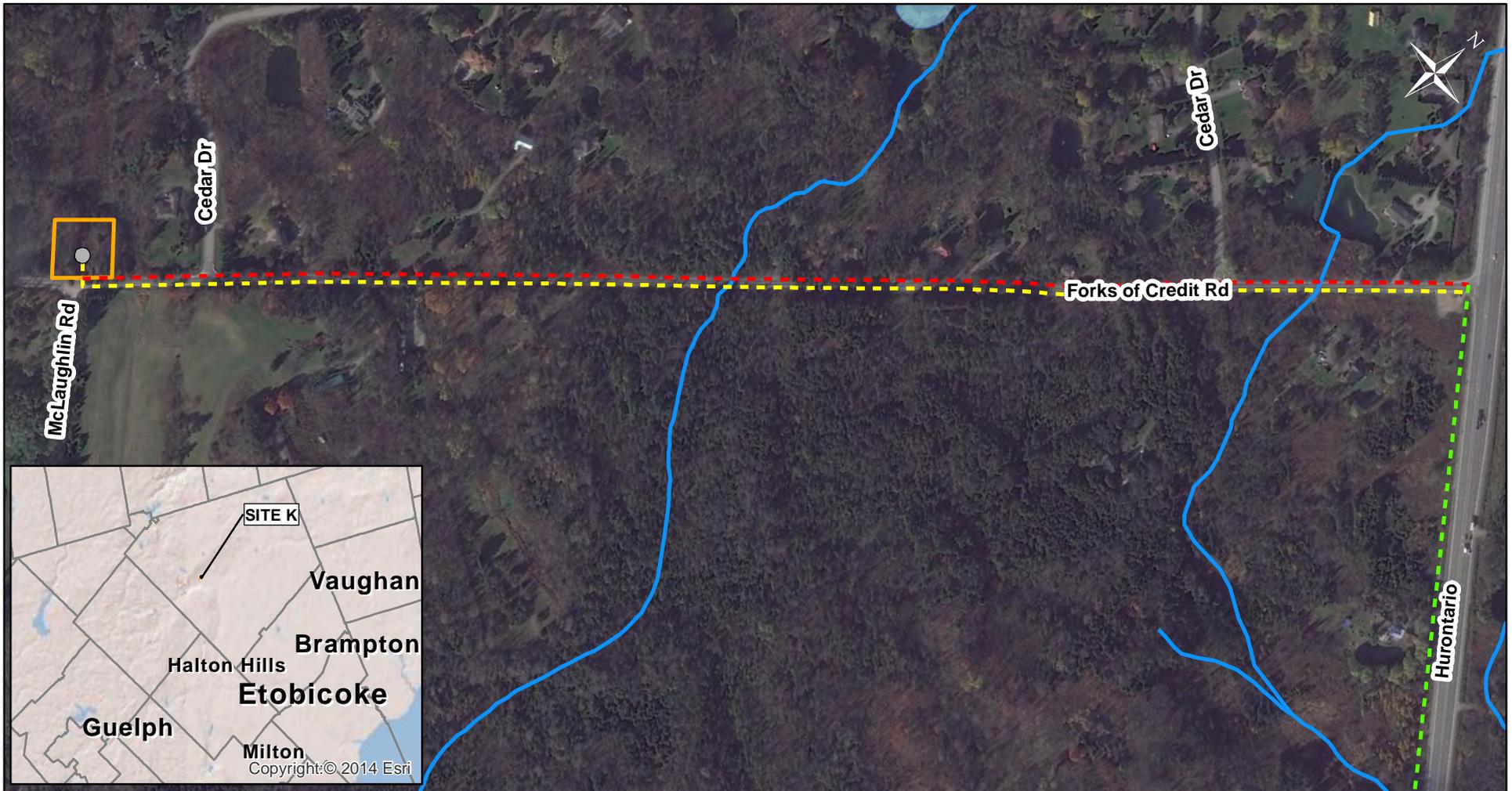


Figure 1b. Project Study Area - Site K

Key

- Site K Project Study Area
- Site K Proposed North Watermain
- Site K Proposed Watermain
- Waterbody
- Site K Proposed Well
- Site K Proposed South Watermain
- Watercourse

0 112.5 225 450 Metres

*The information displayed is derived from sources with varying accuracies and all boundaries should therefore be considered approximate



Figure 2a. Ecological Land Classification Map - Site N

Key

- | | | |
|---------------------------|--|---------------------------------|
| Site N Project Study Area | Dry-Fresh Deciduous Regeneration Thicket Ecosite | Manicured Lawn |
| Site N Proposed Well | Dry-Fresh Deciduous Woodland Ecosite | Mineral Cultural Meadow Ecosite |
| Waterbody | Dry-Fresh Graminoid Meadow Ecosite | Mineral Meadow Marsh Ecosite |
| Site N Proposed Watermain | Fresh-Moist Deciduous Woodland Ecosite | Transportation & Utilities |



*The information displayed is derived from sources with varying accuracies and all boundaries should therefore be considered approximate

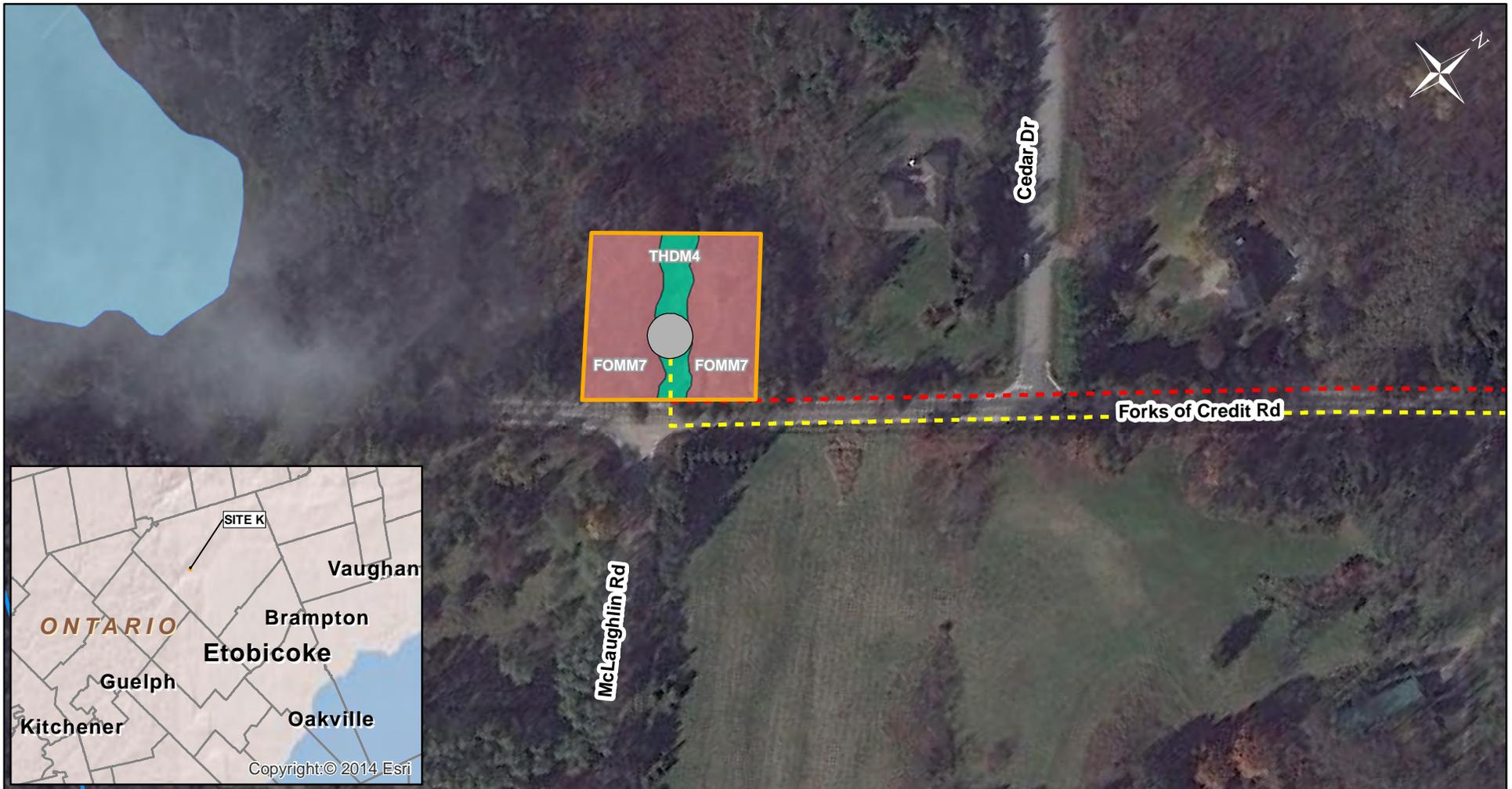
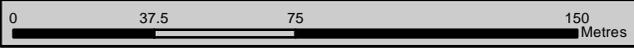


Figure 2b. Ecological Land Classification Map - Site K

Key

- Site K Project Study Area
- Site K Proposed North Watermain
- Fresh-Moist Cedar-Hardwood Mixed Forest Ecosite
- Dry-Fresh Deciduous Regeneration Thicket Ecosite
- Site K Proposed Well
- Site K Proposed South Watermain



*The information displayed is derived from sources with varying accuracies and all boundaries should therefore be considered approximate

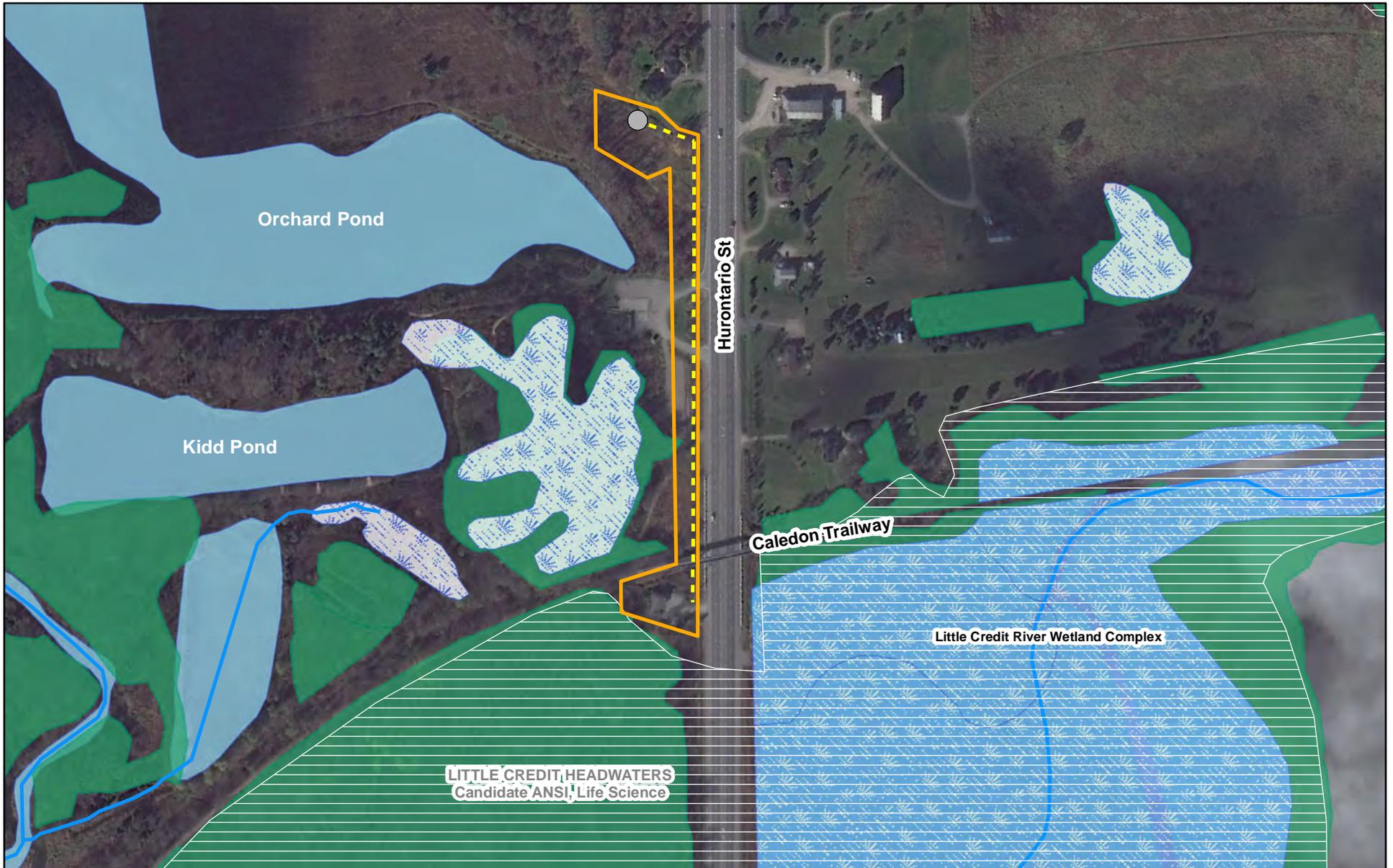


Figure 3a. Natural Heritage Features Map - Site N

Key

- Site N Project Study Area
- Site N Proposed Watermain
- Waterbody
- Watercourse
- Wetland- Evaluated Provincial
- Wetland- Not evaluated per OWES
- Site N Proposed Well
- Woodlands
- Candidate ANSI, Life Science



*The information displayed is derived from sources with varying accuracies and all boundaries should therefore be considered approximate

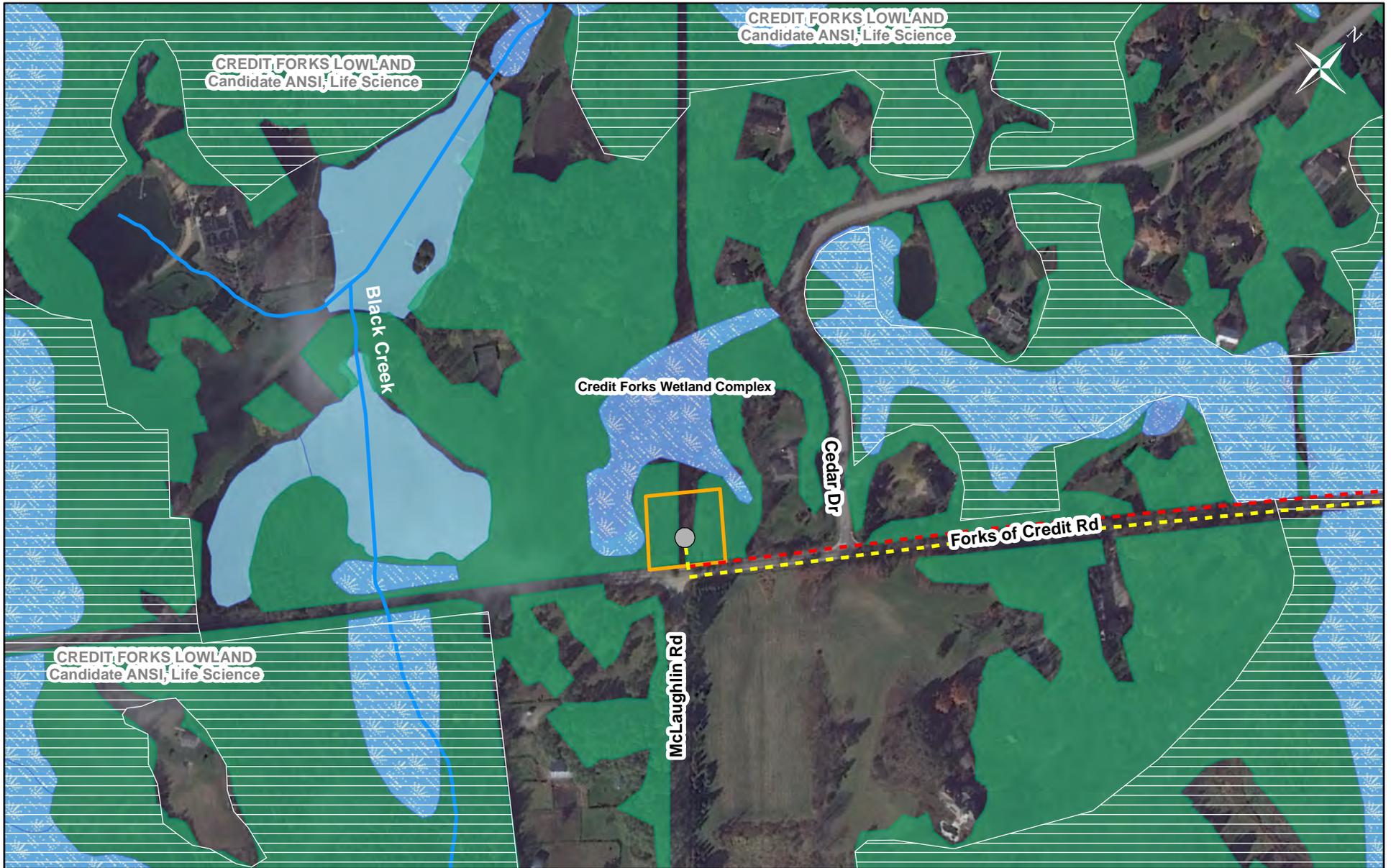


Figure 3b. Natural Heritage Features Map - Site K

Key

- | | | | | |
|---------------------------|---------------------------------|-----------|-------------------------------|---------------------------------|
| Site K Project Study Area | Site K Proposed South Watermain | Woodlands | Watercourse | Wetland- Not evaluated per OWES |
| Site K Proposed Well | Site K Proposed North Watermain | Waterbody | Wetland- Evaluated Provincial | Candidate ANSI, Life Science |



*The information displayed is derived from sources with varying accuracies and all boundaries should therefore be considered approximate



APPENDIX A

Agency Consultation

Nov 3, 2015

Melissa Torchia
Hatch Mott MacDonald
5035 South Service Road, Sixth Floor
Burlington, ON L7L 6M9
Melissa.Torchia@hatchmott.com

Re: Request for Information for Site N (X: 585508, Y: 4851715) Schedule B Class EA for well in Inglewood, ON

Dear Ms. Torchia,

In your email dated Oct 30, 2015 you requested information on natural heritage features and element occurrences occurring on or adjacent to the above mentioned location. There are Species at Risk recorded for your study area.

Butternut	END
Bobolink	THR
Eastern Meadowlark	THR
Barn Swallow	THR
Northern Map Turtle	SC
Snapping Turtle	SC
Canada Warbler	SC
Milksnake	SC

Additionally, the species listed below have the potential to occur in your study and may require further assessment or field studies to determine presence. We have records of the following species within the vicinity of your study area:

Redside Dace	END
Jefferson Salamander	END
Eastern Small-footed Myotis	END
Little Brown Myotis	END
Northern Myotis	END
Barn Swallow	THR

Golden-winged Warbler	SC
Eastern Wood-pewee	SC
Wood Thrush	SC

There are natural heritage features recorded in the vicinity of your area:

- Contributing Redside Dace (END) Habitat (Credit River)
- Provincially Significant Little Credit River Wetland Complex
- Provincially Significant Credit Forks Wetland Complex
- Provincially Significant Credit Forks Lowland
- Regionally Significant Inglewood Forest
- Other Identified Wetlands

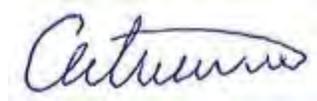
These species may receive protection under the *Endangered Species Act 2007* and thus, an approval from MNRF may be required if the work you are proposing could cause harm to these species or their habitats. If the Species at Risk in Ontario List is amended, additional species may be listed and protected under the *ESA 2007* or the status and protection levels of currently listed species may change.

Absence of information provided by MNRF for a given geographic area, or lack of current information for a given area or element, does not categorically mean the absence of sensitive species or features. Many areas in Ontario have never been surveyed and new plant and animal species records are still being discovered for many localities. For these reasons, the MNRF cannot provide a definitive statement on the presence, absence or condition of biological elements in any part of Ontario.

This species at risk information is highly sensitive and is not intended for any person or project unrelated to this undertaking. Please do not include any specific information in reports that will be available for public record. As you complete your fieldwork in these areas, please report all information related to any species at risk to our office. This will assist with updating our database and facilitate early consultation regarding your project.

If you have any questions or comments, please do not hesitate to contact ESA.aurora@ontario.ca.

Sincerely,



Catherine Wisniowski
Wildlife Technician
Ontario Ministry of Natural Resources and Forestry, Aurora District

Nov 3, 2015

Melissa Torchia
Hatch Mott MacDonald
5035 South Service Road, Sixth Floor
Burlington, ON L7L 6M9
Melissa.Torchia@hatchmott.com

Re: Request for Information for Site K: (X: 582878, Y: 4852744) Schedule B Class EA for new well in Inglewood, ON.

Dear Ms. Torchia,

In your email dated Oct 30, 2015 you requested information on natural heritage features and element occurrences occurring on or adjacent to the above mentioned location. There are Species at Risk recorded for your study area.

Redside Dace	END
Butternut	END
Eastern Meadowlark	THR
Bobolink	THR
Golden-winged Warbler	SC

Additionally, the species listed below have the potential to occur in your study and may require further assessment or field studies to determine presence. We have records of the following species within the vicinity of your study area:

Jefferson Salamander	END
Eastern Small-footed Myotis	END
Little Brown Myotis	END
Northern Myotis	END
Snapping Turtle	SC

There are natural heritage features recorded in the vicinity of your area:

- Contributing Redside Dace (END) Habitat (Credit River)
- Provincially Significant Little Credit River Wetland Complex

- Provincially Significant Credit Forks Wetland Complex
- Provincially Significant Credit Forks Lowland
- Regionally Significant Inglewood Forest
- Other Identified Wetlands

These species may receive protection under the *Endangered Species Act 2007* and thus, an approval from MNRF may be required if the work you are proposing could cause harm to these species or their habitats. If the Species at Risk in Ontario List is amended, additional species may be listed and protected under the *ESA 2007* or the status and protection levels of currently listed species may change.

Absence of information provided by MNRF for a given geographic area, or lack of current information for a given area or element, does not categorically mean the absence of sensitive species or features. Many areas in Ontario have never been surveyed and new plant and animal species records are still being discovered for many localities. For these reasons, the MNRF cannot provide a definitive statement on the presence, absence or condition of biological elements in any part of Ontario.

This species at risk information is highly sensitive and is not intended for any person or project unrelated to this undertaking. Please do not include any specific information in reports that will be available for public record. As you complete your fieldwork in these areas, please report all information related to any species at risk to our office. This will assist with updating our database and facilitate early consultation regarding your project.

If you have any questions or comments, please do not hesitate to contact ESA.aurora@ontario.ca.

Sincerely,



Catherine Wisniowski
Wildlife Technician
Ontario Ministry of Natural Resources and Forestry, Aurora District

Torchia, Melissa

From: ESA Aurora (MNRF) <ESA.Aurora@ontario.ca>
Sent: Friday, November 06, 2015 12:24 PM
To: Torchia, Melissa
Cc: ESA Aurora (MNRF)
Subject: RE: Information Request Schedule B EA - Inglewood Well

Hello Ms. Torchia,

The MNRF would advise the following measures for both Site K and N Schedule B EAs:

- Trying to limit tree removal (staying as close to the road as possible)
- Removing trees within the specified timing windows (outside of the breeding bird window)
- Avoiding impacts to the Little Credit Headwaters Candidate ANSI - the Site N survey area just crosses into the ANSI at Caldeon Trailway.
- Isolating the work area with fencing (at both sites) to prevent turtle and snakes from entering construction sites.
- Specifically for site K, please try to limit impact to the wetland which is in close vicinity (~50 m or less) of the study area. This wetland is part of the Provincially Significant Credit Forks Wetland Complex.

Regarding the definition of 'vicinity' you asked about, generally the screening is done for a 1km vicinity. However, for Site N the following species are in the vicinity of ~600 m or less: Butternut (END), Eastern Meadowlark (THR), Northern Map Turtle (SC), Snapping Turtle (SC), Milksnake (SC)

For Site K, the following species are in the vicinity of ~500m or less: Butternut (END), Snapping Turtle (SC), Golden-winged Warbler (SC).

New plant and animal species records are still being discovered for many localities. For these reasons, the MNRF cannot provide a definitive statement on the presence, absence or condition of biological elements in any part of Ontario.

Hope this helps,
Thank-you,

Catherine Wisniowski

*Wildlife Technician
Aurora District
Ontario Ministry of Natural Resources and Forestry*

50 Bloomington Road
Aurora, ON L4G 0L8
Phone: 905-713-6048
Email: catherine.wisniowski@ontario.ca

From: Torchia, Melissa [mailto:Melissa.Torchia@hatchmott.com]
Sent: November-03-15 11:05 AM
To: ESA Aurora (MNRF)
Subject: RE: Information Request Schedule B EA - Inglewood Well

Hello,

As it stands now, as this is only the EA phase and not detailed design the exact methodologies used for the installation of the watermain connections from the new permanent well is unknown. We are looking for advice from MNRF for potential requirements on methods that would need to be implemented, and other information that might help to identify and compare the two proposed alternatives (i.e. which may have more natural heritage constraints). Again as noted within the information request form, Site N will only involve the creation of the new permanent well (pump test on a installed well is currently being undertaken with CVC), and a watermain extension to the existing pumphouse. Site K however, will require a new pump house along with the watermain and new permanent well.

Based on a quick review of the species noted within the information request, can you possibly identify what the vicinity means. Is that within 120 metres, within 100 metres.. 1km?

Let me know if you wish to chat further.

Melissa

Melissa Torchia, M.A.Sc. | Environmental Planner
Hatch Mott MacDonald | Environment
5035 South Service Road, Sixth Floor Burlington ON L7L 6M9
T 289.288.2740 F 905.315.3569



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From: ESA Aurora (MNRF) [<mailto:ESA.Aurora@ontario.ca>]
Sent: Tuesday, November 03, 2015 10:53 AM
To: Torchia, Melissa
Cc: ESA Aurora (MNRF)
Subject: RE: Information Request Schedule B EA - Inglewood Well

Hello Ms. Torchia,

Please accept the attached response to your species at risk information request.

Could you please provide a brief description of what is proposed for the project? We may require more detailed information in order to assess the impacts of the works on Species at Risk. When further project details have been determined, we may ask you to fill out an Information Gathering Form (IGF) for any threatened or endangered species listed in the provided letter and submit it to our office (to ESA.Aurora@ontario.ca). For now, could you please provide a brief description of what is proposed for the project so I can determine whether and IGF is needed.

Thank-you,

ESA Aurora

From: Torchia, Melissa [<mailto:Melissa.Torchia@hatchmott.com>]
Sent: October-30-15 12:01 PM
To: ESA Aurora (MNRF)
Subject: RE: Information Request Schedule B EA - Inglewood Well

Good day,

Please find attached the information using the updated form.
If there is additional requirements needed to allow for information to be provided please let me know.

Kind regards,
Melissa

From: ESA Aurora (MNRF) [<mailto:ESA.Aurora@ontario.ca>]
Sent: Thursday, October 29, 2015 10:51 AM
To: Torchia, Melissa
Subject: RE: Information Request Schedule B EA - Inglewood Well

Hi Melissa,

Everyone who requests SAR data from our office must complete the attached form. Species at risk data is sensitive information and is provided on a need to know basis only. We do need to have at least some information on what is proposed or being considered. As soon as you complete the form we will provide you with any SAR information we may have for the site.

Regards,

ESA Aurora

From: Torchia, Melissa [<mailto:Melissa.Torchia@hatchmott.com>]
Sent: 29-Oct-15 10:23 AM
To: ESA Aurora (MNRF)
Subject: RE: Information Request Schedule B EA - Inglewood Well

Thanks,

Whom at the aurora district can I contact to speak about this request a little further and the requirements needed for just an ESA screening (only SAR information).

Melissa Torchia, M.A.Sc. | Environmental Planner
Hatch Mott MacDonald | Environment
5035 South Service Road, Sixth Floor Burlington ON L7L 6M9
T 289.288.2740 F 905.315.3569



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From: ESA Aurora (MNRF) [<mailto:ESA.Aurora@ontario.ca>]
Sent: Thursday, October 29, 2015 10:18 AM
To: Torchia, Melissa
Subject: RE: Information Request Schedule B EA - Inglewood Well

Good Morning Ms. Torchia,

In order for us to process your request, we require that you provide us with a completed Information Request Form (updated form attached).

Please feel free to contact us should you have any questions.

Thank you.

From: Torchia, Melissa [<mailto:Melissa.Torchia@hatchmott.com>]
Sent: October 19, 2015 3:09 PM
To: ESA Aurora (MNRF)
Cc: Torchia, Melissa
Subject: ESA: Information Request Schedule B EA - Inglewood Well

October 19, 2015

Good day,

Please find attached an information request form. The project is for siting a new Inglewood Well for the Region of Peel. This project is following a Schedule B Class EA process. The Region of Peel has already completed the well exploration program so only two sites are proposed to move forward. I am looking to obtain any additional and/or confirm/update any ESA screening information. Based on a review of the NHIC database the following species-at-risk and natural areas are known to exist:

Site N & K:

- Hart's tongue fern - Field visit was completed to assess presence (mapped on attached document). No ferns were documented.
- Redside Dace – No in-water works are proposed. Arrangements with CVC underway for GW impacts by sub-consultant - CVC Contact is Scott Sampson.
- Butternut – Field visit was completed to assess presence of Butternut in these areas (mapped on attached document). No Butternut were found.
- Restricted Species
- Credit Forks Wetland Complex
- Niagara Escarpment
- Candidate Life Science ANSi

The 1km square searched does cover quite a bit more area than that which the well will be located for both locations.

If you require any further details please do not hesitate to contact me.

Kindest regards,
Melissa

Melissa Torchia, M.A.Sc. | Environmental Planner

Hatch Mott MacDonald | Environment
5035 South Service Road, Sixth Floor Burlington ON L7L 6M9
T 289.288.2740 F 905.315.3569



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Torchia, Melissa

From: Torchia, Melissa
Sent: Monday, October 19, 2015 3:09 PM
To: 'esa.aurora@ontario.ca'
Cc: Torchia, Melissa
Subject: ESA: Information Request Schedule B EA - Inglewood Well
Attachments: AuroraInfoRequest- Inglewood EA 2015-10-19.pdf

October 19, 2015

Good day,

Please find attached an information request form. The project is for siting a new Inglewood Well for the Region of Peel. This project is following a Schedule B Class EA process. The Region of Peel has already completed the well exploration program so only two sites are proposed to move forward. I am looking to obtain any additional and/or confirm/update any ESA screening information. Based on a review of the NHIC database the following species-at-risk and natural areas are known to exist:

Site N & K:

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- Restricted Species
- Credit Forks Wetland Complex
- Niagara Escarpment
- Candidate Life Science ANSI

The 1km square searched does cover quite a bit more area than that which the well will be located for both locations.

If you require any further details please do not hesitate to contact me.

Kindest regards,
Melissa

Melissa Torchia, M.A.Sc. | Environmental Planner
Hatch Mott MacDonald | Environment
5035 South Service Road, Sixth Floor Burlington ON L7L 6M9
T 289.288.2740 F 905.315.3569



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Torchia, Melissa

From: Torchia, Melissa
Sent: Monday, November 02, 2015 3:59 PM
To: lmarray@creditvalleyca.ca
Cc: Torchia, Melissa
Subject: Inglewood Well: Natural Heritage Report
Attachments: Proposed site locations_N and K Page 001 (2).jpg; Proposed site locations_N and K Page 001 (1).jpg

November 2, 2015

Good afternoon Liam,

Hope all is well.

I am working on an Environmental Assessment to help site a new permanent Well in Inglewood (Jakub has cc'd you on his email to me). When speaking with Jakub, I noted that due to the seasonal constraints and project start-up, specific ecological surveys will not be able to be completed (i.e. amphibian and breeding birds etc). As it stands now I have gone out to do a preliminary overview of the dominant vegetation within the project area and to classify it using ELC. I have also sent in a request to MNR for SAR in the area, and an additional request to Eric James for any CVC data. Given this constraint, I would just like to verify with you this methodology approach, and/or decipher whether or not additional things that would need to be considered for this project in order to complete this report to the satisfaction of the CVC.

Project Description:

HMM has been retained to complete the Schedule B EA and Natural Environment Report to assess two different alternative locations for placement of a new well in Inglewood. Site N will involve the installation of a new permanent well, and construction of a watermain that connects the well to the existing pumphouse (see attached map). Site K will involve the installation of a new permanent well, a new pump house expected to be 20m by 40m and a watermain connect from the pumphouse along Forks of the Credit Rd, to connect with the existing watermain along Hurontario Street (see attached map).

If it easier, please feel free to contact me via telephone (details are below).

I look forward to your response.

Kind regards,
Melissa

Melissa Torchia, M.A.Sc. | Environmental Planner
Hatch Mott MacDonald | Environment
5035 South Service Road, Sixth Floor Burlington ON L7L 6M9
T 289.288.2740 F 905.315.3569



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Torchia, Melissa

From: Kilis, Jakub <JKilis@creditvalleyca.ca>
Sent: Monday, November 02, 2015 3:39 PM
To: Torchia, Melissa
Cc: James, Eric; Marray, Liam
Subject: RE: Inglewood Well

Hi Melissa,

As discussed, you should be able to get a fair bit of information through a data request for data we have on CVC property (Ken Whillans RMA) around site N. The data request should be directed to Eric James (ejames@creditvalleyca.ca) of our office. Please try to list the information you are interested in receiving (natural heritage, etc, floodlines, modeling, etc). Eric will get back to you with any question he may have once you submit your request.

Regarding scope and any technical questions for your proposed study related to ecology, you can contact Liam Marray (lmarray@creditvalleyca.ca) or 905-670-1615 ext. 239 to discuss.

Jakub

Jakub Kilis, MCIP, RPP, Can-CISEC

Planner, Environmental Assessment | Credit Valley Conservation
905.670.1615 ext 287 | C: 647.212.6554 | 1.800.668.5557
jkilis@creditvalleyca.ca | creditvalleyca.ca

From: Torchia, Melissa [<mailto:Melissa.Torchia@hatchmott.com>]
Sent: November 2, 2015 1:15 PM
To: Sampson, Scott; Kilis, Jakub
Subject: RE: Inglewood Well

Thanks Scott.

Jakub, I just left you a voice message. If you can give me a call to discuss that would be great.

Thanks in advance,
Kind regards,
Melissa

From: Sampson, Scott [<mailto:SSampson@creditvalleyca.ca>]
Sent: Monday, November 02, 2015 12:50 PM
To: Torchia, Melissa; Kilis, Jakub
Subject: Re: Inglewood Well

Hello Melissa,

I was speaking with our Planning Department this morning and based on our discussion, you should be speaking to Jakub Kilis concerning the study. Jakub is coordinating CVC's participation in the study.

Thank you.

Scott

Sent from my BlackBerry 10 smartphone on the Rogers network.

From: Torchia, Melissa
Sent: Monday, November 2, 2015 12:43 PM
To: Sampson, Scott
Subject: RE: Inglewood Well

Afternoon Scott,

Not too sure if you are in the office today, can you let me know and perhaps we share a quick chat?

From: Sampson, Scott [<mailto:SSampson@creditvalleyca.ca>]
Sent: Friday, October 30, 2015 2:18 PM
To: Torchia, Melissa
Subject: Re: Inglewood Well

Hi Melissa

I am working from home today. You can give me a call on my cell at 416-684-0614

Scott Sampson
Manager, Natural Heritage Management
Credit Valley Conservation

Sent from my BlackBerry 10 smartphone on the Rogers network.

From: Torchia, Melissa
Sent: Friday, October 30, 2015 12:37 PM
To: Sampson, Scott
Subject: Inglewood Well

Good afternoon Scott,

I just left you a voice message.

I am looking after the Natural Environment Report for this project to assess the impacts associated with the siting of the new permanent well in Inglewood, either at Site N by Ken Whillans, or at Site K off of Forks of the Credit. As it stands now this is mainly going to be a desktop exercise. I have gone out to do a cursory overview of both locations to get a sense of the vegetation types and communications and to confirm absence of SAR veg. I would just like to go over this assessment a bit more with yourself.

As noted in my phone message, I do plan to go out to another site in about an hour I believe..still waiting for my driller to call me

If we cannot connect today please feel free to let me know when you are available for a chat sometime early next week.

Kind regards,

Melissa

Melissa Torchia, M.A.Sc. | Environmental Planner
Hatch Mott MacDonald | Environment
5035 South Service Road, Sixth Floor Burlington ON L7L 6M9
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APPENDIX B

Project Photographs – Site N & Site K



Photograph No. 1: SITE N - View of WODM5 facing east



Photograph No. 2: SITE N - Second view of WODM5, and Hurontario Street; facing north east



Photograph No. 3: SITE N - View of MAM2 within the Right-of-Way; facing south



Photograph No. 4: SITE N - Additional MAM2 communities within the Right-of-Way; facing south



Photograph No. 5: SITE N - View of MEGM3; facing west



Photograph No. 6: SITE N - View of WODM4; facing east towards Hurontario Street



Photograph No. 7: SITE N - Secondary view of WODM5; facing west, with existing pump house to the left of the photograph



Photograph No. 8: SITE N - View of CUM1; facing west



Photograph No. 9: SITE N - View of THDM4 and existing house; facing northwest, with Hurontario Street to the east



Photograph No. 10: SITE K – View of THDM4; facing north



Photograph No. 11: SITE K – Secondary view of THDM4; facing south towards Forks of the Credit Rd



Photograph No. 12: SITE K – View of Credit Forks Wetland Complex; facing north



Photograph No. 13: SITE K – View of woodlands (forest community) FOMM7; facing west