Revised Natural Environment Report and Environmental Impact Statement – Proposed Stittsville II Quarry, Ottawa, Ontario

April 10, 2024

Prepared for:
R W Tomlinson Limited

Cambium Reference: 19686-001

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Table of Contents

List of Embedded Tables

List of Appended Figures

List of Appendices

1.0 Introduction

Cambium Inc. (Cambium) has been retained by R.W. Tomlinson Limited (Tomlinson) to undertake natural environment studies to accompany the application for a Class A Quarry Below the Groundwater Table under the *Aggregate Resources Act* (ARA; Ontario 1990a) for the proposed Tomlinson Stittsville 2 Quarry. The proposed quarry is to be developed on the property located on the east side of the existing Tomlinson Stittsville Quarry on part of Lots 15 and 16, Concession XI, Geographic Township of Goulbourn (635 & 891 Jinkinson Road), in the City of Ottawa, Ontario (the Site; Figure 1).

This report, and the field surveys described within it, were originally completed by WSP Canada Inc. (WSP; formerly Golder Associates Ltd.). The original author of the report and those who conducted the field surveys are now employed at Cambium, and Tomlinson has retained them to continue providing services on this proposed project. For that reason, this report is now under Cambium's cover.

The original version of this report was submitted with the ARA license application in late 2023. This version of the report has been revised to address comments received through the City of Ottawa's application review process.

Cambium has prepared a Tree Conservation Report (TCR; Cambium 2024) for this proposed quarry, as requested through consultation with the City of Ottawa (the City), and has submitted it to the City under separate cover.

1.1 Purpose

This report specifically addresses the requirements of Section 2.2 (Natural Environment Report [NER]) of the Aggregate Resources of Ontario: Technical Reports and Information Standards (Ontario 2020). This NER is also meant to satisfy the City of Ottawa official plan requirements for an Environmental Impact Statement (EIS; Ottawa 2021, Ottawa 2023). A Terms of Reference for this study, including methods and a draft table of contents for this report, was submitted to the City on November 28, 2022 (Appendix A). The City reviewed the document and had no comments (Ottawa 2022a; Appendix A). As such, this report is not required to

adhere strictly to the new guidelines as formal direction had already been provided by the City and this report commenced under the previous version of the guidelines (Ottawa 2015).

The purpose of this report is to assess potential environmental impacts of the proposed aggregate extraction on the Site and Study Area with respect to the following:

a) significant wetlands,

b) other coastal wetlands in Ecoregions 5E, 6E and 7E,

c) fish habitat,

d) significant woodlands and significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River),

e) habitat of endangered and threatened species,

f) significant wildlife habitat,

g) significant areas of natural and scientific interest (ANSI),

h) within the area of one or more provincial plan(s), any key natural heritage features not included in a) through g).

Where any of the above features or areas have been identified, the report must identify and evaluate any negative impacts on the natural features or areas, including their ecological functions, and identify any proposed preventative, mitigative, or remedial measures. The report must also identify if the Site or any of the features included in a) through g) are located within a natural heritage system that has been identified by a municipality in Ecoregions 6E and 7E or by the province as part of a provincial plan.

The potential impacts of the extraction on groundwater and surface water resources are included in the accompanying Water Resources Assessment Report (WSP 2023) and have been summarized where appropriate in this report.

For the purpose of this report, the following definitions are used:

Site – The total land area owned by Tomlinson that is proposed for licensing under the ARA [121.7 hectares (ha); Figure 1].

Extraction Limit – The total area within the Site proposed for extraction (109.8 ha; Figure 1). This area represents the area of the Site less a 15 metre (m) setback along the south

boundary of the Site, 0-15 m setbacks along the eastern boundary of the Site except where a 30 m setback has been applied adjacent to the Goulbourn Wetland Complex Provincially Significant Wetland (PSW), a 30 m setback along Jinkinson Road, and no setbacks from the adjoining properties to the west. These setbacks, other than the wetland setbacks, are prescribed by the ARA.

Study Area – The Study Area for the NER assessment is defined in the Aggregate Resources of Ontario: Technical reports and Information Standards (Ontario 2020) as the Site and surrounding 120 m. The potential incremental groundwater drawdown cone resulting from extraction of the Site, where it extends beyond the 120 m, has been included for discussion of potential impacts (Figure 1).

1.2 Site Description

The Site is located on the south side of Jinkinson Road, which is immediately south of provincial Highway 417, abutting the existing Tomlinson Stittsville Quarry immediately to the west (Figure 1). The Site consists of open meadows with patches of disturbance (including two access roads), as well as thickets, woodlands, and wetlands.

1.3 Adjacent Land Use

Surrounding land uses off-Site in the Study Area include existing licenced Tomlinson aggregate extraction operations to the west (Stittsville Quarry), Jinkinson Road and provincial Highway 417 to the north and northwest, and natural areas to the east, south and southeast. Of note is that the natural areas to the southeast are a licensed quarry (Lafarge Bell Quarry). A portion of the TransCanada Trail runs along the southern edge of the Site.

2.0 Environmental Policy Context

The Site is located in the City of Ottawa. Documents reviewed to gain an understanding of the natural heritage features and regulations that are relevant to the Site and Study Area consisted of the following:

- The ARA (Ontario 1990a) Aggregate Resources of Ontario: Technical Reports and Information Standards (Ontario 2020)
- The Provincial Policy Statement (PPS; MMAH 2020)
- The *Fisheries Act* (Canada 1985)
- The *Migratory Birds Convention Act* (Canada 1994)
- The *Species at Risk Act* (Canada 2002)
- The *Endangered Species Act* (Ontario 2007)
- The City of Ottawa Official Plan (Ottawa 2021)
- The Rideau Valley Conservation Authority (RVCA) Reg. 174/06 Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses (Ontario 2006)

An overview of the above noted legislation and policy documents is discussed in Sections 2.1 to 2.7.

2.1 Aggregate Resources Act

Applicants are required under the Aggregate Resources of Ontario: Technical Reports and Information Standards (Ontario 2020) to prepare an NER that must identify significant natural environment features that occur on, or in proximity to (i.e., within 120 m) the proposed operation. Significant natural heritage features are defined in the PPS (MMAH 2020) with guidance from supporting technical manuals prepared by the Ministry of Natural Resources and Forestry (MNRF; MNRF 2000; MNRF 2010; MNRF 2015a). Where any significant natural features have been identified, the report must identify and evaluate any negative impacts on

the natural features or areas, including their ecological functions, and identify any proposed preventative, mitigative or remedial measures. The report must also identify if the Site lies within a natural heritage system identified by a municipality (in ecoregions 6E or 7E) or by the province as part of a provincial plan (e.g., Greenbelt Plan).

2.2 Provincial Policy Statement

The Provincial Policy Statement (MMAH 2020) was issued under Section 3 of the *Planning Act* (Ontario 1990b).

The natural heritage policies of the PPS indicate that:

2.1.4 Development and site alteration shall not be permitted in:

a) Significant wetlands in Ecoregions 5E, 6E and 7E.

b) Significant coastal wetlands.

2.1.5 Unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions, development and site alteration shall not be permitted in:

c) Significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E.

d) Significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River).

e) Significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River).

f) Significant wildlife habitat.

g) Significant areas of natural and scientific interest.

h) Coastal wetlands in Ecoregions 5E, 6E and 7E that are not subject to policy 2.1.4(b).

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

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

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

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

2.3 Fisheries Act

The purpose of the federal *Fisheries Act* (Canada 1985) is to maintain healthy, sustainable, and productive Canadian fisheries through the prevention of pollution and the protection of fish and their habitat. Under the *Fisheries Act* (Canada 1985), work in and near water must comply with the fish and fish habitat protection provisions of the *Fisheries Act* by incorporating measures to avoid (DFO [Fisheries and Oceans Canada], 2019):

- causing the death of fish
- harmful alteration, disruption, or destruction (HADD) of fish habitat in the work, undertaking or activity

All projects where work is being proposed that cannot avoid impacts to fish or fish habitat require a Fisheries and Oceans Canada (DFO) project review (DFO 2019). DFO will review the project to identify potential risks of the project to the conservation and protection of fish and fish habitat. If potential impacts can be avoided, project approval is not required (DFO 2020). However, if it is determined that the project will result in death of fish or HADD of fish habitat, an authorization is required under the *Fisheries Act*. Proponents of projects requiring a *Fisheries Act* authorization may be required to also submit a habitat offsetting plan, which provides details of how the death of fish and/or HADD of fish habitat will be offset, and outlines associated costs and monitoring commitments. Proponents also have a duty to notify DFO of any unforeseen activities during the project that cause harm to fish or fish habitat.

2.4 Migratory Birds Convention Act

The *Migratory Birds Convention Act* (MBCA; Canada 1994) prohibits the killing or capturing of migratory birds, as well as any damage, destruction, removal or disturbance of active nests. It also allows the Canadian government to pass and enforce regulations to protect various species of migratory birds, as well as their habitats. While Environment and Climate Change Canada (ECCC) can issue permits allowing the destruction of nests for scientific or agricultural purposes, or to prevent damage being caused by birds, it does not typically allow for permits in the case of industrial or construction activities.

Recent changes to the regulations associated with the MBCA have added sixteen species of birds that are protected by the act year-round. There are certain conditions that must be met prior to destroying or disturbing a nest of these species.

2.5 Species at Risk

2.5.1 Species at Risk Act (SARA)

At a federal level, Species at Risk (SAR) designations for species occurring in Canada are initially determined by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). If approved by the federal Minister of the Environment and Climate Change, species are added to the federal List of Wildlife Species at Risk (Canada 2002). Species that are included on Schedule 1 as endangered or threatened are afforded protection of critical habitat on federal lands under the *Species at Risk Act* (SARA). On private or provincially-owned lands, only aquatic species listed as endangered, threatened or extirpated and migratory birds are protected under the SARA, unless ordered by the Governor in Council.

2.5.2 Endangered Species Act (ESA)

SAR designations for species in Ontario are initially determined by the Committee on the Status of Species at Risk in Ontario (COSSARO), and if approved by the provincial Minister of Environment, Conservation and Parks, species are added to the provincial *Endangered Species Act* (ESA) which came into effect June 30, 2008 (Ontario 2007). The legislation

prohibits the killing or harming of species identified as endangered or threatened in the various schedules to the Act. The ESA also provides habitat protection to all species listed as threatened or endangered. As of June 30, 2008, the Species at Risk Ontario (SARO) list is contained in O. Reg. 230/08.

Subsection 9(1) of the ESA prohibits the killing, harming or harassing of species identified as 'endangered' or 'threatened' in the various schedules to the Act. Subsection 10(1)(a) of the ESA states that *"No person shall damage or destroy the habitat of a species that is listed on the Species at Risk in Ontario* (*SARO*) *list as an endangered or threatened species"*.

General habitat protection is provided, by the ESA, to all threatened and endangered species. Species-specific habitat protection is only afforded to those species for which a habitat regulation has been prepared and passed into law as a regulation of the ESA. The ESA has a permitting process to allow alterations to protected species or their habitats as well as a registration process for certain activities and species.

2.6 City of Ottawa

The south and southwest portions of the Site are identified as Bedrock Resource Area on Schedule B9 (Rural Transect) of the City of Ottawa official plan (Ottawa 2021), while the remainder of the Site is identified as Rural Countryside and Greenspace (corresponding to woodlands and wetlands). The existing aggregate extraction operation to the west is identified as Bedrock Resource Area, while lands to the north, east and south are identified as Rural Countryside and Greenspace.

The entire Site is also identified on Schedule C11-A (Natural Heritage System – West) as Natural Heritage System – Core Area, with the woodlands and identified as Natural Heritage Features Overlay and the wetlands identified as Significant Wetlands. As discussed further in this report, updated evaluations of some of the on-Site wetlands were completed by WSP, and they were found to be non-significant. This information was provided to and accepted by the City and their Official Plan mapping is scheduled to be updated accordingly.

2.7 Rideau Valley Conservation Authority

The Study Area is located within the jurisdiction of the Rideau Valley Conservation Authority (RVCA). All wetlands on the Site and in the Study Area are currently mapped as regulated by the RVCA (RVCA 2023). The RVCA regulates wetlands, but it is not applicable to ARA applications.

3.0 Description of Proposed Project

The development of the Stittsville 2 Quarry is anticipated to occur simultaneously with the operation of the existing Stittsville Quarry. The proposed annual tonnage limit for the Site is 3 million tonnes in conjunction with the current license. The existing entrance to the Stittsville Quarry from Jinkinson Road will continue to be used and no changes are anticipated to overall truck traffic levels. The proposed haul route will remain the same as the existing operation, which is predominantly Jinkinson Road east to Highway 7. Limited truck traffic may head west on Jinkinson Road for local deliveries.

The Site is proposed to be extracted in seven phases, starting near the northwest corner of the property and working south on the west half of the Site. Then extraction will occur in the east half of the Site proceeding southward. The final area to be extracted will be the area that contains the existing asphalt and concrete plants. Materials will be extracted above and below the water table via drilling and blasting, and will be processed on the Site or at the existing Stittsville Quarry. Recycled aggregate materials will also be processed on-Site.

During the initial phases of quarry development, a sump would be located in the existing Stittsville Quarry, and this sump would be relocated (as required) within the extraction area during the operational life of the proposed Stittsville 2 Quarry. The proposed quarry will be developed in three lifts, which may operate simultaneously depending on rock quality and market demand. The depth of each lift is dependent on bedrock formation thickness. The anticipated lowest quarry floor elevation will be approximately 101 m above-sea-level (asl).

The proposed extraction will maintain a 15 m setback along the south boundary of the Site, 0-15 m setbacks along the eastern boundary of the Site except where a 30 m setback has been applied adjacent to the Goulbourn Wetland Complex PSW, a 30 m setback along Jinkinson Road, and 0-15 m setbacks from the adjacent quarries to the west. A 0 m setback will be in place adjacent to lands owned by Tomlinson. These setbacks will generally be no-touch areas, with the exception of placement of berms in some locations (detailed on Figure 3 and discussed further throughout this report) and additional tree plantings.

3.1 Rehabilitation Plan

The Rehabilitation Plan for the project recognizes aggregate extraction as a temporary land use. To demonstrate “no negative impacts”, the plan considers restoration of affected natural heritage features and ecological functions over two time periods:

1. In the short term, undertake proactive and progressive rehabilitation to ensure ecological functions are maintained throughout the life of the Stittsville 2 Quarry; and,
2. In the long-term, replace these features and (if possible) expand on the areas covered and improve upon their current ecological functions through restoration.

Restoration includes backfilling the excavation to the original grade and naturalizing the Site through progressive rehabilitation as detailed below. The proposed licensed area of the quarry is approximately 121.7 ha, with a proposed extraction area of approximately 109.8 ha. Setbacks along the southern boundary (15 m), northern boundary (30 m) and wetland/woodland retention areas including 15 m and 30 m setbacks along the eastern boundary will account for approximately 12 ha. These areas will be maintained and enhanced except where berms may be required; although they do not constitute “restored” lands under the compensation package, they do represent opportunities from which the restoration process can begin and expand upon. The remaining 109.8 ha (extraction area) will be restored as described below, and illustrated in Appendix B.

3.1.1 Future Potential Development

The northern portion of the Site (43.5 ha) will be restored for future potential development. At the end of Phase 7 of extraction, it is recommended that these areas be restored to cultural meadows (i.e., CUM1-1 communities) until such time as they will be developed.

3.1.2 Naturalized Areas

Approximately 66.3 ha (i.e., 109.8 ha of extraction area minus 43.5 ha for future potential development) within the extraction limits is available for the ecological restoration of uplands, wetlands and transition areas.

3.1.2.1 Wetlands

As per the current draft rehabilitation plan, a wetland feature will be created that will cover an area of approximately 19.5 ha. This feature will be located in the southeast quadrant of the Site (within the extraction limits). Design considerations for the created wetland should demonstrate that:

- the feature is hydrologically connected to adjacent wetlands (and by association to the Goulbourn Wetland Complex PSW);
- the wetland substrate is conducive to groundwater recharge; and,
- the vegetation communities in the open water and along the wetland edges is conducive to flood attenuation.

These design considerations would also provide the necessary characteristics to encourage wildlife use of the created wetland feature and would ultimately result in the restoration and improvement of ecological functions associated with the previous wetlands.

3.1.2.2 Woodlands

Up to 46.8 ha may be available for woodland restoration (i.e., 66.3 ha of area available for ecological restoration within the extraction limits minus 19.5 ha for wetland creation). Given the City of Ottawa's preference that rehabilitation should focus on natural and ecological functions over recreational opportunities, it is recommended that as much of this area as feasible be restored through progressive rehabilitation so that the area of woodlands exceeds the area removed with improved ecological functions re-established in the most timely manner possible, guided by the following principles:

- Progressive rehabilitation generally follows the direction of extraction, (i.e., southward between Phases, and eastward within each Phase) and proceeds as soils become available;
- Soil movement and duration of storage should be kept to a minimum to maintain viability of the soils to be used for restoration and reduce costs;

- Restored woodlands should be located adjacent to, or as close as reasonably possible, to the restored wetland and retained/enhance setbacks along the eastern and southern Site boundaries as a means of re-establishing the proximity and linkage functions of lost woodlands and enhance these functions for portions of woodlands that will be retained; and,
- Planting strategies be developed whereby the water protection function of the removed woodlands will be replicated. This would include “pit-and-mound[1]” in upland restoration areas to promote infiltration, as well as planning for transition areas between wetland to upland forest communities, and upland forest to cultural meadow communities.

The current Rehabilitation Plan illustrates these targets through the restoration of 35.5 ha of Upland Reforestation Area (i.e., FOD3-1/FOD5-1 communities); 3.0 ha of Wetland/Upland Transition Area (i.e., FOC1-2/FOC2-2); and, 6.0 ha of Cultural Hedgerow/Upland Area (i.e., CUT1B). This reflects a total forested area of 44.5 ha, and exceeds the 30.3 ha area of woodland to be cleared for extraction.

[1] Grading is to replicate undisturbed forest floor conditions reflective of diverse micro topography which includes hummocks and depressions to encourage a variety of moisture conditions, habitats, slopes and aspects as well as enhancing infiltration. During soil placement, logs and stumps are placed throughout the rehabilitation area to mimic forest decomposition processes. This is commonly referred to as a “pit-and-mound" rehabilitation technique. Pit-and-mound technique is advantageous because it provides a diversity of growing conditions, ranging from moist to dry, capable of supporting an equally diverse range of tree, shrub and groundcover species.

4.0 Methods

4.1 Background Review

The investigation of existing conditions on the Site and in the Study Area included a background information search and literature review to gather data about the local area and provide context for the evaluation of the natural features. This included review of the following resources:

- Existing Studies within the Study Area (Golder and MHBC 2018; Golder 2022)
- Level I and II Water Report - Site Plan Licence Application for a Class 'A' Quarry Below Water: Proposed Stittsville 2 Quarry, Ottawa, Ontario (WSP 2023)
- MNRF Natural Heritage Information Centre (NHIC) Make-a-Map geographic explorer for SAR, rare (S1-S3) species reported as occurring in the vicinity of the Site, and natural areas information queries (MNRF 2022a)
- Environment and Climate Change Canada's (ECCC) SAR Public Registry (ECCC 2022) including COSEWIC status reports, assessments, and recovery strategies
- Ministry of the Environment, Conservation and Parks (MECP) list of SAR in Ontario (O.Reg. 230/08) (MECP 2023) including COSSARO species assessment reports
- DFO Aquatic Species at Risk Maps (DFO 2022)
- Breeding Bird Atlas of Ontario (OBBA) (Cadman et al. 2007)
- Atlas of the Mammals of Ontario (Dobbyn 1994)
- Ontario Reptile and Amphibian Atlas (Ontario Nature 2019)
- Bat Conservation International (BCI) range maps (BCI 2022)
- Ontario Butterfly Atlas (Jones et al. 2022)
- eBird species maps (eBird 2022)
- Vascular Plants at Risk (Leslie 2018)

- MNRF Land Information Ontario Aquatic Resources Area Layer (MNRF 2022b)
- Information contained in natural heritage related map layers from Land Information Ontario (LIO; 2022) and the Ontario Land Cover Compilation (MNRF 2022c)
- City of Ottawa official plan (Ottawa 2021)
- Existing high-resolution aerial imagery and mapping

To develop an understanding of the drainage patterns, ecological communities and potential natural heritage features that may be affected by the proposed aggregate extraction, MNRF LIO data were used to create base layer mapping for the Study Area. A geographic query of the MNRF Make-a-Map database was conducted to identify element occurrences of any natural heritage features, including wetlands, ANSI, rare vegetation communities and rare species (i.e., S1-S3 species in the NHIC), threatened or endangered species and other natural heritage features within two kilometres (km) of the Site. A formal information request was also submitted to the MNRF and Ministry of the Environment, Conservation and Parks (MECP) in April 2020, with responses received in September 2020 (Appendix A). The information contained in these responses has been incorporated in this report.

4.2 SAR Screening

A SAR screening was completed for the Site and Study Area, focusing on the review of records and range maps pertaining to species that are designated as threatened, endangered or special concern under the ESA, and species that are protected under Schedule 1 of the SARA. Species with ranges overlapping the Site or Study Area, or recent occurrence records in the vicinity, were screened by comparing their habitat requirements to habitat conditions at the Site and Study Area.

The potential for the species to occur was determined through a probability of occurrence. A ranking of low indicates no suitable habitat availability for that species in the Site and Study Area and no specimens identified. Moderate probability indicates more potential for the species to occur, as suitable habitat appeared to be present in the Study Area, but no occurrence of the species has been recorded. Alternatively, a moderate probability could

indicate an observation of a species, but there is no suitable habitat on the Site or in the Study Area. High potential indicates a known species record at the Site or in the Study Area (including during field surveys or background data review) and good quality habitat is present.

Searches were conducted during field surveys for suitable habitats and signs of all SAR identified through the desktop screening. If the potential for the species to occur at the Site and in the Study Area was moderate or high, the screening was refined based on field surveys (i.e., habitat assessment) and/or species-specific surveys. Any habitat identified during ground-truthing or other field surveys with potential to provide suitable conditions for additional SAR not already identified through the desktop screening was also assessed and recorded.

4.3 Field Surveys

The wildlife, habitats and communities on the Site were characterized through field surveys. The habitats in the Study Area were characterized through review of aerial imagery, and through visual assessment from accessible lands (e.g., roadside, edge of the Site). Some field surveys were completed in the Study Area where land access was granted (e.g., public roadside and on other lands owned by Tomlinson). The following sections outline the methods used for each of the field surveys. During all surveys, wildlife visual encounter surveys (VES) and area searches were conducted, and wildlife, plant, and habitat observations were recorded. Searches were also conducted to document the presence or absence of suitable habitat, based on habitat preferences, for those species identified in the desktop SAR screening described above. The dates when all surveys were conducted are included in Table 1. Locations of all survey stations are shown on Figure 1.

Table 1 Summary of Field Surveys Conducted on the Site and in the Study Area

Year	Date	Type of Survey
2018	April 27	Turtle Visual Encounter Survey (VES)
	May 7	Turtle VES
	May 18	Turtle VES
	May 26	Turtle VES, Plant Community, Botanical, and Wetland Boundary Survey
	May 30	Turtle VES
	June 15	Plant Community, Botanical, and Wetland Boundary Survey
	August 20	Plant Community, Botanical, and Wetland Boundary Survey
2020	April 28	Nocturnal Amphibian Survey, Turtle VES
	May 21	Nocturnal Amphibian Survey, Turtle Nesting Survey
	May 26	Breeding Bird Survey, Plant Community and Botanical Survey, Turtle VES, Bat Habitat Assessment
	May 31	Eastern Whip-poor-will Survey
	June 9	Breeding Bird Survey (Grassland Only), Turtle VES
	June 9	Eastern Whip-poor-will Survey, Turtle Nesting Survey
	June 23	Nocturnal Amphibian Survey, Turtle Nesting Survey
	June 29	Eastern Whip-poor-will Survey
	June 30	Breeding Bird Survey, Plant Community and Botanical Survey
	September 17	Plant Community and Botanical Survey, Aquatic Survey
2021	February 27	Winter Deeryard Survey
	March 7	Winter Deeryard Survey
	May 30	Plant Community and Botanical Survey
	August 3	Plant Community and Botanical Survey
	September 10	Plant Community and Botanical Survey
2023	May 25	Fish Spawning Habitat Assessment

In addition, surveys specific to the wetlands at the Site were conducted by Golder in 2017 (boundary reviews), and annual monitoring (amphibian breeding, breeding birds, fish and benthics, plant community and botanical) since 2003, as part of separate studies. These surveys included VES for wetland species, including turtles.

4.4 Plant Community Assessment and Botanical Surveys

4.4.1 Ecological Land Classification

Ecological land classification (ELC) mapping and data in the Site were gathered according to standard protocols (Lee et al. 1998). ELC was completed and refined over several visits between 2018 and 2021 to capture seasonal variability in the dominant plant forms. ELC mapping of the Study Area was completed through interpretation of aerial imagery, and observations made from public access points (e.g., roadside) and from the edge of the Site.

4.4.2 Botanical Inventory

A botanical inventory was completed concurrent with the plant community assessments, with a running list compiled of all plants encountered on the Site. An effort was made to search for SAR, provincially rare plants (ranked as S1 to S3 by NHIC), as well as food plants for any SAR insects. The running list of plants observed was augmented, as needed, during all field surveys.

4.4.3 Wetlands

On-Site wetlands were delineated, classified and evaluated using the protocols of the Ontario Wetland Evaluation System (OWES; MNRF 2022d) by a certified wetland evaluator.

4.5 Wildlife and Wildlife Habitat Surveys

4.5.1 Herpetile Surveys

In order to document use of wetlands on the Site and in the Study Area by breeding amphibians, three rounds of nocturnal amphibian point-count surveys were conducted. Surveys followed standardized Marsh Monitoring Program (MMP) protocols (BSC 1995) and included evening call-count surveys, as well as VES, in areas where access was permitted.

Turtle nesting surveys were conducted after sunset on three separate nights in late May and June 2020 following MNRF recommended protocols (MNRF 2015b; MNRF 2013a; McDiarmid 2012). Turtle nesting surveys focused on the portions of the Site adjacent to wetlands, or

where exposed substrates were evident. The surveys involved slow area searches with a flashlight, searching for females nesting or on their way to nest sites.

During all field surveys, VES for herpetiles on the Site were conducted following recommended protocols (MNRF 2015b; MNRF 2013a; MNRF 2016; McDiarmid 2012).

Basking turtle visual surveys (Turtle VES) focused around wetlands on the Site that appeared to provide potentially suitable turtle habitat. Using the Occurrence Survey Protocol for Blanding's Turtle in Ontario (MNRF 2015b) as guidance, five survey rounds were conducted when water temperatures were above 10°C in 2018, and three more rounds in 2020. These protocols are appropriate for searching for a range of turtle species, since most turtle species have similar ecologies. WSP scanned (i.e., with binoculars) suitable habitat from a distance, trying to remain hidden, on sunny or partly sunny days, and waded through shallow portions of wetlands from mid-morning to mid-afternoon.

4.5.2 Breeding Bird Surveys

To survey the Site for breeding birds, including grassland birds, three combined breeding bird point counts / grassland bird surveys were completed on the Site within the dates of May 26 to June 30, 2020, each separated by at least one week. This follows the guidance provided by the document draft Survey Methodology Under the *Endangered Species Act*, 2007*: Dolichonyx Oryzixorous* (Bobolink) (MNRF 2011). These surveys were completed using a combination of point count surveys and walking transects. The surveys began as early as sunrise and ended no later than four hours past sunrise. Each survey location consisted of a 50 m radius circular-plot; with an additional 50 m radius buffer (i.e., a total of 100 m radius was surveyed). A list of all species was compiled, and the locations of any SAR were marked using a hand-held GPS.

During all field surveys, VES for bird species not well covered by point count or walking transect surveys, such as raptors, were completed, and all bird observations were documented. Attention was paid to searching for nests of birds that are protected year-round by special provisions of the MBCA, which are generally conspicuous.

4.5.2.1 Eastern Whip-poor-will

Eastern whip-poor-will (*Caprimulgus vociferus*) is known to occur in the local landscape surrounding the Site (eBird 2022). Surveys for this species were conducted over three nights from late May to late June 2020 following MNRF protocols (MNRF 2014a). These surveys took place 30 minutes after sunset within 10 days on either side of the full moon, on relatively clear nights with little wind.

When an eastern whip-poor-will was heard at a specific survey station, an azimuth of the calling bird was noted using a compass. Additional azimuths to the specific calling eastern whip-poor-will were taken at several locations within 50-100 m of each station, for greater accuracy of triangulation.

Data collected during the surveys were used to triangulate the approximate locations of calling eastern whip-poor-will. This information was then used to map habitat as described in the General Habitat Description for this species (Ontario 2021a). According to the General Habitat Description, Category 1 habitat is the location of a nest or the area within 20 m of the nest; Category 2 includes the area between 20 m and 170 m from the nest, or from the centre of approximated defended territory; and Category 3 includes the area of suitable habitat between 170 m and 500 m of the nest or from the centre of approximated defended territory.

As searching for individual nests is difficult, risky to the nest, and not recommended by the MNRF, Category 1 habitat was not searched for. The centre of approximated defended territory was determined by using the centroid of triangulated locations of individual eastern whip-poor-wills. Data from all three surveys were used to determine these locations. The centroids and survey stations are shown on Figure 2 and are the basis for the habitat mapping discussed later in this report.

Surveys for crepuscular species [e.g., common nighthawk (*Chordeiles minor)* and short-eared owl (*Asio flammeus*)] were also conducted on the same days, but earlier in the evening (around dusk)].

4.5.3 Mammal Surveys

4.5.3.1 Bats

During daylight, treed areas of the Site were searched for trees that provide potentially suitable maternity roosting habitat for bats. A survey for potential roost trees was performed, and included searching for trees with suitable cavities, cracks, peeling bark, presence of squirrel nests or dead, retained leaf clusters. Any suitable trees were also inspected for any visual signs of bat use (e.g., guano). Based on the results of the roost survey, no targeted bat acoustic monitoring was completed.

4.5.3.2 Winter Deeryards

Winter deeryard surveys were performed when snow depths in open areas on the Site were 40 cm or greater, and involved a biologist performing a wandering transect through treed areas of the Site. The surveys were timed to occur as soon as possible after a snowfall to allow for easy identification of tracks, and to quantify use by deer since the last snowfall. Any evidence of use by deer (tracks, trails, scat, bed or browse) was recorded, and an estimate of number of individuals was made, where possible.

4.5.4 Visual Encounter Surveys

General wildlife surveys included track and sign surveys, area searches, and incidental observations, concurrent with other field surveys. These surveys followed recommended protocols (MNRF 2013a; MNRF 2016; McDiarmid 2012; Bookhout 1994). During these surveys, the full range of habitats across the Site and in accessible parts of the Study Area were searched, with special attention paid to edge habitats and other areas where mammals might be active. Any areas of exposed substrate such as sand or mud were examined for any visible tracks. Any wildlife (including mammals, reptiles, amphibians, birds, butterflies, and dragonflies) seen and identified were recorded. When encountered, tracks and other signs (e.g., stick or cavity nests, tracks, scats, hair, tree scrapes, etc.) were identified to a species, if possible, and recorded.

4.5.5 Aquatic Survey

As part of the annual wetland monitoring of the existing Stitsville Quarry (Golder 2022), site visits are made each year to assess water levels, flow condition, and potential aquatic habitat in the on-Site wetlands. Historically, fish community surveys were completed as part of this long-term monitoring, but water levels have not been sufficient for fish sampling and no fish have been present since 2015. Based on Golder and WSP's observations during the monitoring program and over the course of multiple field visits to the Site, it was determined that there is no fish habitat present on the Site. Fish habitat is assumed to be present in the off-Site portions of the eastern wetlands, given their connection to extensive off-Site wetlands to the east. For these reasons, no targeted aquatic surveys were completed as part of this study with the exception of a single survey completed in 2023 to review the location and extent of suitable fish spawning habitat adjacent to the Site within the Study Area.

4.6 Analysis of Significance and Sensitivity and Impact Assessment

An assessment was conducted to determine the significance and sensitivity of natural features as well as significant species observed or determined to have the potential to exist on the Site or in the Study Area. The assessment was completed by comparing natural environment data collected through background material and the field surveys to published resources as described in Section 4.1, and through a detailed analysis using the methods and criteria outlined in the following sources:

- Natural Heritage Reference Manual (NHRM; MNRF 2010)
- Significant Wildlife Habitat Technical Guide (SWHTG; MNRF 2000)
- Significant Wildlife Habitat Criteria Schedules for Ecoregions 6E (SWHCS; MNRF 2015a)

An assessment was then conducted to determine how the proposed extraction may negatively impact significant natural features or SAR. Preventative, mitigative and remedial measures were considered in assessing the net effects of the proposed extraction on the surrounding ecosystem. Where impacts to significant wildlife habitat were determined to be possible,

mitigation was determined using the guidance provided in the Significant Wildlife Habitat Mitigation Support Tool (SWHMiST; MNRF 2014b).

5.0 Existing Conditions

5.1 Ecosystem Setting, Landforms, and Regional Context

The Study Area is located in Ecoregion 6E (Lake Simcoe - Rideau), which covers approximately 6.4% of Ontario, extending from Lake Huron east to the Rideau River (Crins et al. 2009). Ecoregion 6E is dominated by the Great Lakes – St. Lawrence Forest Region, which is underlain primarily by dolomite and limestone bedrock, except along the Frontenac Arch between Algonquin Park and the Adirondack Mountains where granites and gneisses are mixed with limestones and sandstones (Crins et al. 2009). The majority of this ecoregion exists as cropland (44.4%) and pasture or abandoned fields (12.8%), while water covers 4% of the ecoregion (Crins et al. 2009).

The Study Area lies within the Smith's Falls Limestone Plain physiographic region in an area dominated by limestone plain, with areas of clay plain and peat / muck to the east (Chapman and Putnam 1984). The limestone plains are characterized by thin soils over limestone bedrock. At the Site, the main landform feature present is flat tableland with bedrock near surface, with a slight sloping to the southeast towards the Goulbourn Wetland Complex PSW. Depressions in the bedrock have resulted in the formation of pockets of wetland at the Site, and the thin soils have influenced the plant community types present.

The Study Area is located within the Rideau River watershed, specifically the Flowing Creek catchment area of the Jock River subwatershed (RVCA 2023). This subwatershed is 555 km^2 and is characterized by 26% forest cover and 24% wetland cover (RVCA 2016). The Flowing Creek catchment area has been graded 'Fair' for surface water quality (RVCA 2016).

The Site is located in the Jock River planning area that has been identified by the City for the purposes of determining significance of woodlands (Ottawa November 2018). Forest cover in the Jock River planning area is 36.7%.

5.2 Geology and Hydrogeology

The information in this section is taken from WSP (2023) which should be read in conjunction with this report. Surficial geology within the area surrounding the Stittsville Quarry consists primarily of bedrock with thin unconsolidated Quaternary sediments or organic deposits.

The sequence of Paleozoic sedimentary rock underlying the Study Area (from oldest to youngest and deepest to shallowest) is Nepean Formation (sandstone), March Formation (sandstone/dolostone), Oxford Formation (dolostone), Rockcliffe Formation (limestone/sandstone/shale), Shadow Lake Formation (dolostone/sandstone), Gull River Formation (limestone/dolostone/shale) and Bobcaygeon Formation (limestone).

The estimated incremental 1 m water table drawdown associated with the proposed extraction is illustrated on Figure 1.

5.3 Surface Water Resources

Surface water features on the Site include pockets of the Goulbourn Wetland Complex PSW (eastern wetland), two additional wetland pockets (southern and western wetlands) and a small man-made ditch that conveys quarry discharge between the western and eastern wetlands during pumping events. Within the Study Area, surface water resources consist of the Goulbourn Wetland Complex PSW.

The most prominent surface water feature in the vicinity of the Site is the Goulbourn Wetland Complex PSW, located east directly adjacent to the Site. Under existing conditions, the surface runoff from the Site either drains towards the western wetland on the Site, or directly east towards the PSW. The Goulbourn Wetland Complex PSW drains from northwest to southeast from directly northwest of Speedway Road, approximately 1.5 km northeast of the Site, to its confluence with a branch of Flowing Creek southeast of Fallowfield Road, approximately 6 km southeast of the Site. Flowing Creek then drains into the Jock River near the Town of Richmond, Ontario.

5.4 Plant Communities

5.4.1 Regional Setting

The Study Area is located in the Upper St. Lawrence section of the Great Lakes – St. Lawrence Forest Region, which contains a wide variety of both coniferous and deciduous species, including yellow birch (*Betula alleghaniensis*), white ash (*Fraxinus americana*), green ash (*Fraxinus pennsylvanica*), eastern hemlock (*Tsuga canadensis*), white pine (*Pinus strobus*) and balsam fir (*Abies balsamea*), sugar maple (*Acer saccharum*) and American beech (*Fagus grandifolia*) in combination with basswood (*Tilia americana*), red maple (*Acer rubrum*), red oak (*Quercus rubra*), white oak (*Quercus alba*), and bur oak (*Quercus macrocarpa*), bitternut hickory (*Carya cordiformis*), butternut (*Juglans cinerea*), and silver maple (*Acer saccharinum*) (Rowe 1972).

5.4.2 Ecological Land Classification

Overall, the Site consists of meadows, thickets, disturbed and regenerating areas, as well as patches of forest, swamp, and marsh. Some areas are in various stages of regeneration from recent disturbance. The Study Area includes the Site, plus additional forest, meadow, thicket, wetland, and disturbed areas.

During the field surveys conducted on Site, seven upland plant communities were identified based on the ELC system (Lee et al. 1998), and five wetland communities based on the OWES system (MNRF 2022a), in addition to disturbed areas. No rare plant communities were identified. Plant communities are shown on Figure 1 and are described in Table 2 and Table 3.

Table 2 Upland Plant Communities on the Site

Terrestrial Plant Community	Description	SRANK [a]
CUM1-1 Mixed Meadow	This community includes meadows and habitat edges throughout the Site. These areas are a mix of remnant old fields and regenerating disturbed areas. Dominant plants include a mix of grasses and forbs such as meadow fescue (*Schedonorus pratensis*), poverty oat grass (*Danthonia spicata),* gray goldenrod (*Solidago nemoralis),* and asters	N/A

Terrestrial Plant Community	Description	SRANK [a]
	(*Symphyotrichum* spp.). There are scattered shrubs and regenerating seedling/sapling trees throughout. Soils range from deeper areas of fill and mineral soils to exposed bedrock.	
CUT1a Deciduous Thicket	This community is a band of deciduous thicket along the northeastern boundary of the Site. It is a mix of dense thicket and regenerating areas with a relatively low diversity of species such as common buckthorn (*Rhamnus cathartica*), and staghorn sumac (*Rhus typhina*). Small patches of meadow-like communities occur scattered throughout.	N/A
CUT1b Mixed Thicket/Regeneration	This community is three different areas throughout the Site. It underwent forestry operations in recent years and is a mixture of regenerating trees and thickets, interspersed with patches of meadows and open bedrock. Trees and shrubs are primarily seedlings and saplings with species such as trembling aspen (*Populus tremuloides*), white ash (*Fraxinus americana*), white spruce (*Picea glauca*), common buckthorn, and red raspberry (*Rubus idaeus*).	N/A
FOC1-2 Dry to Fresh White Pine – White Cedar Coniferous Forest	This community is an immature to semi-mature forest on relatively shallow rocky soils, that borders the wetland on the western side of the Site. The canopy is partially open and is dominated by white pine and white cedar (*Thuja occidentalis*), with associates such as white spruce (*Picea glauca*), large-toothed aspen (*Populus grandidentata*), and white birch (*Betula papyrifera*). The understory and groundcover ranges from sparse to moderate with a mix of seedling trees, as well as shrubs, graminoids and forbs such as poison ivy (*Rhus radicans*), wild sarsaparilla (*Aralia nudicaulis*), bracken (*Pteridium aquilinum*), ivory sedge (*Carex eburnea*), and large-leaved aster (*Eurybia Macrophylla*). There are occasional openings throughout due to a mix of relatively shallow bedrock and historic logging. Downed woody debris is occasional and snags and cavity trees are rare.	N/A
FOC2-2 Dry to Fresh White Cedar-White Spruce Coniferous Forest	This community is two forests that border wetlands on both the east and west side of the Site. It is similar to FOC1-2 above, with the main difference being that it is dominated by white cedar (western location), and white spruce	N/A

Terrestrial Plant Community	Description	SRANK [a]
	(eastern location). Snags are rare and cavity trees are absent.	
FOD3-1 Dry to Fresh Poplar Deciduous Forest	This community is a small patch of regenerating forest in the south-central portion of the Site. The canopy is partially open with a mixture of poplar species (*Populus* spp.). The understory and ground cover are moderate to dense with a mixture of forest species such as large-toothed aspen, and open habitat species such as Canada bluegrass (*Poa compressa*), and gray goldenrod. Downed woody debris, snags and cavity trees are absent.	N/A
FOD5-1 Dry to Fresh Sugar Maple Deciduous Forest	This community is a relatively small patch of semi-mature forest with silty/loamy soil on the western side of the Site. It is a small deciduous community surrounded by larger coniferous communities. The canopy is mostly closed and dominated by sugar maple (*Acer saccharum*), with associates such as trembling aspen and white cedar. The understory is sparse with sapling trees, shrubs, and forbs such as balsam fir (Abies balsamifera), glossy buckthorn (*Rhamnus frangula*), and Canada mayflower (*Maianthemum canadense*). Downed woody debris is occasional, snags and cavity trees are rare.	N/A
ANTHROPOGENIC		
DIST – Anthropogenic Disturbance	This community includes roadways, built up facilities, and other areas where soil has been stripped or recent fill added as part of day-to-day operations. There is a mix of bare soil, bedrock, pavement and gravel, and lawn/landscaping. Some naturally occurring plants do occur in these areas, but they are not abundant.	N/A

Notes: *[a] SRANK is a provincial–level rank indicating the conservation status of a species or plant community and is assigned by the NHIC in Ontario (NHIC 2023). SRANKs are not legal designations but are used to prioritize protection efforts in the Province. SRANKs for plant communities in Ontario are defined in the Significant Wildlife Habitat Technical Guide (MNRF 2000). Ranks 1-3 are considered extremely rare to uncommon in Ontario; Ranks 4 and 5 are considered to be common and widespread. N/A indicates a community that has not been ranked.*

Table 3 Wetland Plant Communities on the Site

Wetland Plant Community	Dominant Forms	Dominant Species	Description
reM1	re, ne, gc,	*Typha latifolia, Carex* spp*., Scirpus* spp*., Thelypteris palustris, Lythrum salicaria, Galium palustre*	This community is represented by two basin marshes within the western and eastern wetlands, as well as tiny portions of wetlands along the eastern boundary that are contiguous off-Site. They occur on moderately deep organics over a thin layer of silt, then bedrock. They are dominated by dense stands of common cattail with several other plant species including patches of shrubs and trees throughout. There are also areas of dead standing trees, primarily white cedar, where historic flooding has occurred, possibly due to beaver activity. There are a few isolated channels and deeper pools throughout where flooding occurs during snow melt and other periods of high water, but they mostly dry up by late summer. The alien invasive phragmites is present within this community in the western wetland and has been spreading in recent years.
neM2	ne, gc, ls	*Juncus* spp*., Carex* spp*., Phalaris arundinacea, Scirpus* spp*., Rhamnus frangula, Agalinis tenuifolia, Lythrum salicaria,*	This community is in the core of the southern wetland. There are linear channels that appear to be remnants of some historical disturbance, that contain pooled water in spring and dry up by early summer. Surrounding these channels is a band of shallow marsh on slightly deeper clayey-sandy soils over rock.
cS1	c, ts, ne	*Thuja occidentalis, Abies balsamea Rhamnus frangula, Alnus incana, Carex* spp.	This community is a narrow band of relatively dry swamp around the perimeter of the western wetland, on shallow organics and silt, over bedrock and rock. It is a primarily closed canopy transitional area between the basin portion of the wetland and the adjacent upland forest. There are no signs of surface water features, but the soil is moist for at least part of the year. In addition to the dominant species noted, there are patches

Wetland Plant Community	Dominant Forms	Dominant Species	Description
			and scattered individuals of various other moisture tolerant species and upland species such as poison ivy (*Rhus radicans*) and wild sarsaparilla (*Aralia nudicaulis*). Downed woody debris is occasional, and snags are rare, and cavity trees are absent. The alien invasive glossy buckthorn is not a dominant component but has been increasing in recent years.
tsS2	ts, ls, ne	*Thuja occidentals, Salix* spp., *Larix laricina, Cornus stolonifera, Carex* spp.	This community covers a large portion of the southern half of the western wetland. Substrate is moderately deep organics over silt and bedrock/rock. It is similar to the reM1, and part of the main basin, but with a much higher proportion of tall shrubs and stunted/immature trees that have increased in abundance in recent years. This increase in woody vegetation is possibly due to the decreased water levels in the overall wetland from a lack of beaver activity. There are a few small channels and areas where minor flooding occurs in very early spring, and during major rain events.
cS3	c, ts, ne	*Thuja occidentalis, Abies balsamea, Rhamnus frangula, Alnus incana, Carex* spp.	This community is a medium sized relatively dry swamp at the northeastern corner of the western wetland, and around the eastern wetland, on shallow organics and silt over bedrock/rock. It is a mix of thicket swamp and treed swamp, but overall is dominated by trees. There are a few small areas where brief pooling of water occurs in very early spring, otherwise the soil is moist for at least part of the year. Diversity is relatively low, but in addition to the dominant species noted, there are patches and scattered individuals of various other moisture tolerant species such as red maple, and some upland species. Green ash was a notable component historically; however, many are dead or dying, likely a result of emerald ash

Wetland Plant Community	Dominant Forms	Dominant Species	Description
			borer. The alien invasive glossy buckthorn is widespread and becoming dominant in lower to middle layers. Downed woody debris is abundant, and snags and large cavity trees are rare or absent with the exception of dead and dying ash.
tsS4	ts, c, ls,	*Rhamnus frangula, Alnus incana, Thuja occidentalis*	This community is a dense thicket swamp that is the transition between the reM1 and the cS3 in the western wetland. Substrate is shallow to moderate organics over silt and bedrock/rock. Overall, it is very dense with low diversity, except for some open areas associated with historic beaver activity. These small patches historically held standing water for notable periods, but this is no longer the case, and they are dense with marsh-like vegetation. There are signs of old beaver dams although they are barely visible. This is also the location where water exits the wetland. Glossy buckthorn is dominant or becoming dominant in most layers, and seedlings are very dense in some areas.
tsS5	ts, gc	*Rhamnus frangula, Alnus incana, Salix* spp., *Onaclea sensibilis, Rubus pubescens, Eupatorium maculatum*.	This community is a mature, tall, thicket swamp on organic and shallow sand over bedrock in the southern wetland. For the most part it is dominated by very dense, closed canopy mature deciduous shrubs, dominated by the alien invasive glossy buckthorn. There are also scattered trees present. The understory is sparse, with some patches of forbs and shrubs. In addition, in the understory, seedlings of glossy buckthorn are becoming dominant in some areas. Open water is lacking, with the exception of some overland flow and flooding that occurs in early spring.
cS6	c, ts, gc	*Thuja occidentalis, Larix laricina,*	This community makes up the southern and western portions of the southern wetland and

Wetland Plant Community	Dominant Forms	Dominant Species	Description
		Rhamnus frangula, Alnus incana, Rubus pubescens, Onaclea sensibilis	occurs on shallow organics over sand and rock. It is somewhat similar to tsS5, except it is dominated in the canopy by conifer trees including tamarack (*Larix laricina*), and eastern white cedar. Tall shrubs, including the alien invasive glossy buckthorn, are also very abundant and are codominant throughout. Ground cover and understory is sparse to moderate with a mix of forbs, shrubs, and graminoids. Open water is restricted to a few small pools, and overland flooding in early spring. The groundwater is close to the surface in this community in some locations. Downed woody debris, snags, and cavity trees are rare.

5.4.3 Vascular Plants

A total of 250 vascular plants were identified on the Site during the field surveys. For a list of plants identified within the Site refer to Appendix D. One species identified, prairie dropseed (*Sporobolus heteroplepis*), is ranked as rare provincially (S3), and considered regionally significant in Ottawa by Brunton (2005). This species was represented by a small colony on an opening of shallow bedrock soil within the white cedar – white spruce coniferous forest (ELC code: FOC2-2) immediately south of the western wetland (Figure 3). Prairie dropseed is discussed further in Section 6.7.3. No plant SAR, as designated under the ESA or SARA, were observed on the Site.

5.5 Wildlife

A list of all wildlife or wildlife signs encountered on the Site during field surveys is provided in Appendix E.

5.5.1 Herpetiles

A total of nine herpetile species were identified on the Site. Seven species of anurans (frogs and toads) were identified in the wetlands on the Site. This included a full chorus of spring peepers (*Pseudacris crucifer*) in all wetlands on Site, as well as smaller numbers of the other species. Western chorus frog (*Pseudacris triseriata*) was observed within the western and southern wetlands during the April survey (between 5 and 10 individuals) (Figure 3). Two species of snakes were observed, including a few individual eastern garter snakes (*Thamnophis sirtalis),* throughout the Site and a single northern red-bellied snake (*Storeria occipitomaculata*) at the edge the forest near the western boundary of the Site. No turtles were observed on the Site during the targeted surveys, or during any of the numerous historic site visits, and available turtle habitat is limited.

Western chorus frog (no designation under the ESA; threatened under the SARA; ranked S3 by the NHIC), is discussed further in Section 6.7.3. No other SAR or provincially rare herpetiles were observed on Site.

5.5.2 Birds

A total of 58 bird species were identified in the Study Area. This includes a mix of open habitat, edge, wetland, and forest species such as savannah sparrow (*Passerculus sandwichensis*), song sparrow (*Melospiza melodia*), red-winged blackbird (*Agelaius phoeniceus*), and red-eyed vireo (*Vireo olivaceus*). Common nighthawks were observed flying over the Site during crepuscular surveys in June 2020, with one individual observed landing on the Site. A single singing male each of wood thrush (*Hylocichla mustelina*) and eastern wood-pewee (*Contopus virens*) were observed within the white cedar – white spruce coniferous forest (ELC code: FOC2-2) on the west side of the Site. Common nighthawk and wood thrush are designated as threatened under the SARA, and special concern under the ESA. Eastern wood-pewee is designated as special concern under both the SARA and the ESA. These species are discussed further in Section 6.7.3. Locations of these species observations are shown on Figure 3.

A few individual eastern whip-poor-will were observed within the Site, or on the adjacent lands. This included primarily birds heard far outside of the Site (>500 m), but one individual was triangulated within the Site, near the western wetland, and another was triangulated within 500 m of the Site to the south (Figure 2). Both of these individuals have habitat that overlaps the Site, as defined within the General Habitat Description for eastern whip-poor-will (Ontario 2021a). Eastern whip-poor-will is designated as threatened under the SARA and the ESA, and is discussed further in Section 6.1.

No nests of the bird species listed as having year-round protection, per the Migratory Bird Convention Regulations 2022, were observed on the Site.

5.5.3 Mammals

A total of eleven species of mammal were identified on the Site. This included species that are common in the region such as white-tailed deer (*Odocoileus virginianus*) and red squirrel (*Tamiasciurus hudsonicus*). Although bats may forage in the airspace over the Site, no potential SAR bat roosting habitat was identified.

During the winter deeryard surveys, very minimal use of the Site by deer was observed. Three individual tracks were observed in the forest surrounding the western wetland during the first visit, and one individual track was observed during the second visit. Occasional and scattered tracks were also observed in the open areas of the Site that do not have suitable cover to be considered a deeryard. No well-used trails, evidence of browsing, beds, scat or urine were observed. Snow depths in the open areas were measured at 45 to 55 cm, and snow within the treed areas was 20 to 35 cm during the surveys. The results of these surveys suggest that there is very little winter deer use of the Site. No concentrations of other mammals were noted during any of the surveys.

No SAR or provincially rare mammals were identified on the Site.

5.5.4 Bumblebees, Dragonflies, and Butterflies

A total of 31 insect species were identified during the field surveys. This included common species such as dun skipper (*Euphyes vestris*), common eastern bumblebee (*Bombus*

impatiens), and white-faced meadowhawk (*Sympetrum obtrusum*). A single adult monarch was observed nectaring on some flowers near the center of the Site (Figure 3). Monarch is designated as special concern under the SARA and the ESA. This species is discussed further in Section 6.7.3. No other SAR or provincially rare insects were identified on the Site, and no unusual concentrations were noted.

5.6 Aquatic Habitat and Fish

Based on Golder's observations during the monitoring program associated with the existing aggregate operation (Golder 2022) and over the course of multiple field visits to the Site, it was determined that there is no fish habitat present in the western or southern wetlands, or the on-Site portions of the eastern wetlands. Fish habitat is assumed to be present in the off-Site portions of the eastern wetlands, given that they are part of the extensive Goulbourn Wetland Complex PSW. This assumed off-Site fish habitat includes potential fish spawning habitat, which WSP has mapped where present in close proximity to the Site (Figure 3).

6.0 Significant Natural Features and Impact Assessment

This section assesses the significance of natural features and functions (as outlined in Section 2.0) observed on the Site or in the Study Area, as well as the potential impacts to those features that may result from the proposed extraction, in consideration of recommended mitigation measures.

6.1 Habitat of Endangered or Threatened Species

Based on the background review and field surveys, two endangered or threatened species and/or their defined habitat were identified as being present or potentially present on the Site and/or in the Study Area (Appendix C). This included eastern whip-poor-will and Blanding's turtle (*Emydoidea blandingii*).

Eastern Whip-poor-will

Eastern whip-poor-will is designated as threatened under the ESA. Territories of two individual eastern whip-poor-wills were identified during the surveys on the western portion of the Site and on lands to the south of the Site, as shown on Figure 2. Additional eastern whip-poor-will were heard off-Site, but these were calling too far away and/or detected too infrequently to triangulate or determine habitat use.

Eastern whip-poor-will habitat, as protected under the ESA is defined in the General Habitat Description (Ontario 2021a) as the following:

- Category 1 – Nest and the area within 20 m of the nest.
- Category 2 – The area between 20 m and 170 m from the nest or centre of approximated defended territory.
- Category 3 – The area of suitable habitat between 170 m and 500 m of the nest or centre of approximated defended territory.

As no nests were identified on the Site, no Category 1 habitat has been identified. Category 2 and 3 habitats occur on the Site and in the Study Area (Figure 2). The proposed extraction will

result in the loss of 8.5 ha of Category 2 habitat and 49.8 ha of Category 3 habitat for eastern whip-poor-will.

During extraction, there will be no suitable Category 2 habitat at the Site; however, the entire Site will be rehabilitated post-extraction to a mix of natural habitat types that will be suitable for supporting nesting and foraging of eastern whip-poor-will. It is anticipated that the Site will continue to provide Category 3 (i.e., foraging) habitat during extraction, as this species is an aerial forager, and the quarry will not be operational at night when this species is foraging. The proposed rehabilitation plan for the Site includes the creation of approximately 15 ha of wetlands and approximately 40 ha of forest, with the balance of the Site consisting of open areas, all of which will be suitable habitat for this species. Based on this, there will be no net loss of habitat for eastern whip-poor-will at the Site post-rehabilitation. Mitigation to protect individuals of this species during site preparation and extraction are presented in Section 8.1.

Since the proposed extraction will remove habitat for this species, authorizations under the ESA will be required. An Information Gathering Form (IGF) will need to be prepared and submitted to the MECP to initiate the approvals process.

Blanding's Turtle

Blanding's turtle is designated as threatened under the ESA. There are records of Blanding's turtle within 2 km of the Site (NHIC 2022).

Blanding's turtle habitat, as protected under the ESA is defined in the General Habitat Description (Ontario 2021b) as the following:

- Category 1 – Nest and the Area within 30 m or overwintering sites and the area within 30 m.
- Category 2 – The wetland complex (i.e., all suitable wetlands or waterbodies within 500 m of each other) that extends up to 2 km from an occurrence, and the area within 30 m around those suitable wetlands or waterbodies.
- Category 3 – Area between 30 m and 250 m around suitable wetlands/waterbodies identified in Category 2, within 2 km of an occurrence.

To assess whether or not Blanding's turtles are using the Site, multiple surveys were completed as noted in Section 4.0. No Blanding's turtles or evidence of nesting was identified on the Site or in the Study Area during targeted surveys following MNRF protocols. No Blanding's turtles or evidence of nesting by any species of turtle have been seen on the Site by WSP (formerly Golder) staff in the >10 years that biological monitoring has been occurring in the wetlands and terrestrial habitats on the Site. Based on this, no Category 1 (nesting) habitat has been identified at the Site. The western, southern and on-Site portions of the eastern wetlands are dry for long periods of time during the active season for turtles, and typically contain shallow water during early spring (i.e., after snow melt) and during the active season immediately after large storm or quarry pumping events. Even at these times, water levels are very shallow. Based on this, Cambium's opinion is that these wetlands provide no Category 1 (over-wintering) habitat, and only marginal, sporadic Category 2 habitat for this species. This Category 2 and subsequent Category 3 habitat have been mapped on Figure 2. The proposed extraction will remove approximately 15 ha of wetland (which equates to approximately 24 ha of Category 2 habitat) and 76.3 ha of Category 3 habitat. No impacts to off-Site wetlands are anticipated (see Section 6.2 for detailed discussion), and a 30 m setback to the Goulbourn Wetland Complex PSW has been incorporated.

The proposed rehabilitation plan for the Site includes the creation of approximately 19.5 ha of wetlands that will be suitable Category 2 habitat for this species, and will include suitable Category 1 habitat, in the form of deeper pockets within the wetland (over-wintering habitat, which is currently lacking at the Site). Under the rehabilitated condition, the entire Site will constitute suitable movement habitat for this species (i.e., Category 3 habitat). Based on this, there will be no net loss of habitat for Blanding's turtle at the Site post-rehabilitation, and there will be newly created over-wintering habitat. Mitigation to protect individuals of this species during site preparation and extraction are presented in Section 8.1.

Since the proposed extraction will remove habitat for this species, authorizations under the ESA will be required. An Information Gathering Form (IGF) will need to be prepared and submitted to the MECP to initiate the approvals process.

6.2 Significant and Coastal Wetlands

Significant wetlands are areas identified as provincially significant by the MNRF using evaluation procedures established by the province, as amended from time to time (MMAH 2020). Wetlands are assessed based on a range of criteria, including biology, hydrology, societal value and special features (MNRF 2022d).

There are no coastal wetlands on the Site or in the Study Area.

The Site and Study Area contain several pockets of wetland (eastern, western and southern wetlands on Figure 3). The eastern wetlands form part of the Goulbourn Wetland Complex PSW. The boundaries of all wetlands on the Site were mapped by WSP (formerly Golder) and accepted by MNRF and are reflected in the current LIO mapping, and no additional changes to wetland boundaries are proposed.

In 2022, an Ontario Land Tribunal determined that the southern wetland was not part of the Goulbourn Wetland Complex PSW (Case No. PL200263). WSP evaluated the southern and western wetlands according to the OWES (MNRF 2022d) and determined that neither constitutes a PSW. The evaluations have been deemed complete by Fergus Nicoll and Gwendolyn Weeks, certified wetland evaluators, and submitted to the City of Ottawa on April 6, 2023 (evaluations confirmed to be accurate by the City on May 9, 2023). Digital mapping of the boundaries of these wetlands was sent to the City and MNRF in April 2023, and confirmation of the non-PSW status of these wetlands was forwarded to the MNRF on April 18, 2023. LIO mapping currently reflects the non-PSW status of the on-Site wetlands. For a discussion of impacts to non-PSW wetlands, refer to Section 6.8.

A 30 m setback has been applied to all portions of the Goulbourn Wetland Complex PSW on and adjacent to the Site within the Study Area, inside which no vegetation clearing will occur, with one minor exception: berms will be placed in a few locations along the perimeter of the Site (Figure 3), one of which will be located within the 30 m setback to the Goulbourn Wetland Complex PSW (where it meets Jinkinson Road). In this area, existing cover consists of manicured grass and a small corner of a meadow community (ELC code: CUM1-1) so the implementation of a berm at that location is not expected to reduce the effectiveness of the

buffer or cause a negative impact to the buffer area itself. A document prepared by Beacon Environmental (2012) reviewed scientific literature and current practices in Ontario relating to ecological buffering. For wetlands, the study identified the key functions of buffers as:

- Providing protection of water quality;
- Providing protection of water quantity;
- Screening direct human disturbances;
- Protecting a hazard mitigation zone; and,
- Protection of core habitat.

Table 7 of that report (reproduced below as Table 4) identifies ranges for wetland buffer widths, and the corresponding risk of not achieving the desired buffer function for each identified range of widths.

Table 4 Ranges for Buffer Widths to Natural Environment Features based on the Current Science

Wetland Buffers														
	<5m	5-10m	11-20m	21-30m	31-40m	41-50m	51-60m	61-70m	71-80m	81-90m	91-	101-	111-	>120m
A. Water Quantity	Data indicate that this is not mitigated by site specific buffers													
B. Water Quality														
C. Screening of Human Disturbance / Changes in Land Use														
D. Hazard Mitigation Zone	Should be based on consideration of hazards, but may overlap with buffers													
E. Core Habitat Protection														

Key: Risk of Not Achieving the Desired Buffer Function

	High		Moderate		Low

Based on the information presented by Beacon (2012) and in its application to the conditions at the Site, a no-touch buffer zone adjoining the Goulbourn Wetland Complex PSW of 30 m is sufficient to protect the PSW from impacts. At this distance, risk to the wetland from changes in water quality, human disturbance and protection of core habitats are considered moderate, however; WSP (2023; detailed further below) has demonstrated that there will be no impacts to water quality under development conditions, and the habitat within the wetland buffer is trees, which provide enhanced screening of the core habitat from adjacent human activity. Further, human activity is already present in proximity to the wetland (i.e., existing aggregate operation). Key considerations for identifying a hazard mitigation zone around a wetland are identified by Beacon (2012) as presence of slopes, the height and condition of trees at the wetland edge, and the vegetative composition of the adjacent area itself. Beacon (2012) notes that the literature reviewed for their report identifies reasonable ranges to protect hazard zones around wetlands as being between 10 and 50 m. In the case of the eastern wetlands, no slopes are present on Site adjacent to these features, and adjacent vegetation is comprised of semi-mature mixed forest. Based on this, Cambium is of the opinion that the hazard zone does not extend past the proposed 30 m buffer, and that over-all the 30 m buffer is sufficient to protect a hazard zone around the wetlands, as well as protecting the form and function of these particular wetlands.

Therefore, although Table 4 indicates that a 30 m buffer has a moderate risk of not achieving the desired buffer function in general terms, the site-specific information discussed above leads Cambium to the opinion that the 30 m buffer will be sufficient in this case, given the Site conditions and mitigations being implemented, and that no negative impact to the wetlands is anticipated based on the results of this study and the Water Report (WSP 2023). Further, the rehabilitation plan involves substantial re-naturalization of the Site, which will provide long-term protection and enhancement to the adjacent wetlands.

The 30 m wetland setbacks have been measured from the edge of the wetlands, as identified by a certified wetland evaluator in accordance with the methods of the OWES (MNRF 2022d). The setbacks will be implemented on the ground under the supervision of a certified wetland evaluator.

According to WSP (2023), the estimated changes in overall average annual flow volume to the Goulbourn Wetland Complex PSW during the operational phase of the proposed extraction is not expected to significantly change flows or water levels, which are influenced by external factors under both baseline (all quarries at full development except for the Site) and proposed operational conditions. The Water Report (WSP 2023) notes that there is limited additional drawdown predicted in the upper weathered bedrock beneath the Goulbourn Wetland Complex PSW (see Figure 1). It is anticipated that the volume of water being pumped to the Goulbourn Wetland Complex PSW (combination of groundwater and surface water captured in the excavation) from the quarry sump will compensate for the decreased groundwater input to the wetland due to the predicted drawdown. Therefore, this predicted drawdown will not have any measurable effect on the form or functions of the PSW. The water that will be discharged from the quarry extension is sourced from local precipitation and groundwater from approximately the same catchment area as under baseline conditions. The quarry discharge will be diffused in the connecting water bodies and changes in flows and water levels are expected to be minimal. Based on calculations and visual observations in the field, it is expected that there will be no change to the form or function of the receiving features in comparison to baseline conditions.

Based on the above, the proposed extraction will not result in any encroachment or negative impacts to the Goulbourn Wetland Complex PSW. General mitigation relating to noise and dust is presented in Section 8.1. Further analysis is not warranted.

6.3 Fish Habitat

There is no fish habitat on the Site. Fish habitat in the Study Area is associated with the Goulbourn Wetland Complex PSW. As detailed in Section 6.2, the proposed extraction will not result in any encroachment or negative impacts to the Goulbourn Wetland Complex PSW and the fish habitat it represents. Explotech (2023) indicates that the proposed blasting meets DFO guidelines for blasting adjacent to fish habitat. General mitigation relating to fish habitat is presented in Section 8.1. No further analysis is warranted.

6.4 Significant Woodlands

Significant woodlands are to be defined and designated by the local planning authority (MNRF 2010). According to the PPS, significant woodlands are to be identified using criteria established by the MNRF in the NHRM (MNRF 2010).

The City has updated their official plan policies as they relate to determining woodland significance in the Rural Area to be in conformity with the direction given in the PPS. As part of this, the City has prepared criteria for determining woodland significance in their jurisdiction (Ottawa 2022b). The criteria indicate that woodlands within the Rural Area are significant if they exhibit any one of the NHRM criteria and meet a minimum size threshold for each of those criteria. The criteria and associated thresholds are provided below in Table 5.

Table 5 City of Ottawa Significant Woodland Evaluation Criteria and Size Thresholds (Rural)

Woodland Cover in Planning Area (%):		5% or less	5%-15%	15%-30%	30%-60%	> 60%
Category	**Criteria**					
Size	Minimum Size	2 ha	4 ha	20 ha	50 ha	N/A
Ecological Functions	Woodland Interior	Any	Any	2 ha	8 ha	20 ha
	Proximity	0.8 ha	2 ha	5 ha	10 ha	20 ha
	Linkages	0.8 ha	2 ha	5 ha	10 ha	20 ha
	Water Protection	0.8 ha	2 ha	5 ha	10 ha	20 ha
	Woodland Diversity	0.8 ha	2 ha	5 ha	10 ha	20 ha
Uncommon Characteristics	Unique Species Composition	0.8 ha	0.8 ha	0.8 ha	0.8 ha	0.8 ha
	Provincially Significant Vegetation Community	0.8 ha	0.8 ha	0.8 ha	0.8 ha	0.8 ha
	Rare, Uncommon or Restricted Plant Species	0.8 ha	0.8 ha	0.8 ha	0.8 ha	0.8 ha
	Older Woodlands	0.8 ha	1 ha	2.5 ha	5 ha	10 ha
Economic and Social Values	Economic and Social Values	0.8 ha	2 ha	5 ha	10 ha	20 ha

For those criteria listed under Ecological Functions, the specified distance for Proximity and Water Protection is 30 m. For linkages, there are no minimum distances as any woodland meeting the minimum size threshold shall be considered significant if it falls within a core natural area or natural landscape linkage area shown in Appendix E of the guidelines (Ottawa 2022b), or has been identified as a natural linkage in another Council-approved planning study.

Based on the definition of a break in canopy cover (i.e., 20 m per the NHRM), there are four distinct woodlands on the Site (Woodlands A, B, C and D; Figure 3). The Study Area contains large woodlands contiguous with all the woodlands on the Site. Forest cover in the Jock River planning area is 36.7% (see green highlighted column in Table 4).

Woodland A is contiguous with off-Site woodlands to the southwest. The combined on- and off-Site woodlands are >50 ha in size and meet the minimum size threshold for the Size criteria and are considered significant. The on-Site portion of Woodland A is approximately 24.3 ha in size. The on-Site portion of Woodland A was compared to the criteria listed in Table 5, with the results presented in Table 6:

Table 6 Comparison of On-Site Portion of Woodland A to Significance Criterion

Category	Criteria	Meets the Minimum Size for the Criteria?	Meets the Criteria?	Notes
Size	Minimum Size	N	-	
Ecological Function	Woodland Interior	Y	N	
	Proximity	Y	Y	Contiguous with wetland
	Linkages	Y	Y	Shown as Core Natural Area (Ottawa November 2018)
	Water Protection	Y	Y	Contiguous with wetland
	Woodland Diversity	Y	N	
Uncommon Characteristics	Unique Species Composition	Y	N	
	Provincially Significant Vegetation Community	Y	N	
	Rare, Uncommon or Restricted Plant Species	Y	Y	Prairie dropseed
	Older Woodlands	Y	N	
Economic and Social Values	Economic and Social Values	Y	N	

Based on this analysis, the on-Site portion of Woodland A meets the City definition of significant woodlands, when considered in isolation of the contiguous off-Site woodlands. 23.1 ha of the on-Site portion of Woodland A will be removed as part of the proposed extraction. The removal of the on-Site portions of Woodland A will not impact the form, function or significance (i.e., any criteria listed in Table 5 that may be present off-Site) of the off-Site portions of Woodland A, including any habitats the woodland may provide (e.g., potential bat maternity roosting habitat; interior forest habitat, etc.).

Woodland B is contiguous with off-Site woodlands to the east. The combined on- and off-Site woodlands are >50 ha in size and meet the minimum size threshold for the Size criteria and

are considered significant. The on-Site portion of Woodland B is approximately 8.6 ha in size. The on-Site portion of Woodland B was compared to the criteria listed in Table 5, with the results presented in Table 7.

Table 7 Comparison of On-Site Portion of Woodland B to Significance Criterion

Category	Criteria	Meets the Minimum Size for the Criteria?	Meets the Criteria?	Notes
Size	Minimum Size	N	-	
Ecological Function	Woodland Interior	Y	N	
	Proximity	N	-	
	Linkages	N	-	
	Water Protection	N	-	
	Woodland Diversity	N	-	
Uncommon Characteristics	Unique Species Composition	Y	N	
	Provincially Significant Vegetation Community	Y	N	
	Rare, Uncommon or Restricted Plant Species	Y	N	
	Older Woodlands	Y	N	
Economic and Social Values	Economic and Social Values	N	-	

Based on this analysis, the on-Site portion of Woodland B does not meet the City definition of a significant woodland, when considered in isolation of the contiguous off-Site woodlands. This feature is associated with the eastern wetland, which is considered part of the Goulbourn Wetland Complex PSW, and much of the woodland lies outside of the proposed extraction area. 3.4 ha of the on-Site portion of Woodland B will be removed as part of the proposed extraction. The removal of the on-Site portions of Woodland B will not impact the form, function or significance (i.e., any criteria listed in Table 5 that may be present off-Site) of the off-Site

portions of Woodland B, including any habitats the woodland may provide (e.g., potential bat maternity roosting habitat; interior forest habitat, etc.).

Woodlands C and D are contiguous with off-Site woodlands to the south. The combined on- and off-Site woodlands are >50 ha in size and meet the minimum size threshold for the Size criteria and are considered significant. The on-Site portion of Woodlands C and D are approximately 3.1 ha and 1.0 ha in size, respectively. The on-Site portion of Woodlands C and D were compared to the criteria listed in Table 5, with the results presented in Table 8.

Table 8 Comparison of On-Site Portion of Woodlands C and D to Significance Criterion

Category	Criteria	Meets the Minimum Size for the Criteria?	Meets the Criteria?	Notes
Size	Minimum Size	N	-	
Ecological Function	Woodland Interior	N	-	
	Proximity	N	-	
	Linkages	N	-	
	Water Protection	N	-	
	Woodland Diversity	N	-	
Uncommon Characteristics	Unique Species Composition	Y	N	
	Provincially Significant Vegetation Community	Y	N	
	Rare, Uncommon or Restricted Plant Species	Y	N	
	Older Woodlands	N	-	
Economic and Social Values	Economic and Social Values	N	-	

Based on this analysis, the on-Site portion of Woodlands C and D do not meet the City definition of a significant woodlands, when considered in isolation of the contiguous off-Site

woodlands. 2.8 ha of the on-Site portion of Woodland C will be removed, and all of Woodland D will be removed as part of the proposed extraction. The removal of the on-Site portions of Woodlands C and D will not impact the form, function or significance (i.e., any criteria listed in Table 5 that may be present off-Site) of the off-Site woodlands, including any habitats the woodland may provide (e.g., potential bat maternity roosting habitat; interior forest habitat, etc.).

According to the analysis presented above, each of the Woodlands on the Site is considered significant when considered in combination with the off-Site woodlands they are contiguous with. When considered in isolation of the off-Site portions, only Woodland A is considered significant. The proposed extraction will result in the removal of 23.1 ha of Woodland A, 3.4 ha of Woodland B, 2.8 ha of Woodland C and 1.0 ha of Woodland D, totalling 30.3 ha of woodland loss. According to the City of Ottawa official plan (Section 4.8.1 5]), the City shall take a no net loss approach with respect to woodlands in the Rural Area. The proposed rehabilitation plan for the Site calls for the creation of approximately 44.5 ha of woodland habitat, which will result in no net loss of woodlands on the Site.

The off-Site woodlands in the Study Area meet the minimum size threshold for the Size criteria (among others) and are therefore considered significant woodlands.

The forest communities on-Site and off-Site within the Study Area are bedrock-dominated, which means they are heavily reliant on snow melt and rain for water inputs rather than groundwater. This is evidenced by the health and persistence of the existing forests and other vegetation communities immediately adjacent to the current extraction. Based on WSP (2023) the water table in the Study Area is interpreted to be within the bedrock between 0.3 m to 3.5 m below the bedrock surface. At most locations, the water table is at least 0.5 m below ground surface. The anticipated incremental drawdown of 1-2 m is not expected to result in any negative impacts to surface vegetation since, as noted, these communities are reliant on surface water inputs rather than groundwater. Implementation of standard mitigation measures and setbacks as outlined in Section 8.1 will further protect these woodlands. Further analysis is not warranted.

Discussion of linkages is provided in Section 6.7.4.

6.5 Significant Valleylands

Significant valleylands should be defined and designated by the planning authority. General guidelines for determining significance of these features are presented in the NHRM (MNRF 2010). Recommended criteria for designating significant valleylands include prominence as a distinctive landform, degree of naturalness, importance of its ecological functions, restoration potential, and historical and cultural values.

The topography of the Site and Study Area is flat to undulating, and therefore there are no significant valleylands on the Site or in the Study Area. Further analysis is not warranted.

6.6 Significant Areas of Natural or Scientific Interest

Significant Areas of Natural and Scientific Interest (ANSIs) are areas identified as provincially significant by the MNRF using evaluation procedures established by the Province, as amended from time to time.

There are no provincially significant ANSI identified on the Site or in the Study Area. Further analysis is not warranted.

6.7 Significant Wildlife Habitat

Significant wildlife habitat (SWH) is one of the more complicated natural heritage features to identify and evaluate. The NHRM includes criteria and guidelines for designating SWH. There are two other documents, the Significant Wildlife Habitat Technical Guide (SWHTG) and the Significant Wildlife Habitat Criteria Schedules (SWHCS) (MNRF 2000 and MNRF 2015a), that can be used to help decide what areas and features should be considered significant wildlife habitat. These documents were used as reference material for this study.

There are four general types of significant wildlife habitat: seasonal concentration areas, rare vegetation communities or specialized habitats for wildlife, species of conservation concern, and animal movement corridors. The specific habitats considered in this report were evaluated

based on the criteria outlined in the SWHCS for ecoregion 6E (MNRF 2015a). All types of SWH are discussed below in relation to the Site and the Study Area.

6.7.1 Seasonal Concentration Areas

Seasonal concentration areas are those areas where large numbers of a species congregate at one particular time of the year. If a SAR, or if a large proportion of the population may be lost if significant portions of the habitat are altered, all examples of certain seasonal concentration areas may be designated.

The SWHCS for ecoregion 6E identifies the following types of seasonal concentrations of animals that may be considered significant wildlife habitat, and outlines means of identifying such habitat. They are:

- Waterfowl stopover and staging areas (aquatic and/or terrestrial)
- Shorebird migratory stopover areas
- Raptor wintering areas
- Bat hibernacula
- Bat maternity roost colonies
- Turtle wintering areas
- Snake hibernaculum
- Colonially nesting bird breeding habitat (bank and cliff)
- Colonially nesting bird breeding habitat (tree / shrub)
- Colonially nesting bird breeding habitat (ground)
- Migratory butterfly stopover areas
- Landbird migratory stopover areas
- Deer yarding and winter congregation areas

No areas suitable for supporting waterfowl during migration times (stopover and staging) were identified during field surveys. No terrestrial stopover or staging habitat was observed on the Site or in the Study Area. No concentrations of waterfowl were observed during the field surveys.

Shorebird stopover sites are typically well-known and have a long history of use. There are no areas of suitable shorebird foraging habitat on the Site or in the Study Area. In addition, no concentrations of shorebirds or presence of the listed species was identified during the field surveys.

Ideal raptor wintering habitat areas are generally located in mature mixed or coniferous woodlands that abut windswept fallow fields or pastures that do not get covered by deep snow, with a combined habitat size of >20 ha. There are no such suitable habitats on the Site, but this habitat type is likely present in the Study Area based on the extensive forest cover. Potential impacts of the proposed aggregate extraction to potential off-Site raptor wintering habitat are discussed under the blanket of Significant Woodlands (Section 6.4).

No suitable areas of bat hibernacula were observed on the Site and none are known to occur in the Study Area, although the Site and Study Area are mapped as potential and inferred karst topography (OMNDM 2016). Based on the field surveys, no portions of the Site provide the necessary number (>10/ha) of large (>25 cm diameter-at-breast-height [DBH]) wildlife trees to be considered significant maternity roost habitat; however, this habitat type may be present within the mature forests within the Study Area (off-Site). Potential impacts of the proposed aggregate extraction to potential off-Site bat maternity roost habitat are discussed under Significant Woodlands (Section 6.4).

No potential turtle over-wintering habitat was observed on the Site, as no standing water of suitable depth or hydroperiod was present. This habitat type may be present off-Site in the Study Area (within the Goulbourn Wetland Complex PSW). Potential impacts of the proposed aggregate extraction to potential off-Site turtle over-wintering areas are discussed under the blanket of Significant Wetlands (Section 6.2).

Snake hibernacula and evidence of snake congregations were searched for during field surveys on the Site. No evidence of snake hibernacula or congregation were observed during field surveys on the Site. Any habitat of this type in the Study Area will not be affected by the proposed extraction.

There are no banks or cliffs suitable for colonial bird nesting habitat on the Site or in the Study Area (active quarry faces are not suitable habitat).

Colonially nesting tree / shrub breeding bird habitats consist of heronries, while colonially nesting ground bird breeding habitat consist of rocky islands and peninsulas where species such as gulls and terns nest. No such habitats are present on the Site or in the Study Area, and no heronries were identified during the field surveys.

The Site and Study Area are not located within 5 km of Lake Ontario, and therefore do not meet the criteria for significant migratory butterfly stopover habitat.

The Site and Study Area are not located within 5 km of Lake Ontario, and therefore do not meet the criteria for significant landbird migratory stopover areas.

Deer management is an MNRF responsibility. The Site and much of the Study Area are mapped by the MNRF as deer yard (Figure 3); however, much of the Site is open / disturbed and so does not provide suitable deer yard habitat, and no evidence of deer yarding was observed during targeted surveys. This type of habitat may be present off-Site; however, the proposed extraction will not impact off-Site woodlands.

No impacts to any seasonal concentration areas are expected to result from the proposed extraction. Further analysis is not warranted.

6.7.2 Rare Vegetation Communities or Specialized Habitats for Wildlife

6.7.2.1 Rare Vegetation Communities

Rare vegetation communities are those that are considered rare in the province, such as sand barrens, alvars, savannah and tallgrass prairie. It is assumed that these habitats are at risk and that they are also likely to support additional wildlife species that are considered

significant. Generally, communities assigned an SRANK of S1 to S3 (extremely rare to rare-uncommon) by the NHIC qualify as rare. None of the plant communities identified on the Site are ranked S1 to S3 by the NHIC (2023).

In addition to those communities considered rare by the NHIC, old-growth forests are considered rare. No old growth forests were identified on the Site or in the Study Area.

Further analysis of rare vegetation communities is not warranted.

6.7.2.2 Specialized Habitats for Wildlife

Specialized habitats for wildlife are microhabitats that provide a critical resource to some groups of wildlife. The SWHTG for ecoregion 6E defines specialized habitats that may be considered significant wildlife habitat, and outlines means of identifying such habitats. They are:

- Waterfowl nesting areas
- Bald eagle (*Haliaeetus leucocephalus*) and osprey (*Pandion haliaetus*) nesting, foraging and perching habitat
- Woodland raptor nesting habitat
- Turtle nesting areas
- Seeps and springs
- Amphibian breeding habitat (woodland)
- Amphibian breeding habitat (wetland)
- Woodland area sensitive bird breeding habitat

Waterfowl nesting areas consist of upland habitats extending 120 m from swamp and marsh habitats where waterfowl nesting is known to occur. To qualify as SWH, the wetlands must meet size criteria and contain certain numbers of listed species of waterfowl. No such habitats are present on the Site based on field observations. Potential impacts of the proposed

extraction to potential off-Site waterfowl nesting areas are discussed under the blanket of Significant Wetlands (Section 6.2).

Bald eagle and osprey nesting, foraging and perching habitat may be identified where an active nest is present, and includes the surrounding habitats. No active nests of either species was identified on the Site or in the Study Area.

Woodland raptor nesting habitat was not identified as no raptor nests were observed during field surveys. Further, to meet the SWHCS criteria for this habitat type, there must be >10 ha of interior forest habitat (measured 200 m from any edge) present. This is not present on the Site or in the Study Area.

The SWHCS indicates that exposed mineral soils in open sunny areas must be present within 100 m of certain ecosites to support turtle nesting, including shallow marshes such as those found on-Site. The Site and Study Area consists mainly of shallow soils over bedrock, with some areas of soil stockpiles. Most of the shallow marsh communities on the Site are surrounded by forest, and do not have exposed mineral soils within 100 m of them (except for areas associated with the active aggregate operations). The southern wetland does have exposed mineral soils within 100 m; however, the southern wetland and all other wetlands on the Site have not been seen to contain turtles during any of the targeted or casual surveys at the Site over the last 10 years. For this reason, no SWH of this type has been identified at the Site. Turtle nesting may be present in the Study Area; however, the proposed extraction is not expected to impact this type of habitat.

No evidence of groundwater seepage or springs were observed on the Site or in the Study Area.

To be considered woodland or wetland amphibian breeding habitat according to the SWHCS, wetlands must be at least 500 m^2 in area and contain certain amphibian species richness and abundance. Wetlands on the Site were determined to be woodland habitats, per the SWHCS. On-Site wetlands were surveyed for breeding amphibians, and it was determined that Stations 1 and 5 (associated with the eastern wetlands) met the criteria for significant amphibian breeding habitat (woodland). According to the SWHCS, the significant habitat is

the wetland plus a 230 m radius of woodland habitat (Figure 3). The eastern wetlands will not be removed as part of the proposed extraction, and will be buffered from extraction by 30 m. The proposed extraction will result in the temporary loss of 3.8 ha of this habitat type (represented by upland habitat only) on-Site. During rehabilitation, the Site will include approximately 19.5 ha of wetlands and approximately 44.5 ha of suitable contiguous upland forest habitat. Based on this, no permanent impacts to this type of SWH on the Site is expected. Further, there is abundant suitable habitat of this type within the Study Area and surrounding local landscape (e.g., Goulbourn Wetland Complex PSW). The Goulbourn Wetland Complex PSW, including the eastern wetlands, are not expected to be impacted by the proposed extraction, as discussed in Section 6.2.

There are no forested areas on the Site that provide habitat for area-sensitive breeding birds (measured 200 m from the edge), and removal of forested habitat on the Site will not affect the availability of interior forest habitat in the Study Area.

No impacts to any specialized habitats are expected to result from the proposed extraction. Further analysis is not warranted.

6.7.3 Habitat for Species of Conservation Concern

Habitat for species of conservation concern (SOCC) includes habitat for three groups of species:

- Species that are rare (S1-S3 and tracked species), those whose populations are significantly declining, or have a high percentage of their global population in Ontario;
- Species listed as special concern under the ESA; and,
- Species listed as threatened or endangered under SARA only.

Rare species are considered at five levels: globally rare, nationally rare, provincially rare, regionally rare, and locally rare (i.e., in the municipality). This is also the order of priority that should be attached to the importance of maintaining species. Some species have been identified as being susceptible to certain practices, and their presence may result in an area being designated significant wildlife habitat. The final group of species of conservation concern

includes species that have a high proportion of their global population in Ontario. Although they may be common in Ontario, they are found in low numbers in other jurisdictions.

Six SOCC were assessed to have potential to occur on the Site or in the Study Area (Appendix C; Figure 3): western chorus frog, monarch, common nighthawk, eastern wood-pewee, wood thrush and prairie dropseed. As noted, western chorus frog was observed within the western and southern wetlands in low numbers (Figure 3). A single adult monarch was observed on the Site, but no evidence of caterpillars were observed. Common nighthawk were observed foraging over the Site and Study Area, and one individual was observed landing on the Site. Eastern wood-pewee and wood thrush were observed in the wooded area at the eastern edge of the Site, outside of the proposed extraction area. A single small colony of prairie dropseed was observed in the area just south of the western wetland, within the proposed extraction area (Figure 3). Portions of the Site outside of the proposed extraction area will continue to provide suitable habitat for these species, and extensive similar or better habitats are present within the Study Area and local landscape. Further, post-extraction, the rehabilitated Site will provide suitable habitats for each of these species in the form of wetlands, meadows and open areas, and forests. As the prairie dropseed lies within the proposed extraction area, it is recommended that individuals of this species be relocated to an open dry area of shallow soil within the proposed buffer area around the eastern wetlands. This area is the same ecosite (ELC code: FOC2-2) and will provide suitable habitat.

In addition, there are four specific habitat types identified as potentially providing habitat for species of conservation concern:

- Marsh bird breeding habitat;
- Open country bird breeding habitat;
- Shrub/early successional bird breeding habitat; and,
- Terrestrial crayfish.

There is no marsh habitat suitable for marsh breeding birds on the Site. This habitat type may be present in the Study Area; however, the proposed extraction is not expected to impact

wetlands in the Study Area (as discussed in Section 6.2). No open country or shrub/early successional breeding bird habitat meeting the size criteria, or containing the required species as listed in the SWHCS, are present on the Site or in the Study Area. No evidence of terrestrial crayfish was identified on the Site or in the Study Area.

No impacts to any habitats for species of conservation concern are expected to result from the proposed extraction. Further analysis is not warranted.

6.7.4 Animal Movement Corridors

The SWHTG (MNRF 2000) defines animal movement corridors as elongated, naturally vegetated parts of the landscape used by animals to move from one habitat to another. This is generally in response to different seasonal habitat requirements. For example, trails used by deer to move to wintering areas or areas used by amphibians between breeding and summer habitat. To qualify as significant wildlife habitat, these corridors would be a critical link between habitats that are regularly used by wildlife.

The SWHCS indicates that movement corridors are to be identified where certain types of SWH have been identified according to the SWHCS, including:

- Amphibian movement corridors: to be identified when significant amphibian breeding habitat (wetland) is present.
- Deer movement corridors: to be identified when deer wintering habitat is present.

Amphibian call-count Stations 1 and 5 (associated with the eastern wetlands) were identified as SWH for breeding amphibians (Woodland) (Figure 3). As the wetland habitats at these locations are within forested summer habitat, no corridors need to be identified. No deer wintering habitat was observed and therefore no deer movement corridors are identified.

The Study Area is not adjacent to any major watercourse or major landscape feature that would act as a natural corridor for wildlife. The Study Area is located in a local landscape characterized by gently rolling to flat topography and a matrix of open and forested habitats, and so does not provide a linkage between different habitat types, or habitats providing different seasonal requirements for wildlife. Highway 7 acts as a barrier to wildlife migration

and is present immediately north of the Site; and extensive natural areas are present south and east of the Site. For these reasons, no animal movement corridors have been identified on the Site or in the Study Area.

6.8 Other Natural Features and Designations

The proposed extraction will result in the removal of the western and southern wetlands, which are 10.7 ha and 4.6 ha in size, respectively. These wetlands have been evaluated by WSP and are considered non-PSW. According to the City of Ottawa official plan (Ottawa 2021: policy 4.8.1 5]), the City shall take a no net loss approach with respect to evaluated wetlands deemed not provincially significant in the Rural Area. The proposed rehabilitation plan calls for the creation of approximately 19.5 ha of wetland habitat, which will result in no net loss of wetlands on the Site. The key hydrologic functions of the western wetland were recharge and flood attenuation, per the OWES evaluation performed by WSP. The western wetland scored for recharge based on the wetland type (Palustrine) rather than for any verified groundwater recharge function it may have. During operations, water at the Site will be redirected to the Goulbourn Wetland Complex PSW via a sump, where it will continue to be available for recharge. Post-extraction, a larger wetland will be created on the Site as part of the rehabilitation plan, which will replace the potential for groundwater recharge currently represented at the Site by the western wetland. As noted, the western wetland also scored for flood attenuation; however, water in the western wetland is sourced primarily from the pumping within the existing licensed area and flows to the much larger Goulbourn Wetland Complex PSW. Therefore, little if any flood attenuation function is being performed by the western wetland, especially in consideration of the small size of the wetland compared to the Goulbourn Wetland Complex PSW and the flood attenuation performed by the existing quarry.

Over-all, the hydrological function of the western wetland will be replaced by the quarry water management system during the operational period. The quarry excavation will intercept precipitation and be able to hold a significant volume during precipitation events, thus acting like a large, extended detention pond. Following these events, water will be discharged at a controlled rate, thus attenuating peak storm rates.

The Site is identified on Schedule C11-A of the City of Ottawa official plan as being a Natural Heritage System Core Area. According to the official plan policy 5.6.4.1 6), where development or alteration is for the establishment or expansion of mineral aggregate operations within or adjacent to the Natural Heritage System Overlay or the Natural Heritage Feature Overlay, the demonstration of no negative impact or no net negative impact may take into consideration final rehabilitation of the mineral aggregate operation. Rehabilitation of the mineral aggregate operation would need to be planned to occur as soon as possible and be suited to the local natural environment. The proposed rehabilitation plan calls for the establishment of approximately 66.3 ha of natural habitat, consisting of open meadows, wetlands, and woodlands, and protection of the eastern wetlands (Goulbourn Wetland Complex PSW). Based on this, as detailed in this NER, there are no residual negative impacts to the Natural Heritage System expected to result from the proposed extraction.

7.0 Cumulative Impacts

As the proposed extraction represents a temporary land use, and post-rehabilitation the Site will be returned to natural cover, the proposed extraction will not contribute to cumulative impacts to wildlife, plants or plant communities in the local landscape in the long-term.

8.0 Mitigation and Monitoring

8.1 Mitigation

To mitigate the loss of forests, wetlands and associated wildlife habitats, the rehabilitation plan for the Site has been prepared to include equal representation of these features on the Site post-rehabilitation (no net loss), with the addition of turtle over-wintering habitat and bird and bat boxes.

The proposed limit of extraction will be buffered by a 15 m setback along the south boundary of the Site, a 0-15 m setback along the eastern boundary of the Site except where a 30 m setback has been applied to the Goulbourn Wetland Complex PSW, and a 30 m setback along Jinkinson Road. Within the wetland setbacks, existing vegetation will remain untouched during all phases of the project with the exception of the placement of a berm within the buffer at Jinkinson Road, as previously noted. Additional berms will be placed within other setbacks where vegetation consists of meadows, thickets and disturbed areas (Figure 3). These setbacks will provide a buffer to the adjacent natural features and maintain natural areas on the Site that may provide habitat for wildlife. Prairie dropseed plants on the Site will be moved to the Goulbourn Wetland Complex PSW buffer prior to site preparation. As an added precaution, during construction and earth-moving operations, sediment control measures will be in place to prevent the runoff of suspended solids from entering the setback areas wherever existing vegetation is proposed for retention.

To mitigate any potential impacts from blasting, blasting shall be completed in accordance with DFO standards as outlined in Explotech (2023).

To mitigate impacts to City-owned trees, mitigation measures described in the TCR (Cambium 2024) shall be implemented.

To avoid direct or indirect impacts to wildlife, including eastern whip-poor-will, and to avoid contravention of the MBCA, no clearing of vegetation should take place within the core breeding bird season (April 1 – August 31) unless a nesting survey has been completed by a qualified biologist within 24 hours prior to the clearing, and no active nests were observed. If

an active nest is observed, the area must be buffered and vegetation clearing at that location postponed until the nest is no longer active.

To mitigate the impacts to bats, no tree clearing should occur within the active season for bats (April 1 – September 30).

To mitigate the potential for turtles, especially Blanding's turtle, to be harmed on the Site during extraction, Cambium recommends the following mitigation be undertaken:

- Encounter Protocol: The protocol will include information on how to identify Blanding's turtle, how to protect a nest, how to report sightings to the NHIC, and instructions on what to do in the event that a turtle or nest is found on-Site.
- All on-Site staff are to be familiar with and trained on the components of the Encounter Protocol described above.
- If Blanding's turtle is identified on the Site, all work shall stop and the species shall be protected from harm. MECP shall be notified immediately to seek guidance on ways to avoid impacts under the ESA prior to resuming work.
- Install turtle exclusion fencing along the east, south and western boundaries of the extraction area (where adjacent to natural areas). Fencing along the western boundary will be temporary until such time as the adjacent lands approved for aggregate extraction are developed.

An Awareness Package, SAR Encounter Protocol and SAR Training Program is to be prepared that lists the SAR that may be present on the Site or in the local landscape, and identify what to do if one is observed on the Site. The Awareness Package will include:

- Information / training on identifying SAR;
- What to do if a SAR is observed (moving, injured, dead or nesting);
- How to protect a turtle or bird nest;
- Information on how to report a SAR sighting to the NHIC; and,

- Instructions that if a SAR is found on the Site, all work must stop and the species shall be protected from harm. MECP shall be notified immediately to seek guidance on ways to avoid impacts under the ESA prior to resuming work.

Standard best management practices for noise and dust mitigation at quarry operations would be employed to reduce impacts on adjacent lands, and the habitats they provide.

8.2 Monitoring

Based on the finding of this Natural Environment Report, no specific ecological monitoring is required or recommended beyond the current and proposed monitoring of water levels and water quality in the Goulbourn Wetland Complex PSW as part of the existing Environmental Compliance Approval (ECA) for the existing quarry operations. Should any significant changes in water levels or water quality be detected, remedial actions will be required per the existing approvals and a reassessment of the need for additional ecological monitoring would be considered through consultation with the MECP and MNRF. Section 9.0 of the Water Report (WSP 2023) details the current and proposed water monitoring.

Specifics regarding monitoring of the proposed rehabilitation plan will be determined through consultation with the MNRF.

9.0 Summary and Recommendations

The proposed project has been assessed for potential ecological impacts under the ARA Provincial Standards, the Provincial Policy Statement, policies of the City of Ottawa, as well as other relevant provincial and federal legislation. Based on these analyses, it is expected that the proposed extraction will be in compliance with all applicable legislation. These conclusions are based on the following recommendations, which are to be applied to the site plans:

- Establish a 15 m setback along the south boundary of the Site, a 0-15 m setback along the eastern boundary of the Site except where a 30 m setback has been applied to the Goulbourn Wetland Complex PSW, and a 30 m setback along Jinkinson Road. These setbacks are to be clearly demarcated and respected. Wetland setbacks are to be implemented on the ground under the direction of a certified wetland evaluator. Existing natural vegetation communities will be retained within the 30 m wetland setbacks and all other portions of the eastern and southern setbacks where forests occur.
- Prairie dropseed plants on the Site shall be moved to the Goulbourn Wetland Complex PSW buffer prior to site preparation.
- Implement sediment and erosion control measures along the limit of disturbance prior to Site clearing.
- No clearing of vegetation shall occur within the core breeding bird season (April 1 – August 31) unless a nesting survey has been completed by a qualified biologist within 24 hours of the clearing, and no active nests were observed.
- No tree clearing shall occur within the active season for bats (April 1 - September 30).
- To mitigate any potential impacts from blasting, blasting shall be completed in accordance with DFO standards as outlined in Explotech (2023).
- To mitigate impacts to City-owned trees, mitigation measures described in the TCR (Cambium 2024) shall be implemented.

- Prepare an Information Gathering Form for eastern whip-poor-will and Blanding's turtle for submission to the MECP to initiate authorizations under the ESA.
- To mitigate the potential for turtles, especially Blanding's turtle, to be harmed on the Site during extraction, the following mitigation shall be undertaken:
    - Encounter Protocol: The protocol shall include information on how to identify Blanding's turtle, how to protect a nest, how to report sightings to the NHIC, and instructions on what to do in the event that a turtle or nest is found on-Site.
    - All on-Site staff shall be familiar with and trained on the components of the Encounter Protocol described above.
    - If Blanding's turtle is identified on the Site, all work shall stop and the species shall be protected from harm. MECP shall be notified immediately to seek guidance on ways to avoid impacts under the ESA prior to resuming work.
    - Fencing shall be installed along the eastern and southern boundaries of the extraction limit, and along the western boundary of extraction where adjacent to natural areas to deter turtles from entering the Site. Exclusion fencing should be designed and installed according to MNRF recommendations (MNRF 2013b). Fencing along the western boundary will be temporary until such time as the adjacent lands approved for aggregate extraction are developed.
- An Awareness Package, SAR Encounter Protocol and SAR Training Program shall be prepared that lists the SAR that may be present on the Site or in the local landscape, and identify what to do if one is observed on the Site. The Awareness Package shall include:
    - Information / training on identifying SAR.
    - What to do if a SAR is observed (moving, injured, dead or nesting).
    - How to protect a turtle or bird nest.
    - Information on how to report a SAR sighting to the NHIC.

- Instructions that if a SAR is found on the Site, all work must stop and the species shall be protected from harm. MECP shall be notified immediately to seek guidance on ways to avoid impacts under the ESA prior to resuming work.

- Standard best management practices shall be implemented to reduce dust and noise mitigation at the quarry, as are currently implemented in the adjacent operation, and shall be continued during operation of the project.
- Undertake rehabilitation as outlined in the rehabilitation plan.

The mitigation measures listed here are to be included on the Site Plan for the project.

10.0 Closing

We trust this report meets your current needs. If you have any further questions regarding this report, please contact the undersigned.

Respectfully submitted,

Cambium Inc.

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12.0 Standard Limitations

Limited Warranty

In performing work on behalf of a client, Cambium relies on its client to provide instructions on the scope of its retainer and, on that basis, Cambium determines the precise nature of the work to be performed. Cambium undertakes all work in accordance with applicable accepted industry practices and standards. Unless required under local laws, other than as expressly stated herein, no other warranties or conditions, either expressed or implied, are made regarding the services, work or reports provided.

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The findings and results presented in reports prepared by Cambium are based on the materials and information provided by the client to Cambium and on the facts, conditions and circumstances encountered by Cambium during the performance of the work requested by the client. In formulating its findings and results into a report, Cambium assumes that the information and materials provided by the client or obtained by Cambium from the client or otherwise are factual, accurate and represent a true depiction of the circumstances that exist. Cambium relies on its client to inform Cambium if there are changes to any such information and materials. Cambium does not review, analyze or attempt to verify the accuracy or completeness of the information or materials provided, or circumstances encountered, other than in accordance with applicable accepted industry practice. Cambium will not be responsible for matters arising from incomplete, incorrect or misleading information or from facts or circumstances that are not fully disclosed to or that are concealed from Cambium during the provision of services, work or reports.

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When preparing reports, Cambium considers applicable legislation, regulations, governmental guidelines and policies to the extent they are within its knowledge, but Cambium is not qualified to advise with respect to legal matters. The presentation of information regarding applicable legislation, regulations, governmental guidelines and policies is for information only and is not intended to and should not be interpreted as constituting a legal opinion concerning the work completed or conditions outlined in a report. All legal matters should be reviewed and considered by an appropriately qualified legal practitioner.

Site Assessments

A site assessment is created using data and information collected during the investigation of a site and based on conditions encountered at the time and particular locations at which fieldwork is conducted. The information, sample results and data collected represent the conditions only at the specific times at which and at those specific locations from which the information, samples and data were obtained and the information, sample results and data may vary at other locations and times. To the extent that Cambium's work or report considers any locations or times other than those from which information, sample results and data was specifically received, the work or report is based on a reasonable extrapolation from such information, sample results and data but the actual conditions encountered may vary from those extrapolations.

Only conditions at the site and locations chosen for study by the client are evaluated; no adjacent or other properties are evaluated unless specifically requested by the client. Any physical or other aspects of the site chosen for study by the client, or any other matter not specifically addressed in a report prepared by Cambium, are beyond the scope of the work performed by Cambium and such matters have not been investigated or addressed.

Reliance

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Potential liability to the client arising out of the report is limited to the amount of Cambium's professional liability insurance coverage. Cambium shall only be liable for direct damages to the extent caused by Cambium's negligence and/or breach of contract. Cambium shall not be liable for consequential damages.

Personal Liability

The client expressly agrees that Cambium employees shall have no personal liability to the client with respect to a claim, whether in contract, tort and/or other cause of action in law. Furthermore, the client agrees that it will bring no proceedings nor take any action in any court of law against Cambium employees in their personal capacity.

Appended Figures

NATURAL ENVIRONMENT REPORT

R.W TOMLINSON LTD.
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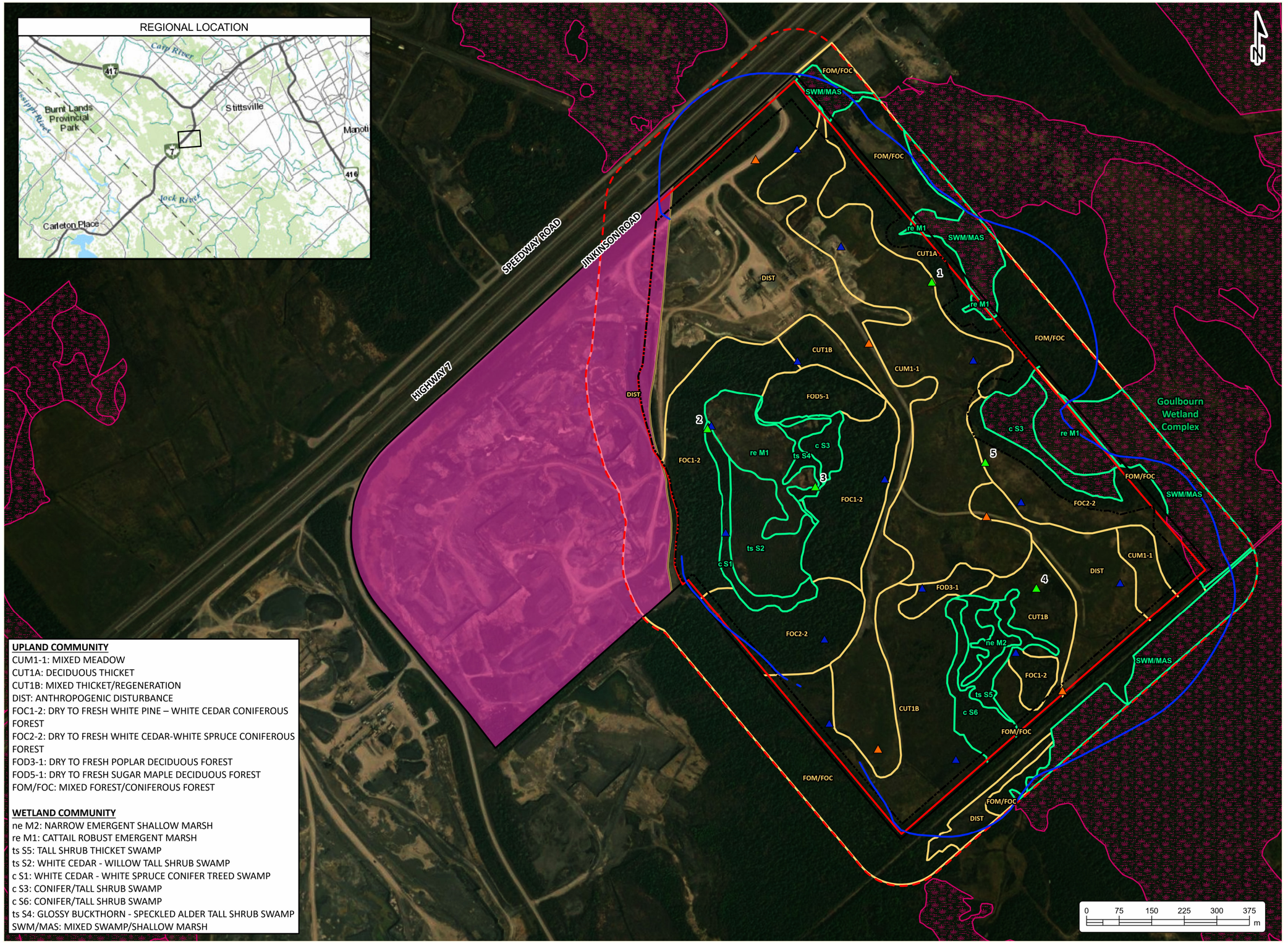
Ottawa, Ontario

REGIONAL LOCATION



UPLAND COMMUNITY
CUM1-1: MIXED MEADOW
CUT1A: DECIDUOUS THICKET
CUT1B: MIXED THICKET/REGENERATION
DIST: ANTHROPOGENIC DISTURBANCE
FOC1-2: DRY TO FRESH WHITE PINE – WHITE CEDAR CONIFEROUS FOREST
FOC2-2: DRY TO FRESH WHITE CEDAR-WHITE SPRUCE CONIFEROUS FOREST
FOD3-1: DRY TO FRESH POPLAR DECIDUOUS FOREST
FOD5-1: DRY TO FRESH SUGAR MAPLE DECIDUOUS FOREST
FOM/FOC: MIXED FOREST/CONIFEROUS FOREST

WETLAND COMMUNITY
ne M2: NARROW EMERGENT SHALLOW MARSH
re M1: CATTAIL ROBUST EMERGENT MARSH
ts S5: TALL SHRUB THICKET SWAMP
ts S2: WHITE CEDAR - WILLOW TALL SHRUB SWAMP
c S1: WHITE CEDAR - WHITE SPRUCE CONIFER TREED SWAMP
c S3: CONIFER/TALL SHRUB SWAMP
c S6: CONIFER/TALL SHRUB SWAMP
ts S4: GLOSSY BUCKTHORN - SPECKLED ALDER TALL SHRUB SWAMP
SWM/MAS: MIXED SWAMP/SHALLOW MARSH

LEGEND

- Breeding Bird Survey Station
- Eastern Whip-poor-will Survey Station
- Nocturnal Amphibian Station
- Potential 1m Incremental Water Table Drawdown
- Provincially Significant Wetlands (on-site portions GOLDER 2017)
- 120m Adjacent Lands
- Stittsville Quarry 2 Limit of Extraction (approximate)
- Stittsville Quarry 2 License Boundary (approximate)
- Stittsville Quarry Licensed Area (approximate)
- Tomlinson Property Boundary (approximate)

Plant Community Classification:
- Upland Community

Plant Community Classification
- Wetland Community

Notes:
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- Distances on this plan are in metres and can be converted to feet by dividing by 0.3048.
- Cambium Inc. makes every effort to ensure this map is free from errors but cannot be held responsible for any damages due to error or omissions. This map should not be used for navigation or legal purposes. It is intended for general reference use only.

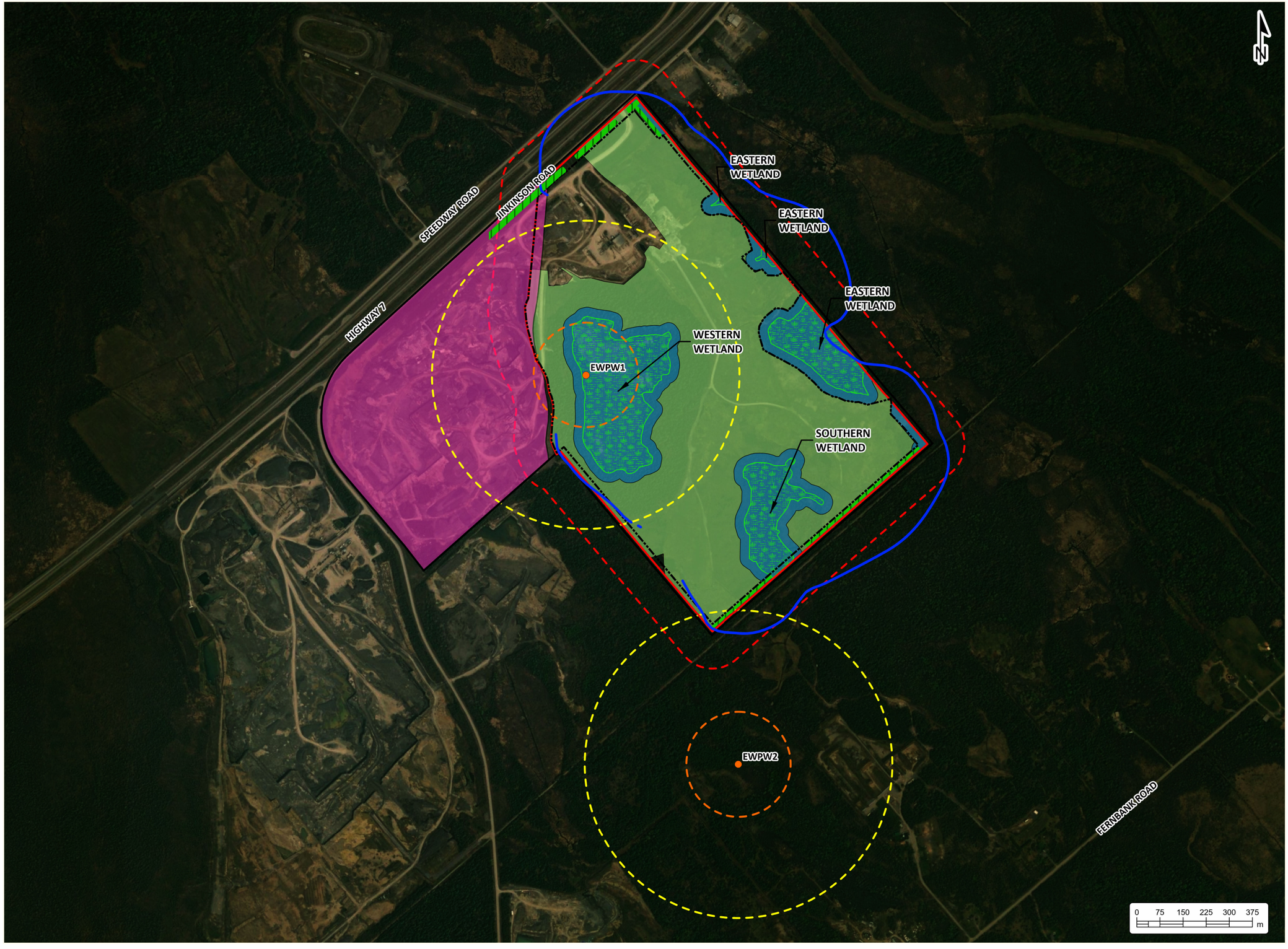
194 Sophia Street
Peterborough, Ontario, K9H 1E5
Tel: (705) 742.7900 Fax: (705) 742.7907
www.cambium-inc.com

CAMBIUM

SITE LOCATION PLAN

Project No.: 19686-001		Date: April 2024	Rev.:
Scale: 1:8,500		Projection: NAD 1983 UTM Zone 18N	
Created by: DBB	Checked by: GW	Figure: 1	

O:\GIS\MXDs\19600-19699\19686-001 R. W. Tomlinson Limited - EIS - Stittsville II Quarry\2024-04-10 Natural Environment Report.aprx



NATURAL ENVIRONMENT REPORT

R.W TOMLINSON LTD.
635 & 891 Jinkinson Road
Ottawa, Ontario

LEGEND

- Eastern Whip-poor-will
- Potential 1m Incremental Water Table Drawdown
- Berm
- On Site Wetlands (GOLDER 2018)
- Category 2 Eastern Whip-poor-will Habitat
- Category 3 Eastern Whip-poor-will Habitat
- Category 2 Blanding's Turtle Habitat
- Category 3 Blanding's Turtle Habitat
- 120m Adjacent Lands
- Stittsville Quarry 2 Limit of Extraction (approximate)
- Stittsville Quarry Licensed Area (approximate)
- Stittsville Quarry 2 License Boundary (approximate)
- Tomlinson Property Boundary (approximate)

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ENDANGERED AND THREATENED SPECIES

Project No.: 19686-001		Date: April 2024	Rev.:
Scale: 1:12,000		Projection: NAD 1983 UTM Zone 18N	
Created by: DBB	Checked by: GW	Figure: 2	

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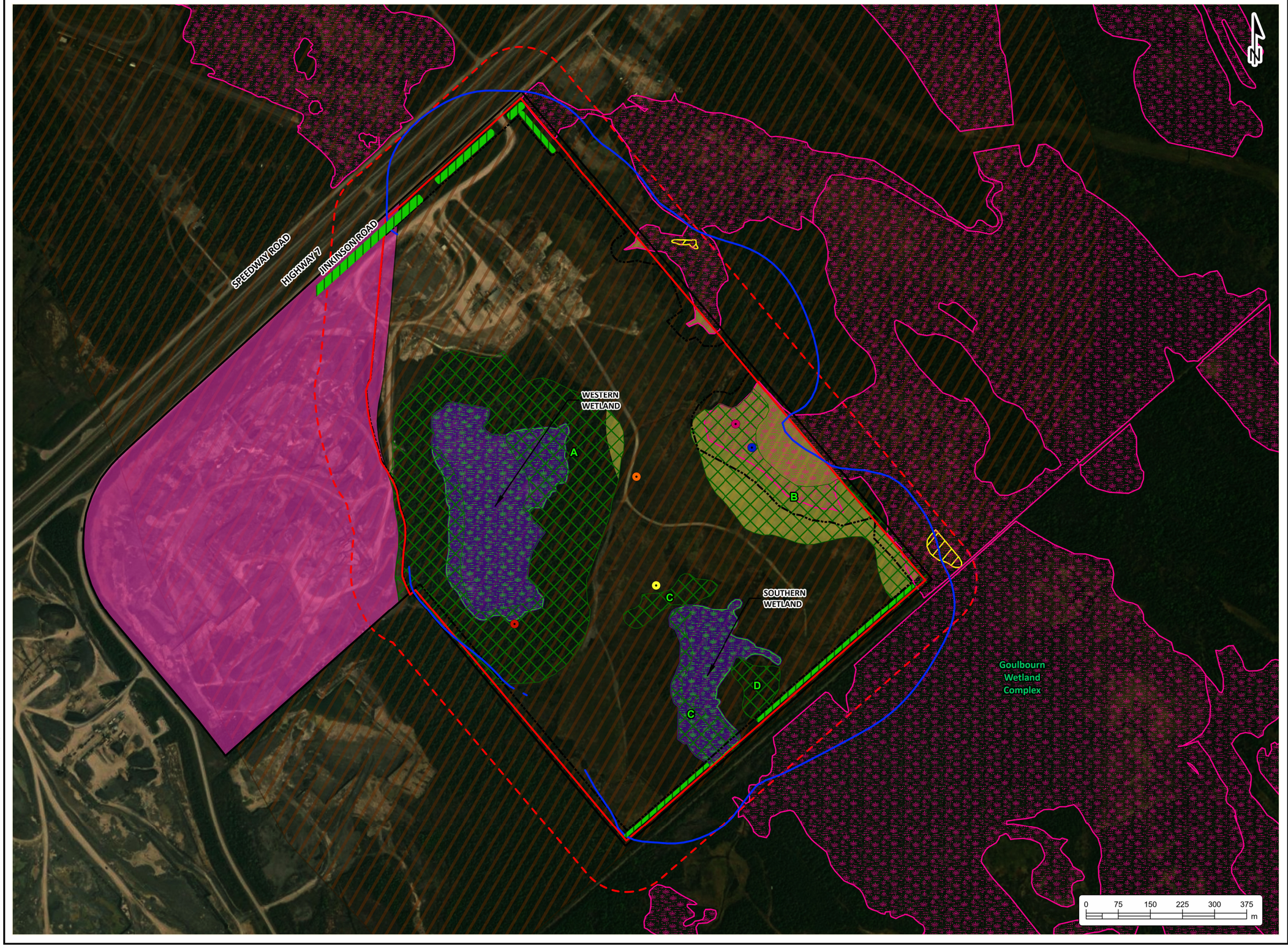
NATURAL ENVIRONMENT REPORT

R.W TOMLINSON LTD.
635 & 891 Jinkinson Road
Ottawa, Ontario



LEGEND

- Common Nighthawk
- Eastern Wood-pewee
- Monarch
- Prairie Drop Seed
- Wood Thrush
- Potential 1m Incremental Water Table Drawdown
- Berm
- Western Chorus Frog Habitat
- Significant Wildlife Habitat - Amphibian Breeding
- Potential Fish Spawning Habitat
- On Site Wetlands (GOLDER 2018)
- Provincially Significant Wetlands (On Site Portions by GOLDER 2017)
- Deer Wintering Area (Stratum 1)
- Signficant Woodland
- 120m Adjacent Lands
- Stittsville Quarry 2 Limit of Extraction (approximate)
- Stittsville Quarry Licensed Area (approximate)
- Stittsville Quarry 2 License Boundary (approximate)
- Tomlinson Property Boundary (approximate)

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SIGNIFICANT NATURAL FEATURES

Project No.: 19686-001		Date: April 2024	
		Rev.:	
Scale: 1:8,542		Projection: NAD 1983 UTM Zone 18N	
Created by: DBB	Checked by: GW	Figure:	3

O:\GIS\MXDs\19600-19699\19686-001 R. W. Tomlinson Limited - EIS - Stittsville II Quarry\2024-04-10 Natural Environment Report.aprx

Appendix A

Agency Correspondence

TECHNICAL MEMORANDUM

DATE November 28, 2022 **Project No.** 19130670

TO Matthew Hayley
City of Ottawa

FROM Fergus Nicoll, Gwendolyn Weeks, Kris Marentette **EMAIL** Fergus.Nicoll@WSP.com

DRAFT TABLE OF CONTENTS AND FIELD METHODOLOGY, EIS, FOR STITTSVILLE 2 QUARRY APPLICATION / OFFICIAL PLAN AMENDMENT

1.0 INTRODUCTION AND BACKGROUND

The following is an excerpt from the draft Environmental Impact Statement (EIS) that will be submitted as part of an Official Plan Amendment, Zoning By-law Amendment and Aggregate Resources Act Application, for the proposed Stittsville 2 Quarry at 635 Jinkinson Road, Ottawa, Ontario, by R.W. Tomlinson Limited (Tomlinson). The purpose of this is to provide the City of Ottawa (the City) the opportunity to review and provide comments as part of the pre-consultation for this file, prior to Golder, a member of WSP (Golder) finalizing the report.

2.0 TABLE OF CONTENTS

This is the draft table of contents from the NER/EIS.

TABLES

FIGURES

Figure 1: Ecological Land Classification and Survey Locations
Figure 2: Eastern Whip-poor-will Habitat
Figure 3: Significant Natural Features
Figure 4: Linkages

3.0 FIELD SURVEYS

This section provides the methodology and timing of field surveys conducted as part of this report.

The habitats and communities on the Site were characterized through field surveys. The habitats in the Study Area were characterized through review of aerial imagery, and through visual assessment from accessible lands (e.g., roadside, edge of the Site). Some field surveys were completed in the Study Area where land access was granted (e.g., public roadside and on other lands owned by Tomlinson). The following sections outline the methods used for each of the field surveys. During all surveys, area searches were conducted, and wildlife, plant, and habitat observations were recorded. Searches were also conducted to document the presence or absence of suitable habitat, based on habitat preferences, for those species identified in the desktop SAR screening described above. The dates when all surveys were conducted are included in Table 1. Locations of all survey stations are shown on Figure 1.

Table 1: Summary of Field Surveys Conducted on the Site in 2018, 2020 and 2021

Year	Date	Type of Survey
2018	April 27	Turtle Visual Encounter Survey
	May 7	Turtle Visual Encounter Survey
	May 18	Turtle Visual Encounter Survey
	May 26	Turtle Visual Encounter Survey, Plant Community and Wetland Boundary Survey
	May 30	Turtle Visual Encounter Survey
	June 15	Plant Community and Wetland Boundary Survey
	August 20	Plant Community and Wetland Boundary Survey
2020	April 28	Nocturnal Amphibian Survey, Turtle Visual Encounter Survey
	May 21	Nocturnal Amphibian Survey, Turtle Nesting Survey
	May 26	Breeding Bird Survey, Plant Community Survey, Turtle Visual Encounter Survey, Bat Habitat Assessment
	May 31	Eastern Whip-poor-will Survey
	June 9	Breeding Bird Survey (Grassland Only), Turtle Visual Encounter Survey
	June 9	Eastern Whip-poor-will Survey, Turtle Nesting Survey
	June 23	Nocturnal Amphibian Survey, Turtle Nesting Survey
	June 29	Eastern Whip-poor-will Survey
	June 30	Breeding Bird Survey, Plant Community Survey
	September 17	Plant Community Survey, Aquatic Survey

Year	Date	Type of Survey
2021	February 27	Winter Deeryard Survey
	March 7	Winter Deeryard Survey
	May 30	Plant Community Survey
	August 3	Plant Community Survey
	September 10	Plant Community Survey

Surveys specific to the wetlands at the Site were conducted by Golder in 2018 (boundary update) and annual monitoring since 2003, as part of separate studies. These surveys included visual encounter surveys (VES) for wetland species, including turtles.

Plant Community Assessment and Botanical Surveys

Ecological Land Classification

Ecological land classification (ELC) mapping and data in the Site were gathered according to standard protocols (Lee et al. 1998). ELC was completed over 3 visits in 2020 to capture seasonal variability in the dominant plant forms. ELC mapping of the Study Area was completed through interpretation of aerial imagery, and observations made from public access points (e.g., roadside) and from the edge of the Site.

Botanical Inventory

A botanical inventory was completed concurrent with the plant community assessments, with a running list compiled of all plants encountered on the Site. An effort was made to search for SAR, provincially rare plants (ranked as S1 to S3 by NHIC), as well as food plants for any SAR insects. Incidental information on plant species was also collected during all field surveys.

Wetlands

On-Site wetlands were delineated and classified using the protocols of the Ontario Wetland Evaluation System (OWES; MNRF 2014a) by a certified wetland evaluator. Surveys specific to the wetlands at the Site were conducted by Golder in 2018 (boundary update) and annual monitoring since 2003, as part of separate studies. In addition, an analysis of significance and complexing under OWES has been conducted and is provided as an Appendix in this report (Appendix F).

Wildlife and Wildlife Habitat Surveys

Herpetile Surveys

In order to document use of the on-Site wetlands and the Study Area by breeding amphibians, three rounds of anuran point-counts were conducted. Surveys followed standardized Marsh Monitoring Program (MMP) protocols (BSC 1995) and included evening call-count surveys, as well as visual encounter surveys (VES), in areas where access was permitted.

Turtle nesting surveys were conducted after sunset on three separate nights in late May and June following MNRF recommended protocols (MNRF 2013a; MNRF 2013b; McDiarmid 2012). Turtle nesting surveys focused on the portions of the Site adjacent to wetlands, or where exposed substrates were evident. The surveys involved slow area searches with a flashlight, searching for females nesting or on their way to nest sites.

During all field surveys, VES for herpetiles on the Site were conducted following recommended MNRF protocols (MNRF 2015b; MNRF 2013; McDiarmid 2012).

Basking turtle visual surveys focused on suitable habitat. Observation areas included wetlands on the Site that appeared to provide potentially suitable turtle habitat. Using the Occurrence Survey Protocol for Blanding's Turtle in Ontario (MNRF 2015) as guidance, Golder conducted five survey rounds when water temperatures reached 10°C in 2018, and three more rounds in 2020. These protocols are appropriate for searching for a range of turtle species, since most turtle species have similar ecologies. Golder biologists scanned (i.e., with binoculars) suitable habitat from a distance, trying to remain hidden, on sunny or partly sunny days, and waded through shallow portions of wetlands, from mid-morning to mid-afternoon.

Breeding Bird Surveys

To survey the Site for breeding birds, including grassland birds, three combined breeding bird point counts / grassland bird surveys were completed in the open habitats at the Site within the dates of May 21 to July 7, each separated by at least one week. This follows the guidance provided by the document draft *Survey Methodology Under the Endangered Species Act, 2007: Dolichonyx Oryzixorous (Bobolink)* (MNRF 2011). These surveys were completed using a combination of point count surveys and walking transects. The surveys began as early as sunrise and ended no later than four hours past sunrise. Each survey location consisted of a 50 m radius circular-plot; with an additional 50 m radius buffer (i.e., a total of 100 m radius will be surveyed). A list of all species was compiled, and the locations of any SAR were marked using a hand-held GPS.

During all field surveys, VES for bird species not well covered by point count surveys, such as raptors, were completed, and all bird observations were documented.

Eastern Whip-poor-will

Eastern whip-poor-will (*Caprimulgus vociferus*) is known to occur in the local landscape surrounding the Site (eBird 2020). Surveys for this species were conducted over three nights from late May to late June, following MNRF protocols (MNRF 2014b). These surveys took place 30 minutes after sunset within 10 days on either side of the full moon, on relatively clear nights with little wind.

When an eastern whip-poor-will was heard at a specific survey station, an azimuth of the calling bird was noted, using a compass. Additional azimuths to the specific calling eastern whip-poor-will were taken at several locations within 50-100 m of each station, for greater accuracy of triangulation.

Data collected during the surveys were used to triangulate the approximate locations of calling eastern whip-poor-will. This information was then used to map habitat as described in the General Habitat Description (Ontario 2017). According to the General Habitat Description: Category 1 habitat is the location of a nest or the area within 20 m of the nest; Category 2 includes the area between 20 m and 170 m from the nest, or from the centre of approximated defended territory; and Category 3 includes the area of suitable habitat between 170 m and 500 m of the nest or from the centre of approximated defended territory.

As searching for individual nests is difficult, risky to the nest, and not recommended by the MNRF, Category 1 habitat was not searched for. The centre of approximated defended territory was determined by using the centroid of triangulated locations of individual eastern whip-poor-will. Data from all three surveys were used to determine these locations. The centroids and survey stations are show on Figure 2 and are the basis for the habitat mapping.

Surveys for crepuscular species [e.g., common nighthawk (*Chordeiles minor)* and short-eared owl (*Asio flammeus*)] were also conducted on the same days, but earlier in the evening (around dusk).

Mammal Surveys

Bats

During daylight, treed areas of the Site were searched for trees that provide potentially suitable maternity roosting habitat for bats. A survey of suitable roost trees was performed, and included searching for trees with suitable cavities, cracks, peeling bark, presence of squirrel nests or dead, retained leaf clusters. Any suitable trees were also inspected for any visual signs of bat use (e.g., guano). Based on the results of the roost survey, no targeted bat acoustic monitoring was completed.

Winter Deeryards

Winter deeryard surveys were performed when snow depths in open areas on the Site were 40 cm or greater, and involved a biologist performing a wandering transect through treed areas of the Site. The surveys were timed to occur as soon as possible after a snowfall to allow for easy identification of tracks, and to quantify use by deer since the last snowfall. Any evidence of use by deer (tracks, trails, scat, bed or browse) was recorded, and an estimate of number of individuals was made, where possible.

Visual Encounter Surveys

General wildlife surveys included track and sign surveys, area searches, and incidental observations, concurrent with other field surveys. These surveys followed recommended protocols (MNRF 2013; McDiarmid 2012; Bookhout 1994). During these surveys, the full range of habitats across the Site and in accessible parts of the Study Area were searched, with special attention paid to edge habitats and other areas where mammals might be active. Areas of exposed substrate such as sand or mud were located and examined for any visible tracks. Any wildlife (including mammals, reptiles, amphibians, birds, butterflies, and dragonflies) seen and identified were recorded. When encountered, tracks and other signs (e.g., tracks, scats, hair, tree scrapes, etc.) were identified to a species, if possible, and recorded.

Aquatic Surveys

As part of the annual wetland monitoring of the existing Stitsville Quarry (Golder 2021), site visits are made each year to assess water levels, flow condition, and potential aquatic habitat in the on-Site wetlands. Historically, fish community surveys were completed as part of this long-term monitoring, but water levels have not been sufficient for fish sampling and no fish have been present since 2015. Based on Golder's observations during the monitoring program and over the course of multiple field visits to the Site, it was determined that there is no fish habitat present in the western or southern wetlands, or the on-Site portions of the eastern wetlands. Fish habitat is assumed to be present in the off-Site portions of the eastern wetlands, given their connection to extensive off-Site wetlands to the east. For these reasons, no targeted aquatic surveys were completed as part of this study.

4.0 LIMITATIONS

The information presented in this memo is in draft format and is subject to change through the finalization and review process of the NER/EIS. It should be used for pre-consultation purposes only and should not be considered a final product.

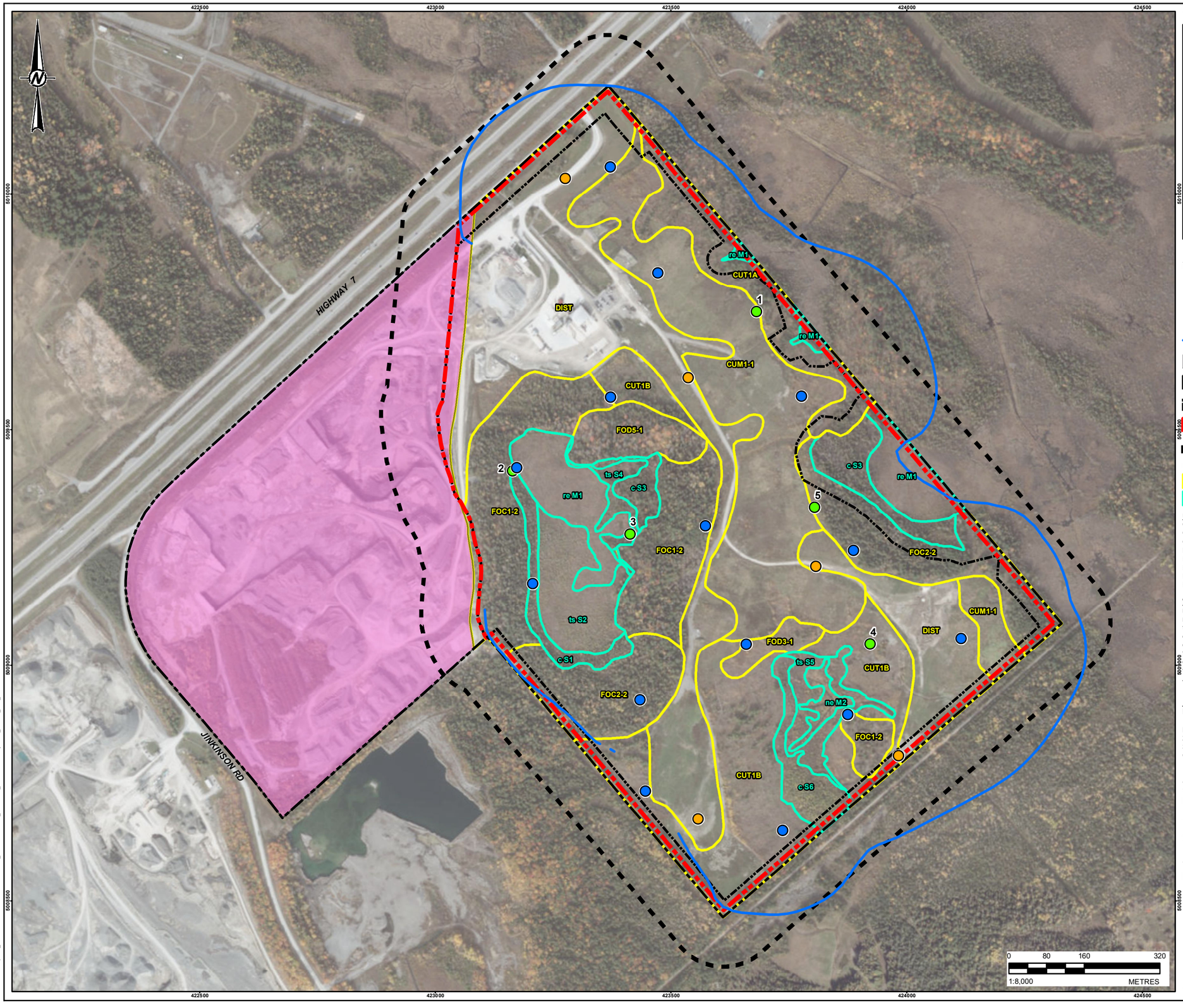
WSP Golder

Fergus Nicoll, Dip.T.
Terrestrial and Wetlands Technical Specialist.

Kris A. Marentette, M.Sc., P.Geo.
Senior Hydrogeologist / Principal

FN/KAM/sg
https://golderassociates.sharepoint.com/sites/115663/project files/6 deliverables/tor - eis/high level tor for city_stittsville 2_draft_22nov_2022_final.docx

Attachments: Figure 1 - Plant Communities and Survey Stations



KEY MAP

SCALE 1:200,000

LEGEND

- BREEDING BIRD STATION
- EASTERN WHIP-POOR-WILL STATION
- NOCTURNAL AMPHIBIAN STATION
- EXPECTED 1 METRE INCREMENTAL WATER TABLE DRAWNDOWN
- APPROXIMATE STITTSVILLE QUARRY LICENSED AREA
- APPROXIMATE TOMLINSON PROPERTY BOUNDARY
- APPROXIMATE STITTSVILLE QUARRY 2 LIMIT OF EXTRACTION
- APPROXIMATE STITTSVILLE QUARRY 2 LICENSE BOUNDARY
- 120 m STUDY AREA

ECOLOGICAL LAND CLASSIFICATION

- UPLAND COMMUNITY
- WETLAND COMMUNITY

UPLAND COMMUNITY

CUM1-1: MIXED MEADOW
CUT1A: DECIDUOUS THICKET
CUT1B: MIXED THICKET/REGENERATION
DIST: ANTHROPOGENIC DISTURBANCE
FOC1-2: DRY TO FRESH WHITE PINE – WHITE CEDAR CONIFEROUS FOREST
FOC2-2: DRY TO FRESH WHITE CEDAR-WHITE SPRUCE CONIFEROUS FOREST
FOD3-1: DRY TO FRESH POPLAR DECIDUOUS FOREST
FOD5-1: DRY TO FRESH SUGAR MAPLE DECIDUOUS FOREST

WETLAND COMMUNITY

ne M2: NARROW EMERGENT SHALLOW MARSH
re M1: CATTAIL ROBUST EMERGENT MARSH
ts S5: TALL SHRUB THICKET SWAMP
c S6: CONIFER/TALL SHRUB SWAMP
c S1: WHITE CEDAR - WHITE SPRUCE CONIFER TREED SWAMP
ts S2: WHITE CEDAR - WILLOW TALL SHRUB SWAMP
c S5: WHITE CEDAR CONIFER TREED SWAMP
ts S4: GLOSSY BUCKTHORN - SPECKLED ALDER TALL SHRUB SWAMP

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2014
2. SERVICE LAYER CREDITS: © OPENSTREETMAP (AND) CONTRIBUTORS, CC-BY-SA
3. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 18, VERTICAL DATUM: CGVD28

DRAFT

CLIENT
R.W. TOMLINSON LIMITED

PROJECT
STITTSVILLE 2 QUARRY NATURAL ENVIRONMENT LEVEL 1-2

TITLE
PLANT COMMUNITIES AND SURVEY STATIONS

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2020-09-27
DESIGNED	----
PREPARED	JEM
REVIEWED	FN
APPROVED	KAM

PROJECT NO.	CONTROL	REV.	FIGURE
19130670	0004	A	1

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Pre-Application Consultation Meeting Notes

Property Address: 635 & 891 Jinkinson Road
PC2022-0267
November 14, 2022, Microsoft Teams Meeting

Attendees:
Erica Ogden, Planner, City of Ottawa
Travis Smith, Project Manager, City of Ottawa
Matthew Hayley, Environmental Planner, City of Ottawa
Michel Kearney, Hydrogeologist, City of Ottawa
Nick Stow, Natural System, City of Ottawa
Jasdeep Brar, Student Planner, City of Ottawa
Eric Lalande, Planner, Rideau Valley Conservation Authority

Neal DeRuyter, MHBC
Dawson McKenzie, MHBC
Craig Bellinger, R W Tomlinson Group
Brian Henderson, Golder
Kevin MacKenzie, Golder
Kris Marentette, Golder
Fergus Nicoll, Golder
Gwendolyn Weeks, Golder

Regrets:
Claire Milloy, Hydrogeologist, Rideau Valley Conservation Authority
Neeti Paudel, Transportation, City of Ottawa

Subject: 635 & 891 Jinkinson Road

Meeting notes:

Overview of Proposal

- R.W. Tomlinson Ltd. (Tomlinson), are proposing an extension of the Stittsville Quarry in Goulbourn Township. The subject lands are located immediately east of the existing Stittsville Quarry (ARA Licence # 39958).
- The proposed licensed area of the quarry is approximately 120 ha and the proposed extraction area is approximately 108 ha. Please note these areas could be subject to change based on the results of the technical studies being completed with the application.
- Similar to the existing quarry, the site is proposed to be operated below the water table. The proposed maximum annual tonnage for the quarry is 3 million tonnes in conjunction with the existing quarry.
- Truck traffic levels are anticipated to remain the same. The existing truck entrance on Jinkinson Road would continue to be used as well as existing haul routes.
- There is an extensive history on the lands related to the identification of the Goulbourn Wetland Complex culminating in an OLT decision in early 2022. It should be noted that despite the OLT decision and previous approval of the wetland boundaries, MNRF has not yet updated their PSW mapping on Land Information Ontario (LIO) for the subject lands.
- The following application are required to permit the proposed quarry:
  - Class A Licence under the Aggregate Resources Act
  - Official Plan Amendment

- Zoning By-law Amendment
- At this time, it is anticipated that the applications will be submitted concurrently in early 2023. The application will include draft amendments to both the existing and adopted Official Plans should the new Official Plan not be in effect at the time of application submission.
- The following technical studies are being prepared with the applications:
  - Aggregate Resources Act Site Plan
  - Planning Justification Report and ARA Summary Statement
  - Water Report Level 1 / 2 (Hydrogeology and Hydrology)
  - Maximum Predicted Water Table Report
  - Natural Environment Report
  - Noise Impact Study
  - Blasting Impact Assessment
  - Traffic Impact Study
  - Archaeological Assessment
  - Heritage Screening Checklist
- A conceptual rehabilitation plan has been prepared to illustrate potential rehabilitation opportunities on the subject lands. The conceptual plan includes wetland creation, open meadows, reforested areas and passive recreational uses with connections to the adjacent Trans Canada Trail.
- The north half of the site could include a potential development area for rural and/or industrial uses (not a residential or country lot subdivision). These landforms would be created utilizing on-site overburden and imported excess soil in accordance with MECP and MNRF standards for rehabilitation.

Preliminary comments and questions from staff and agencies, including follow-up actions:

- Planning
  - Official Plan
    - The City's New Official Plan was approved by the Ministry of Municipal Affairs and Housing on November 4, 2022 and is now in force and effect.
    - The subject property is designated Rural Countryside, Greenspace and Bedrock Resources Area Overlay on Schedule B9.
    - The property is also identified as a part of the Natural Heritage System Core Area, Natural Heritage Features Overlay and Significant Wetlands on Schedule C11-A.
    - As a part of the adoption of the Official Plan motion ee.[m65.1] was passed, That Council approve the following:
      i. That any complete application for an amendment to the Official Plan to establish a new or expanded mineral aggregate operation which has commenced under the current Official Plan be permitted to continue under the Official Plan policies that existed at the time of the complete application was received.
      ii. And that in accordance with Section 22(2.2) of the Planning Act, committee and council agree to receive for consideration Official Plan amendments in support of a licence application under the Aggregate Resources Act (before the second anniversary of the first day that this Official Plan came into effect.

    <u>Bedrock Resource Area</u>
    - The requirements for the submission of a complete application, noted in policy 5.6.3.9) are those required under the Aggregate Resources Act.

- Policy 5.6.3.1.2) states: “Extraction of mineral aggregate resources may be permitted outside of the mineral aggregate overlays where there is a sufficient quantity and quality of resources to warrant extraction; as demonstrated to the satisfaction of the City and the Province and subject to the policies in this Plan.”

Greenspace - Significant Wetlands

- The Significant Wetland policies of 7.3.2) states that the City shall consider the identification or revision of a provincially significant wetland by the Province in any applicable Planning Act process.
- 5.6.4.1. 4) Development or site alteration proposed in or adjacent to natural heritage features shall be supported by an environmental impact study prepared in accordance with the City’s guidelines.
- 5.6.4.1.6) Where development or alteration is for the establishment or expansion of mineral aggregate operations within or adjacent to the Natural Heritage System Overlay or the Natural Heritage Feature Overlay, the demonstration of no negative impact or no net negative impact may take into consideration final rehabilitation of the mineral aggregate operation. Rehabilitation of the mineral aggregate operation would need to be planned to occur as soon as possible and be suited to the local natural environment.
- 4.8.1.5) The City shall take a no net loss approach with respect to evaluated wetlands deemed not provincially significant and forest cover outside the urban area and designated villages. Mechanisms for achieving no net loss include land use planning, development processes, acquisition and conservation of land and support for voluntary, private land conservation and stewardship. Development and site alteration is prohibited in provincially significant wetlands.

- Zoning By-law
  - The subject property is zoned Mineral Extraction (ME), Rural Countryside (RU), Environmental Protection – subzone 3 (EP3), Mineral Extraction – exception 1r with a holding symbol (ME[1r]-h)
  - The details of the ME[1r]-h states:
    - the holding symbol applies only to the permitted use mineral extraction operation
    - the holding symbol may only be removed by amendment to this by-law upon compliance with the following:
      1. a completed application has been made to the province for a license to extract mineral aggregates;
      2. the City has approved an Environmental Impact Statement submitted when the proposed mineral extraction operation is adjacent to lands zoned EP3- Environmental Protection or lands designated Rural Natural Feature in the Official Plan.

- Discussion
  - An Official Plan Amendment and Zoning By-law Amendment applications will be required.
  - Confirmation from MNRF that the revised wetland boundaries have been implemented is required.
  - The setbacks provided from the wetlands and TransCanada Trail could be increased.
  - Consider appropriate buffers, landscaping or berms to separate the site from the TransCanada Trail.
  - The concept plans should identify watercourses on site.
  - Submission requirements shall include:
    - Archaeological Impact Assessment (Cultural Heritage Report)

- Planning Rationale
- Integrated Environmental Review
- ARA Summary Statement (include quantity and quality of aggregate)
- Public Consultation Strategy

- Engineering
  - General
    - Studies and site plans required by the Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF) for the Aggregate Resource Act application can be used for this application such that they meet or exceed City of Ottawa requirements. The City of Ottawa reviews applications and is circulated for comments under the Aggregate Resources Act application process required to lift the holding provision. Note that the City of Ottawa has its own process and requirements under the Zoning Bylaw and Official Plan which may or may not be in parallel with the NDMNRF requirements. The City should be copied on any technical discussions with the NDMNRF and MECP. Be sure to follow the City's guide to preparing plans and studies to ensure a high quality of your submission.
  - Stormwater (ARA License)
    - A **Stormwater Management Report** will be required per section 4.7.1 of the new Official Plan, which may in part be included in the Water Report 1/2.
      - The quantity criteria for the development will be post development peak flow rate must match the pre-development peak flow rate as per section 8.3.6.1 of the Ottawa Sewer Design Guidelines. Pre-development is the site with its current land use.
      - It appears that the existing ECA may need to amended and if there are any proposed stormwater outlets, It would need to be demonstrated that they are legal and sufficient.
      - Any existing stormwater runoff from adjacent site(s) that crosses the property must be accommodated by the stormwater management design.
      - The quality criteria to South Nation Conservation Authority Total Suspended Solids removal percentage.
      - All stormwater management determinations shall have supporting rationale.
  - Groundwater (Zoning Bylaw and Official Plan Amendment)
    - A **Scoped Hydrogeological Report** will be required with the application, which is a similar type of report as Water Report Level 1 / 2. Hydrogeological report is required as per section 4.9.4 of the Official Plan. The report should be completed based on the requirements of section 9.0 – Pits and Quarries of the City of Ottawa's Hydrogeological and Terrain Analysis Guidelines. The report should address, at a minimum, the potential impact on private water supply wells and other requirements noted by the City's Hydrogeologist Michel Kearney and the Conservation Authority's requirements.
  - Erosion and Sediment Control (ARA License)
    - An **Erosion and Sediment Control Plan** is required to show the measures that will be implemented during construction activities where there is potential for loose material to be transported onto adjacent properties or into waterways (e.g., construction of the berm, any stripping of vegetation and soils, site rehabilitation, etc.). The ESC Plan may be combined with another plan.

- Noise (ARA License)
  - A **Noise Feasibility and/or Noise Control Detailed Study Report** is required as per section 10.2.1 of the new Official Plan, which may in part be covered under the Noise Impact Study. Development proposals that introduce new sources of stationary noise in proximity to existing noise sensitive land uses shall require a noise feasibility study and/or noise control detailed study if within the following proximities of noise sensitive land uses:
    - b) 300 metres for a pit to be licensed under the Aggregate Resources Act; and
    - c) 500 metres for a quarry to be licensed under the Aggregate Resources Act; and in this case noise mitigation where necessary shall be required as a condition of approval.

- Hydrogeology
  - A Hydrogeological and Terrain Analysis report will be required.
  - The City will review the reports on the hydrogeological impacts of the development on the neighbouring wells.
  - The Conservation Authority will review the hydrogeological and hydrological impacts related to the wetlands and environmental features on site (Dependent on Bill 23 changes)
    - This typically would take the form of an integrated hydrological impact assessment with a water budget component, which may be integrated with the reporting requirements from the province for the ARA license.
  - Please include Hydrogeological Staff at the City and Conservation Authority in all discussions held with the MNRF and MECP.

- Conservation Authority
  - Part of the property is regulated by RVCA under O.Reg 174/06
  - The Conservation Authority's role is currently in flux related to Bill 23.
  - A separate technical pre-consultation is recommended to discuss the hydrogeological requirements.
    - It is recommended that this be done after the anticipated regulations about wetlands, under the Conservation Authorities Act, are released. At that time, new review roles and responsibilities can be discussed again.
    - We understand that the requirement to demonstrate that the control of flooding and erosion of a regulated area, such as a wetland, will be maintained in the new regulations.

- Transportation
  - The screening form indicates no new trips are anticipated for the quarry expansion. Please confirm this is not generating any new truck trips. If new truck trips are generated, the screening form should be updated to include the trips and submitted to Transportation Project Manager, Neeti Paudel at Neeti.paudel@ottawa.ca for review.
  - Site plan will be reviewed to ensure the truck deliveries can be safely accommodated.
  - Stationary noise study is only required if there is exposed mechanical equipment in proximity to noise sensitive land use – confirm if there are any neighbouring noise sensitive land uses.

- Environmental
  - Please ensure the Natural Environment Report includes all the required elements of the Environmental Impact Study, in particular the impact assessment and cumulative impact.
  - MNRF will need to approve the changes to the wetland boundary as this is the current process.
  - Schedule C11-A – Identifies the property as a Natural Heritage Features Overlay and Natural Heritage System Core Area - accordingly the restoration plan will be an important aspect of the mitigation measures. Consider focusing on ecological function and less on future industrial/commercial development/public parkland.
  - The Draft Table of Contents and Field Methodology, EIS, for Stittsville 2 Quarry Application / Official Plan Amendment, prepared by WSP Golder, dated November 28, 2022 has been reviewed and have no comments on the field work completed.

- City Surveyor
  - The determination of property boundaries, minimum setbacks and other regulatory constraints are a critical component of development. An Ontario Land Surveyor (O.L.S.) needs to be consulted at the outset of a project to ensure properties are properly defined and can be used as the geospatial framework for the development.
  - Topographic details may also be required for a project and should be either carried out by the O.L.S. that has provided the Legal Survey or done in consultation with the O.L.S. to ensure that the project is integrated to the appropriate control network.

  Questions regarding the above requirements can be directed to the City's Surveyor, Bill Harper, at Bill.Harper@ottawa.ca

Submission requirements and fees

- Please see attached the list of required studies.
- Additional information regarding fees related to planning applications can be found here.
- Plans are to be standard A1 size (594 mm x 841 mm) or Arch D size (609.6 mm x 914.4 mm) sheets, dimensioned in metric and utilizing an appropriate Metric scale (1:200, 1:250, 1:300, 1:400 or 1:500).
- All PDF submitted documents are to be unlocked and flattened.

Next steps

- You are encouraged to discuss the proposal with Councillor, community groups and neighbours.
- It is recommended that you reach out to MNRF regarding the updates to the wetland boundaries.
- It is anticipated that, as a result of the *More Homes for Everyone Act, 2022*, for applications for site plan approval and zoning by-law amendments, new processes in respect of pre-application consultation will be in place as of January 1, 2023. The new processes are anticipated to require a multiple phase pre-application consultation approach before an application will be deemed complete. Applicants who have not filed a complete application by the effective date may be required to undertake further pre-application consultation(s) consistent with the provincial changes. The by-laws to be amended include By-law 2009-320, the Pre-Consultation By-law, By-law 2022-239, the planning fees by-law and By-law 2022-254, the Information and Materials for Planning Application By-law. The revisions are anticipated to be before Council in the period after the new Council takes office and the end of the year.

From: Hann, Carolyn (MECP) <Carolyn.Hann@ontario.ca>
Sent: October 1, 2020 3:39 PM
To: Weeks, Gwendolyn
Subject: 2020-10-01_Tomlinson Stittsville II Quarry

EXTERNAL EMAIL

Hi Gwendolyn,

Sorry for the delay in responding to your information request. We have a backlog of these types of inquiries if which I am currently trying to catch up on.

I have reviewed your preliminary screening search and have no additional occurrences of species at risk to add at this time.

Please note it remains the clients responsibility to:

- Carry out preliminary screening for their project,
- Obtain the best available information for all applicable information sources,
- Conduct necessary field studies or inventories to identify and confirm the presence of absence of species at risk or their habitat,
- Consider any potential impacts to species at risk that a proposed activity might cause, and
- Comply with the Endangered Species Act (ESA).

Additionally, while this data represents MECP's best current available information, it is important to note that a lack of information for a site does not mean that species at risk or their habitat are not present. There are many areas where the Government of Ontario does not currently have information, especially in more remote parts of the province. On-site assessments can better verify site conditions, identify and confirm presence of species at risk and/or their habitats. It is the responsibility of the proponent to ensure that species at risk are not killed, harmed, or harassed, and that their habitat is not damaged or destroyed through the activities carried out on the site.

If you would like to discuss further please feel free to reach out directly.

Best,

Carolyn Hann
Management Biologist | Permissions and Compliance Section | Ontario Ministry of Environment, Conservation and Parks | 10-1 Campus Drive, Kemptville, Ontario, K0G 1J0 | PH: 613.355.7312 | Email: carolyn.hann@ontario.ca

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From: Weeks, Gwendolyn <Gwendolyn_Weeks@golder.com>
Sent: April-14-20 3:57 PM
To: Species at Risk (MECP) <SAROntario@ontario.ca>
Subject: RE: Tomlinson Stittsville II Quarry

Hi There,
Please find below our preliminary screening.
Thanks!
-Gwendolyn

Western chorus frog - Great Lakes St. Lawrence / Canadian Shield population
Monarch
Mottled duskywing
West Virginia white
Bank swallow
Barn swallow
Bobolink
Canada warbler
Chimney swift
Common nighthawk
Eastern meadowlark
Eastern whip-poor-will
Eastern wood-pewee
Evening grosbeak
Golden-winged warbler
Grasshopper sparrow pratensis subspecies
Least bittern
Peregrine falcon (anatum/tundrius subspecies)
Red-headed woodpecker
Wood thrush
American Eel
Bridle shiner
Channel darter - St. Lawrence populations
Lake sturgeon - Great Lakes / Upper St.Lawrence population
Northern brook lamprey - Great Lakes / Upper St.Lawrence population
River redhorse
Silver lamprey - Great Lakes / Upper St.Lawrence population
Pale-bellied frost lichen
Eastern small-footed myotis
Little brown myotis
Northern myotis
Tri-colored bat
Blanding's turtle - Great Lakes / St.Lawrence population
Milksnake
Snapping turtle
Eastern musk turtle
Ram's-head ladyslipper
Long-styled rush
American ginseng
Butternut

From: Species at Risk (MECP) <SAROntario@ontario.ca>
Sent: April 14, 2020 2:00 PM
To: Weeks, Gwendolyn <Gwendolyn_Weeks@golder.com>
Subject: RE: Tomlinson Stittsville II Quarry

EXTERNAL EMAIL

Good Day Gwendolyn,

Please find attached for your use MECP's "Draft Client's Guide to Preliminary Screening for Species at Risk". Once you have completed your preliminary screening, please provide us with your results and your file will be assigned to a Management Biologist for triaged review.

Please Note: We are experiencing a high volume of requests at this time and thank you for your patience.

Kind Regards,
Nikki

Nikki Boucher
A/Species at Risk Specialist
Permissions & Compliance, Species at Risk Branch
Ministry of the Environment, Conservation & Parks

Learn more about Ontario's Species at Risk: *https://www.ontario.ca/page/species-risk*

From: Weeks, Gwendolyn <Gwendolyn_Weeks@golder.com>
Sent: April-14-20 1:47 PM
To: Inforequest, Kemptville (MNRF) <Kemptville.Inforequest@ontario.ca>; Species at Risk (MECP) <SAROntario@ontario.ca>
Subject: Tomlinson Stittsville II Quarry

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hello,
Please find attached a completed information request form. We also request at this time that the MECP provide information relating to Species at Risk that may be present in the vicinity of the Site.
If you have any questions, please contact me.
Thanks,
-Gwendolyn

Gwendolyn Weeks (H.B.Sc.Env.)
Ecologist

GOLDER

Golder Associates Ltd.
1931 Robertson Road, Ottawa, Ontario, Canada, K2H 5B7
T: +1 613 592 9600 | **D:** +1 (613) 592-9600 x4234 | **C:** +1 (613) 913-1179 | **golder.com**
LinkedIn | Facebook | Twitter

Work Safe, Home Safe

From:	Smithers, Scott (MNRF)
To:	Weeks, Gwendolyn
Subject:	FW: Tomlinson Stittsville II Quarry
Date:	October 1, 2020 4:05:00 PM
Attachments:	image001.jpg image003.jpg TownshipsSAR_KemptvilleDistrict_Nov2018.pdf TownshipsSAR_KemptvilleDistrict_Nov2018.pdf KVD_In_Water_Work_Timing_Guidelines_2018-02-27.pdf InfoRequestGuide_2018-12-18-FINAL.PDF

EXTERNAL EMAIL

Thank you for your request.
Please find attached your Response Letter, Work in Water Timing Guidelines, Species at Risk Lists by Township and an Information Request Guide.
Feel free to contact me if you have any questions

Scott

Scott Smithers
Management Biologist
Kemptville District Office
Ministry of Natural Resources and Forestry
613-504-2207
Scott.smithers@ontario.ca

From: Inforequest, Kemptville (MNRF) <Kemptville.Inforequest@ontario.ca>
Sent: October-01-20 11:41 AM
To: Smithers, Scott (MNRF) <scott.smithers@ontario.ca>
Cc: Boos, John (MNRF) <john.boos@ontario.ca>
Subject: FW: Tomlinson Stittsville II Quarry

Here is another one from April??
FYI,
Sheri

From: Weeks, Gwendolyn <Gwendolyn_Weeks@golder.com>
Sent: September-30-20 4:55 PM
To: Inforequest, Kemptville (MNRF) <Kemptville.Inforequest@ontario.ca>
Subject: FW: Tomlinson Stittsville II Quarry

Hi There,
Just following up on the request below. I do not believe I received a response.

Many thanks,
-Gwendolyn

From: Weeks, Gwendolyn
Sent: April 14, 2020 1:47 PM
To: Inforequest, Kemptville (MNRF) <Kemptville.Inforequest@ontario.ca>; Species at Risk (MECP) <SAROntario@ontario.ca>
Subject: Tomlinson Stittsville II Quarry

Hello,
Please find attached a completed information request form. We also request at this time that the MECP provide information relating to Species at Risk that may be present in the vicinity of the Site. If you have any questions, please contact me.
Thanks,
-Gwendolyn

Gwendolyn Weeks (H.B.Sc.Env.)
Ecologist

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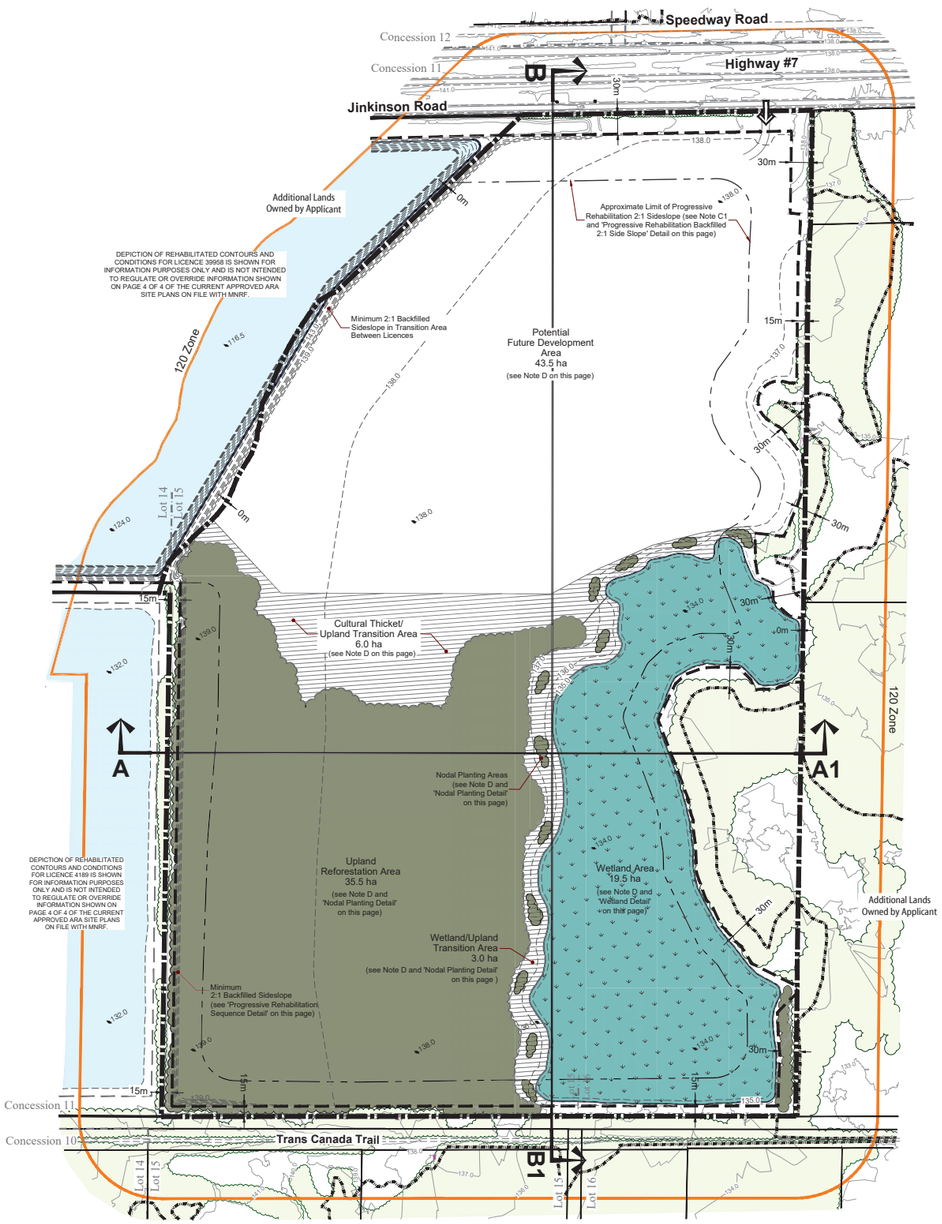
Work Safe, Home Safe

Appendix B
Rehabilitation Plan



A. General

1. Area Calculations: Licence Area: 121.7 hectares (300 acres)
   Limit of Excavation: 108.7 hectares (268 acres)

2. The rehabilitated landform of this site will include: upland reforestation area, wetland area, wetland/upland transition area, cultural thicket/upland transition area and future development area.

B. Phasing

1. The proposed quarry will be rehabilitated on a progressive basis, corresponding to the operational progression of the quarry excavation, to form landforms shown at final rehabilitation.

2. Progressive and final rehabilitation will be completed in direct correlation to the development of the quarry as the extraction limits are reached and enough area is available to ensure that rehabilitation activities will not interfere with the production, stockpiling and processing of aggregate materials. Progressive rehabilitation will commence along the east limit of Phase 1 of the site. Perimeter slopes will be established following the completion of extraction of the lift(s) in each phase. The perimeter slope will be established 'on-grade' (floor of the same lift) before the following lift reaches the limit of extraction (see Schematic). Therefore, the minimum rehabilitation treatments for the perimeter of the quarry will be completed prior to the completion of the final (bottom) lift. The sequence is further described in Note G on page 3 of 5 and as shown on the 'Progressive Rehabilitation Sequence' on this page. The ultimate rehabilitation plan will see the quarry backfilled to a grade of 138.0-139.0 masl, except in the areas of the wetland.

3. Side slopes will be vegetated and will include nodal tree and shrub plantings in suitable locations in order to introduce a diversity of native vegetation types and species that are anticipated to spread around the rehabilitated side slopes (see Note C and 'Nodal Planting Detail' on this page).

C. Slopes and Grading

1. As extraction of the lifts are completed, backfill material, including overburden and excess soils will be placed along the perimeter of the limit of extraction to create a 2:1 side slope. This will be completed as extraction proceeds across the site and prior to extraction of the bottom lift as illustrated on the 'Progressive Rehabilitation Sequence' on this page. Final quarry landform will be in accordance with the drawing as shown on this page. The proposed rehabilitated landform would allow for the future redevelopment and use of the site in a manner that is consistent with planning direction at the time.

2. Topsoil and overburden will be used in the progressive rehabilitation of the side slope areas. Overburden and/or imported material will be used to backfill quarry faces to create the topography of the side slopes (i.e. 3:1 slope). Above water side slope areas that will be vegetated will be covered with a minimum 15 cm of topsoil/organic matter prior to planting.

3. Importation of excess soil is planned for this site to facilitate progressive and final rehabilitation.

4. Importation of excess soil:
   a. Excess soil, as defined in Ontario Regulation 244/97 may be imported to this site to facilitate the following rehabilitation:
      i. Establish final grades
      ii. Top dressing to establish vegetation

   b. Liquid soil, as defined in Ontario Regulation 406/19 under the Environmental Protection Act, is not authorized for importation to the site.

   c. The quality of excess soil imported to the site for final placement must be equivalent to or more stringent than the applicable excess soil quality standards as determined in accordance with Ontario Regulation 244/97 as amended from time to time and must be consistent with the site conditions and the end use identified in the approved rehabilitation plan.

   d. Where a qualified person is retained or required to be retained in accordance with Ontario Regulation 244/97, the quality, storage, and final placement of excess soils shall be done according to the advice of the qualified person.

   e. Excess soil imported to facilitate rehabilitation as described on this site plan shall be undertaken in accordance with Ontario Regulation 244/97 under the Aggregate Resources Act, as amended from time to time.

   f. The cumulative total amount of excess soil that may be imported to this site for rehabilitation purposes is 30,000,000 m³.

D. Proposed Vegetation and Rehabilitated Features

1. Rehabilitation of this site involves the creation of 43.5 ha of potential development area, 44.5 ha of reforested area (consisting of 35.5 ha of upland forest, 6.0 ha of cultural thicket/upland transition area and 3.0 ha of wetland/upland transition area)(Upland/Upland Transition Areas) and 19.5 ha of wetland.

2. A measurable ecological trajectory shall be developed as part of the rehabilitation plan that provides specific quantifiable indicators and temporal targets to measure the success of the restoration activities over time. The ecological trajectories should aim towards climax communities comparable to current conditions (i.e. FOD3-1/FOD5-1 for upland areas; FOC1-2/FOC2-2 for the wetland/upland transition area; and CUT1B for the upland/cultural meadow transition area).

3. All planting and seeding will consist of native species. All ground covers on side slopes will be established as part of the phased stripping operations that proceed extraction and will be maintained and replaced as soon as possible if the vegetative cover fails to establish itself to control erosion

4. Wetland Area

A 19.5 ha wetland area will be created in the southeast part of the rehabilitated landform. This area will be backfilled to the desired elevations and plants shall be established by broadcast seeding an Ontario Native Wetland/Riparian Restoration Seed Mix (see "Wetland Detail" on this page).
In order to improve ecological functions, the wetland area:
a. will be hydrologically connected to the eastern wetland;
b. will have substrate that is conducive to groundwater recharge;
c. will have vegetation communities in the open water area along the wetland edges that is conducive to flood attenuation: and
d. will provide the necessary characteristics to encourage wildlife use of this feature

5. Sideslope and Setback Areas

Sideslopes in the transition area between the rehabilitated landforms of the two licences will be covered with a minimum 15 cm of topsoil/organic matter and planted/seeded. Any undisturbed setback areas not subject to reforestation will also be seeded with Ontario Native Grassland Seed Mix.

6. Upland Reforestation and Nodal Plantings

a. Terrestrial nodal plantings in the upland reforestation areas shall include a mixture of coniferous and deciduous tree and shrub species to promote species diversity and provide a variety of species to compensate for any substrate deficiencies (see 'Nodal Planting Detail' on this page). Recommended species are outlined in the species planting list. The establishment of nodal planting areas will occur progressively and follow the rehabilitation sequence and side slope/setback grading and seeding. Nodal planting areas are conceptually shown on the drawing.
b. Soil movement and duration of storage should be kept to a minimum to maintain viability of the soils to be used for reforestation;
c. Restored woodlands should be located adjacent to the restored wetland and retained/enhanced setbacks along the east and southern Site boundaries as a means of re-establishing the proximity and linkage functions of the woodlands and enhance these functions for the portion of woodland that will be removed;
d. Planting strategies shall be developed whereby the water protection function of the removed woodlands will be replicated. This would include "pit-and-mound" to assist in establishing groundwater infiltration, as well as planning for transition areas between wetland to upland forest communities, and upland forest to cultural meadow communities.
e. Prior to reforestation, a detailed planting plan will be developed by a rehabilitation/reforestation specialist or a forester.

7. Cultural Thicket and Wetland/Upland Transition Areas

These areas will provide a transition between the potential future development areas and the reforestation and wetland areas. Terrestrial nodal plantings in the upland reforestation areas shall include a mixture of coniferous and deciduous tree and shrub species to promote species diversity and provide a variety of species to compensate for any substrate deficiencies (see 'Nodal Planting Detail' on this page). The establishment of nodal planting areas will occur progressively and follow the rehabilitation sequence and side slope/setback grading and seeding. Nodal planting areas are conceptually shown on the drawing.

8. Future Potential Development

These areas shall be restored to cultural meadows (i.e. CUM1-1 communities) until such time as they will be developed.

9. Rehabilitated Landform

The proposed rehabilitation includes an opportunity to enhance the biological diversity of the local landscape by providing features that will attract migratory waterfowl and terrestrial and aquatic habitat features that will be of value to locally resident and migratory wildlife. Rehabilitation of this site involves the creation of a 19.5 ha wetland and 44.5 ha terrestrial landform comprised of reforested uplands and transition areas as well as setback areas. The final landform will be in accordance with the drawing as shown on this page.

E. Drainage

1. Final surface drainage will follow the rehabilitated contours as shown and be directed towards the post-extraction wetland area.

F. Final Rehabilitation

1. No buildings or structures will remain on site.

2. The post-extraction ground water table, is as shown on pages 1, 4 and 5 of 5 as per hydrogeological/ hydrological assessment.

Legal Description

PART OF LOTS 14, 15 and 16
CONCESSION 11
(geographic township of Goulbourn)
CITY OF OTTAWA

Legend

- Boundary of Area to be Licensed
- Limit of Excavation — ALL SETBACKS ARE DRAWN TO SCALE AND SHOW LABELLED DISTANCES
- Contour with Elevation — METRES ABOVE SEA LEVEL
- Existing Licensed Boundary
- Existing Fence — PAGE WIRE FENCE UNLESS OTHERWISE NOTED
- Proposed Contour — METRES ABOVE SEA LEVEL (m A.S.L.)
- Public Road (Paved)
- Proposed Elevation — REHABILITATED ELEVATION
- Private Laneway
- Nodal Planting Areas — LOCATION APPROXIMATE
- Site Access
- Proposed Wetland Area — (SEE DETAIL ON THIS PAGE)
- Vegetation
- Provincially Significant Wetland — (WSP/ONTARIO GEOHUB)
- Cross Sections — SEE PAGE 5 OF 5 FOR EXISTING AND REHABILITATED CROSS SECTIONS

Site Plan Amendments

No.	Date	Description	By

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
200 - 540 BINGEMANS CENTRE DR. KITCHENER, ON. N2B 3X9 | P: 519.576.3650 F: 519.576.0121 | WWW.MHBCPLAN.COM

MNRF Approval Stamp

Stamp

north

Applicant

TOMLINSON

R. W. Tomlinson Limited
100 CitiGate Drive, Ottawa Ontario, K2J 6K7
Tel: (613) 822-1867 Fax: (613) 822-6844

Rob Pierce
R.W. Tomlinson Limited
Vice President Planning and Development

Project

Stittsville 2 Quarry

ARA Licence Reference No.

Pre-approval review:

For Application Submission - November 2023

Plan Scale **1:4,000 (Arch D)**

SCALE
50 0 100 200
METRES

Plot Scale 1:4 [1mm = 4 units] MODEL

Drawn By D.G.S. | File No. 9137AI

Checked By N.D.

File Name

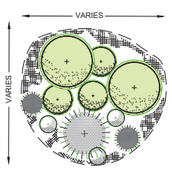
REHABILITATION PLAN

Drawing No.

4 OF 5

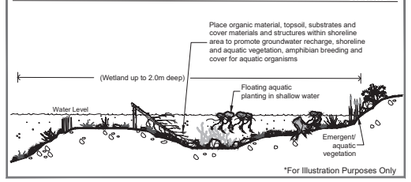
K:\9137AI-Tomlinson-Stittsville Quarry 2IA\Rehaplan 4of5 November2023.dwg

NODAL PLANTING DETAIL — Scale: NTS



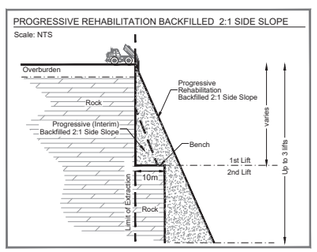
- Reforestation areas and Upland Transition areas will consist of a number of nodal planting cells containing a mixture of coniferous and deciduous species planted as seedlings.
- Terrestrial plants of native, non-invasive species, may include a mixture of deciduous and coniferous species common to the local landscape, such as: Sugar Maple, Large Tooth Aspen, White Birch, White Cedar, White Spruce and White Pine. Shrub varieties may include: Staghorn Sumac, Red Osier Dogwood and Nannyberry. (also see Note L 'Natural Environment' on page 3 of 5).

WETLAND DETAIL — Scale: NTS

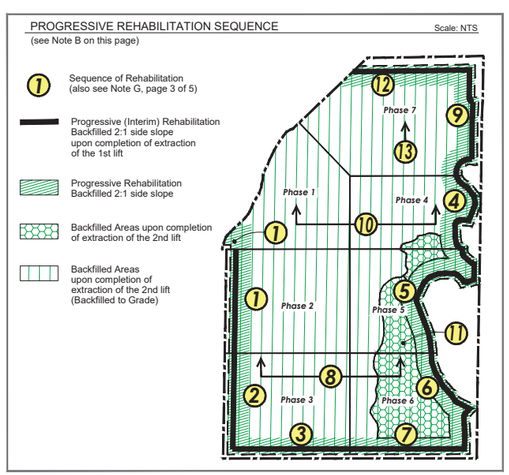


*For Illustration Purposes Only

PROGRESSIVE REHABILITATION BACKFILLED 2:1 SIDE SLOPE
Scale: NTS



PROGRESSIVE REHABILITATION SEQUENCE — Scale: NTS
(see Note B on this page)



Appendix C

Species at Risk Screening

Taxon	Common Name	Scientific Name	Endangered Species Act, Reg. 230/08 SARO List Status[1]	Species at Risk Act, Schedule 1 List of Wildlife SAR Status[2]	COSEWIC Status [3]	Global Rarity Rank[4]	Provincial Rarity Rank[5]	Source(s)*	Ontario Habitat Descriptions	Probability of Occurrence on the Site	Probability of Occurrence in the Study Area
Amphibian	Western chorus frog - Great Lakes St. Lawrence / Canadian Shield population	*Pseudacris triseriata*	—	THR	THR	G5TNR	S3	ORAA	In Ontario, habitat of this amphibian species typically consists of marshes or wooded wetlands, particularly those with dense shrub layers and grasses, as this species is a poor climber. They will breed in almost any fishless pond including roadside ditches, gravel pits and flooded swales in meadows. This species hibernates in terrestrial habitats under rocks, dead trees or leaves, in loose soil or in animal burrows. During hibernation, this species is tolerant of flooding (Environment Canada 2015).	High - observed during surveys.	High - observed during surveys.
Arthropod	Monarch	*Danaus plexippus*	SC	SC	END	G4	S2N, S4B	OOA	In Ontario, monarch is found throughout the northern and southern regions of the province. This butterfly is found wherever there is milkweed (*Asclepias* spp.) plants for its caterpillars and wildflowers that supply a nectar source for adults. It is often found on abandoned farmland, meadows, open wetlands, prairies and roadsides, but also in city gardens and parks. Important staging areas during migration occur along the north shores of the Great Lakes (COSEWIC 2010).	High - observed during surveys.	High - observed during surveys.
Arthropod	Mottled duskywing	*Erynnis martialis*	END	—	END	G3	S2	Range	In Ontario, the mottled duskywing is found in the same habitat as its food plant *Ceanothus* spp.: open or partially open, dry, sandy areas, or limestone alvars. These habitats are relatively uncommon and include dry open pine and pine oak woodland, other open dry woodlands, alvars, savannah and other dry open sandy habitats. Usually seen nectaring on wildflowers, or on wet sandy roads in the company of other duskywing species (Linton 2015).	Low - no food plants present and none observed during surveys.	Moderate - food plants may occur in Study Area.
Arthropod	West Virginia white	*Pieris virginiensis*	SC	—	—	G3?	S3	Range	In Ontario, west Virginia white is found primarily in the central and southern regions of the province. This butterfly lives in moist, mature, deciduous and mixed woodlands, and the caterpillars feed only on the leaves of toothwort (*Cardamine* spp.), which are small, spring-blooming plants of the forest floor. These woodland habitats are typically maple-beech-birch dominated. This species is associated with woodlands growing on calcareous bedrock or thin soils over bedrock (Burke 2013).	Low - no food plants present and none observed during surveys.	Moderate - food plants may occur in Study Area.
Bird	Bank swallow	*Riparia riparia*	THR	THR	THR	G5	S4B	OBBA	In Ontario, bank swallow breeds in a variety of natural and anthropogenic habitats, including lake bluffs, stream and riverbanks, sand and gravel pits, and roadcuts. Nests are generally built in a vertical or near-vertical bank. Breeding sites are typically located near open foraging sites such as rivers, lakes, grasslands, agricultural fields, wetlands and riparian woods. Forested areas are generally avoided (Garrison 1999).	Low - no suitable habitat is present and none were observed during surveys.	Moderate - suitable habitat may be present in Study Area.
Bird	Barn swallow	*Hirundo rustica*	SC	THR	THR	G5	S4B	OBBA	In Ontario, barn swallow breeds in areas that contain a suitable nesting structure, open areas for foraging, and a body of water. This species nests in human made structures including barns, buildings, sheds, bridges, and culverts. Preferred foraging habitat includes grassy fields, pastures, agricultural cropland, lake and river shorelines, cleared right-of-way's, and wetlands (COSEWIC 2011). Mud nests are fastened to vertical walls or built on a ledge underneath an overhang. Suitable nests from previous years are reused (Brown and Brown 2019).	Low - buildings were searched and none were observed during surveys.	Moderate - buildings in Study Area may provide suitable habitat.

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Bird	Bobolink	*Dolichonyx oryzivorus*	THR	THR	THR	G5	S4B	OBBA	In Ontario, bobolink breeds in grasslands or graminoid dominated hayfields with tall vegetation (Gabhauer 2007). Bobolink prefers grassland habitat with a forb component and a moderate litter layer. They have low tolerance for presence of woody vegetation and are sensitive to frequent mowing within the breeding season. They are most abundant in established, but regularly maintained, hayfields, but also breed in lightly grazed pastures, old or fallow fields, cultural meadows and newly planted hayfields. Their nest is woven from grasses and forbs. It is built on the ground, in dense vegetation, usually under the cover of one or more forbs (Renfrew et al. 2015).	Low - open habitat on Site is lacking the structure typical of this species and none were observed during surveys.	Moderate - suitable habitat may be present in Study Area.
Bird	Canada warbler	*Cardellina canadensis*	SC	THR	THR	G5	S4B	eBird	In Ontario, breeding habitat for Canada warbler consists of moist mixed forests with a well-developed shrubby understory. This includes low-lying areas such as cedar and alder swamps, and riparian thickets (McLaren 2007). It is also found in densely vegetated regenerating forest openings. Suitable habitat often contains a developed moss layer and an uneven forest floor. Nests are well concealed on or near the ground in dense shrub or fern cover, often in stumps, fallen logs, overhanging stream banks or mossy hummocks (Reitsma et al. 2010).	Low - habitat is limited and none were observed during surveys.	Moderate - suitable habitat may be present in Study Area.
Bird	Chimney swift	*Chaetura pelagica*	THR	THR	THR	G5	S4B, S4N	OBBA	In Ontario, chimney swift breeding habitat is varied and includes urban, suburban, rural and wooded sites. They are most commonly associated with towns and cities with large concentrations of chimneys. Preferred nesting sites are dark, sheltered spots with a vertical surface to which the bird can grip. Unused chimneys are the primary nesting and roosting structure, but other anthropogenic structures and large diameter cavity trees are also used (COSEWIC 2007).	Low - habitat is limited and none were observed during surveys.	Moderate - suitable habitat may be present in Study Area.
Bird	Common nighthawk	*Chordeiles minor*	SC	SC	SC	G5	S4B	OBBA	In Ontario, these aerial foragers require areas with large open habitat. This includes farmland, open woodlands, clearcuts, burns, rock outcrops, alvars, bogs, fens, prairies, gravel pits and gravel rooftops in cities (Sandilands 2007)	High - observed during surveys.	High - observed during surveys.
Bird	Eastern meadowlark	*Sturnella magna*	THR	THR	THR	G5	S4B	OBBA	In Ontario, eastern meadowlark breeds in pastures, hayfields, meadows and old fields. Eastern meadowlark prefers moderately tall grasslands with abundant litter cover, high grass proportion, and a forb component (Hull 2019). They prefer well drained sites or slopes, and sites with different cover layers (Roseberry and Klimstra 1970).	Low - open habitat on Site is lacking the structure typical of this species and none were observed during surveys.	Moderate - suitable habitat may be present in Study Area.
Bird	Eastern whip-poor-will	*Antrostomus vociferus*	THR	THR	THR	G5	S4B	OBBA	In Ontario, whip-poor-will breeds in semi-open forests with little ground cover. Breeding habitat is dependent on forest structure rather than species composition, and is found on rock and sand barrens, open conifer plantations and post-disturbance regenerating forest. Territory size ranges from 3 to 11 ha (COSEWIC 2009). No nest is constructed, and eggs are laid directly on the leaf litter (Mills 2007).	High - observed during surveys.	High - observed during surveys.

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Bird	Eastern wood-pewee	*Contopus virens*	SC	SC	SC	G5	S4B	OBBA	In Ontario, eastern wood-pewee inhabits a wide variety of wooded upland and lowland habitats, including deciduous, coniferous, or mixed forests. It occurs most frequently in forests with some degree of openness. Intermediate-aged forests with a relatively sparse midstory are preferred. In younger forests with a relatively dense midstory, it tends to inhabit the edges. Also occurs in anthropogenic habitats providing an open forested aspect such as parks and suburban neighborhoods. Nest is constructed atop a horizontal branch, 1-2 m above the ground, in a wide variety of deciduous and coniferous trees (COSEWIC 2012).	High - observed during surveys.	High - observed during surveys.
Bird	Golden-winged warbler	*Vermivora chrysoptera*	SC	THR	THR	G4	S4B	eBird	In Ontario, golden-winged warbler breeds in regenerating scrub habitat with dense ground cover and a patchwork of shrubs, usually surrounded by forest. Their preferred habitat is characteristic of a successional landscape associated with natural or anthropogenic disturbance such as rights-of-way, and field edges or openings resulting from logging or burning. The nest of the golden-winged warbler is built on the ground at the base of a shrub or leafy plant, often at the shaded edge of the forest or at the edge of a forest opening (Confer et al. 2011).	Low - not observed during surveys.	Moderate - suitable habitat may be present in Study Area.
Bird	Grasshopper sparrow *pratensis* subspecies	*Ammodramus savannarum* (pratensis subspecies)	SC	SC	SC	G5	S4B	OBBA	In Ontario, grasshopper sparrow is found in medium to large grasslands with low herbaceous cover and few shrubs. It also uses a wide variety of agricultural fields, including cereal crops and pastures. Close-grazed pastures and limestone plains (e.g. Carden and Napanee Plains) support highest density of this bird in the province (COSEWIC 2013).	Low - not observed during surveys.	Moderate - suitable habitat may be present in Study Area.
Bird	Least bittern	*Ixobrychus exilis*	THR	THR	THR	G5	S4B	eBird	In Ontario, least bittern breeds in marshes, usually greater than 5 ha, with emergent vegetation, relatively stable water levels and areas of open water. Preferred habitat has water less than 1 m deep (usually 10 – 50 cm). Nests are built in tall stands of dense emergent or woody vegetation (Woodliffe 2007). Clarity of water is important as siltation, turbidity, or excessive eutrophication hinders foraging efficiency (COSEWIC 2009).	Low - none were observed during surveys, or in past studies.	Moderate - suitable habitat may be present in Study Area.
Bird	Peregrine falcon (anatum/tundrius subspecies)	*Falco peregrinus anatum/tundrius*	SC	SC	Not at Risk	G4	S3B	eBird	In Ontario, peregrine falcon breeds in areas containing suitable nesting locations and sufficient prey resources. Such habitat includes both natural locations containing cliff faces (heights of 50 - 200 m preferred) and anthropogenic landscapes including urban centres containing tall buildings, open pit mines and quarries, and road cuts. Peregrine falcons nest on cliff ledges and crevices and building ledges. Nests consist of a simple scrape in the substrate (COSEWIC 2017).	Low - none were observed during surveys.	Moderate - suitable habitat may be present in Study Area.
Bird	Red-headed woodpecker	*Melanerpes erythrocephalus*	END	THR	END	G5	S4B	OBBA	In Ontario, red-headed woodpecker breeds in open, deciduous woodlands or woodland edges and are often found in parks, cemeteries, golf courses, orchards and savannahs (Woodliffe 2007). They may also breed in forest clearings or open agricultural areas provided that large trees are available for nesting. They prefer forests with little or no understory vegetation. They are often associated with beech or oak forests, beaver ponds and swamp forests where snags are numerous. Nests are excavated in the trunks of large dead trees (Frei et al. 2017).	Low - none were observed during surveys.	Moderate - suitable habitat may be present in Study Area.

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Bird	Short-eared owl	*Asio flammeus*	THR	SC	THR	G5	S2N/S4B	Range	In Ontario, short-eared owl breeds in a variety of open habitats including grasslands, tundra, bogs, marshes, clear-cuts, burns, pastures and occasionally agricultural fields. The primary factor in determining breeding habitat is proximity to small mammal prey resources (COSEWIC 2008). Nests are built on the ground at a dry site and usually adjacent to a clump of tall vegetation used for cover and concealment (Gahbauer 2007).	Low - none were observed during surveys.	Moderate - suitable habitat may be present in the Study Area.
Bird	Wood thrush	*Hylocichla mustelina*	SC	THR	THR	G4	S4B	OBBA; NHIC	In Ontario, wood thrush breeds in moist, deciduous hardwood or mixed stands that are often previously disturbed, with a dense deciduous undergrowth and with tall trees for singing perches. This species selects nesting sites with the following characteristics: lower elevations with trees less than 16 m in height, a closed canopy cover (>70 %), a high variety of deciduous tree species, moderate subcanopy and shrub density, shade, fairly open forest floor, moist soil, and decaying leaf litter (COSEWIC 2012).	High - observed during surveys.	High - observed during surveys.
Fish	American Eel	*Anguilla rostrata*	END	—	THR	G4	S1?	DFO	In Ontario, American eel is native to the Lake Ontario, St. Lawrence River and Ottawa River watersheds. Their current distribution includes lakes Huron, Erie, and Superior and their tributaries. The Ottawa River population is considered extirpated. The preferred habitat of the American eel is cool water of lakes and streams with muddy or silty substrates in water temperatures between 16 and 19°C. The American eel is a catadromous fish that lives in fresh water until sexual maturity then migrates to the Sargasso Sea to spawn (Burridge et al. 2010; Eakins 2016).	Low - no suitable is present.	Low - no suitable is present.
Fish	Bridle shiner	*Notropis bifrenatus*	SC	SC	SC	G3	S2	DFO	In Ontario, bridle shiner is a species found only in the St. Lawrence River and its tributaries. Preferred habitat conditions include substrates of sand, silt or organic debris and relatively warm, clear water. Bridle shiner are freshwater fish species that inhabit slow-moving areas of unpolluted streams with abundant aquatic vegetation. Bridle shiner is not acid tolerant and so distribution in Precambrian shield may be limited. Typical spawning habitat is in water depths of 45-120 cm over medium to high density of submerged aquatic vegetation, and fine substrates of clay, silt or sand (Boucher et al. 2011).	Low - no suitable is present.	Low - no suitable is present.
Fish	Channel darter - St. Lawrence populations	*Percina copelandi*	SC	SC	SC	G4TNR	S2	DFO	In Ontario, channel darter is found in the lower Great Lakes basin along the shores of Lake Erie, Detroit River, St. Clair River, Lake St. Clair, Ottawa River and some of its tributaries, and in drainages of the Bay of Quinte. Channel darter is a freshwater member of the perch family of fishes. Channel darter can be found in three general types of habitats, depending on which aquatic system they occupy: 1) in lakes, they are found in gravel and coarse sand beach areas; 2) in large river systems, they are typically found in gravel and cobble shoals and riffles; and, 3) in small- to medium-sized rivers, they are typically found in the riffles and pools. Communal spawning occurs in the spring and early summer in upstream areas with moderate to fast current and over fine gravel or small rocks (COSEWIC 2016).	Low - no suitable is present.	Low - no suitable is present.

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Fish	Lake sturgeon - Great Lakes / Upper St.Lawrence population	*Acipenser fulvescens*	END	—	THR	G3G4TNR	S2	DFO	In Ontario, lake sturgeon, a large prehistoric freshwater fish, is found in all the Great Lakes and in all drainages of the Great Lakes and of Hudson Bay. This species typically inhabits highly productive shoal areas of large lakes and rivers. They are bottom dwellers and prefer depths between 5-10 m and mud or gravel substrates. Small sturgeons are often found on gravelly shoals near the mouths of rivers. They spawn in depths of 0.5 to 4.5 m in areas of swift water or rapids. Where suitable spawning rivers are not available, such as in the lower Great Lakes, they are known to spawn in wave action over rocky ledges or around rocky islands (Golder 2011).	Low - no suitable is present.	Low - no suitable is present.
Fish	Northern brook lamprey - Great Lakes / Upper St.Lawrence population	*Ichthyomyzon fossor*	SC	SC	SC	G4	S3	DFO	In Ontario, northern brook lamprey occurs in rivers draining into Lakes Superior, Huron and Erie, as well as in the Ottawa and St. Lawrence Rivers. It is found in clear streams of varying sizes. Adults prefer riffle and run areas of cold-water streams and rivers with gravel and sand substrates. Spawning habitat usually includes a swift current and coarse gravel or rocky substrate, with which males construct inconspicuous nests (COSEWIC 2007).	Low - no suitable is present.	Low - no suitable is present.
Fish	River redhorse	*Moxostoma carinatum*	SC	SC	SC	G4	S2	DFO	In Ontario, river redhorse is known to occur in the Mississippi River, Ottawa River, Madawaska River, Grand River, Trent River, and Thames River systems. They inhabit moderate to large rivers. The majority of their time is spent in pool habitats with slow-moving water and abundant vegetation. Spawning occurs in areas of shallow, moderate to fast-flowing waters in riffle-run habitats with coarse substrates of gravel and cobble (DFO 2019).	Low - no suitable is present.	Low - no suitable is present.
Fish	Silver lamprey - Great Lakes / Upper St.Lawrence population	*Ichthyomyzon unicuspis*	SC	SC	END	G5TNR	S3	DFO	In Ontario, silver lamprey is known to occur in the Great Lakes and its tributaries, St. Lawrence River, Lake Nipissing, Lake-of-the-Woods and its tributaries, and the Ottawa River. Silver lamprey is a parasitic freshwater species that undertake spawning migrations in rivers and streams. They are often confused with sea lamprey. Adults prefer the clear waters of large streams, rivers, and lakes. Adults migrate in flowing water with stoney or gravelly bottom material for nesting. Larvae seek out slow flowing areas initially with thick organic layers where they will grow until moving out into predominantly sandy environments where they reside until they reach adulthood (COSEWIC 2012).	Low - no suitable is present.	Low - no suitable is present.
Lichen	Pale-bellied frost lichen	*Physconia subpallida*	END	END	END	GNR	S2S3	Range	In Ontario, pale-bellied frost lichen grows on trees in mature, deciduous forests with relatively open understory, but moderate to high canopy cover. Common host trees include ash, black walnut, hop-hornbeam, and elm, although in Ontario, it is most often found on hop-hornbream. This lichen has also been found growing on fence rails and rocks (Lewis 2011).	Low - habitat is limited and none were observed during surveys.	Moderate- suitable habitat may be present.
Mammal	Eastern small-footed myotis	*Myotis leibii*	END	—	—	G4	S2S3	BCI	In Ontario, eastern small-footed myotis is not known to roost in trees, but there is very little known about its roosting habits. The species generally roosts on the ground under rocks, in rock crevices, talus slopes and rock piles, but it occasionally inhabits buildings. Entrances of caves or abandoned mines where humidity is low, and temperatures are cool and sometimes subfreezing may be used as hibernacula (Humphrey 2017).	Low - no roost habitat was identified.	Moderate- suitable habitat may be present.

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Mammal	Little brown myotis	*Myotis lucifugus*	END	END	END	G3	S3	BCI	In Ontario, this specie's range is extensive and covers much of the province. It will roost in both natural and man-made structures. Roosting colonies require a number of large dead trees, in specific stages of decay and that project above the canopy in relatively open areas. May form nursery colonies in the attics of buildings within 1 km of water. Caves or abandoned mines may be used as hibernacula, but high humidity and stable above freezing temperatures are required (ECCC 2018).	Low - no roost trees were identified.	Moderate- suitable habitat may be present.
Mammal	Northern myotis	*Myotis septentrionalis*	END	END	END	G1G2	S3	BCI	In Ontario, this species' range is extensive and covers much of the province. It will usually roost in hollows, crevices, and under loose bark of mature trees. Roosts may be established in the main trunk or a large branch of either living or dead trees. Caves or abandoned mines may be used as hibernacula, but high humidity and stable above freezing temperatures are required (ECCC 2018).	Low - no roost trees were identified.	Moderate- suitable habitat may be present.
Mammal	Tri-colored bat	*Perimyotis subflavus*	END	END	END	G2G3	S3?	BCI	In Ontario, tri-colored bat may roost in foliage, in clumps of old leaves, hanging moss or squirrel nests. They are occasionally found in buildings although there are no records of this in Canada. They typically feed over aquatic areas with an affinity to large-bodied water and will likely roost in close proximity to these. Hibernation sites are found deep within caves or mines in areas of relatively warm temperatures. These bats have strong roost fidelity to their winter hibernation sites and may choose the exact same spot in a cave or mine from year to year (ECCC 2018).	Low - no roost trees were identified.	Moderate- suitable habitat may be present.
Reptile	Blanding's turtle - Great Lakes / St.Lawrence population	*Emydoidea blandingii*	THR	THR	END	G4	S3	ORAA: NHIC	In Ontario, Blanding's turtle will use a range of aquatic habitats, but favor those with shallow, standing or slow-moving water, rich nutrient levels, organic substrates and abundant aquatic vegetation. They will use rivers but prefer slow-moving currents and are likely only transients in this type of habitat. This species is known to travel great distances over land in the spring in order to reach nesting sites, which can include dry conifer or mixed forests, partially vegetated fields, and roadsides. Suitable nesting substrates include organic soils, sands, gravel and cobble. They hibernate underwater and infrequently under debris close to water bodies (COSEWIC 2016).	Moderate - although this species has not been observed at the Site, occurrences in the vicinity indicate that habitat is present at the Site.	High - records of this species are known in the vicinity of the Site.
Reptile	Snapping turtle	*Chelydra serpentina*	SC	SC	SC	G5	S3	ORAA; NHIC	In Ontario, snapping turtle uses a wide range of waterbodies, but shows preference for areas with shallow, slow-moving water, soft substrates and dense aquatic vegetation. Hibernation takes place in soft substrates under water. Nesting sites consist of sand or gravel banks along waterways or roadways (COSEWIC 2008).	Low - none were observed during surveys or past studies.	Moderate- suitable habitat may be present.
Reptile	Stinkpot or Eastern musk turtle	*Sternotherus odoratus*	SC	THR	SC	G5	S3	Range	In Ontario, eastern musk turtle is very rarely out of water and prefers permanent bodies of water that are shallow and clear, with little or no current and soft substrates with abundant organic materials. Abundant floating and submerged vegetation is preferred. Hibernation occurs in soft substrates under water. Eggs are sometimes laid on open ground, or in shallow nests in decaying vegetation, shallow gravel or rock crevices (COSEWIC 2012).	Low - habitat is limited and none were observed during surveys.	Moderate - suitable habitat may be present in Study Area.
Vascular Plant	Ram's-head ladyslipper	*Cypripedium arietinum*	—	—	—	G3	S3	NHIC	Ram's-head lady's-slipper can be found in moist coniferous swamps, dry sandy woods and limestone barrens.	Low - none were observed during surveys or past studies.	Moderate - suitable habitat may be present in Study Area.
Vascular Plant	Long-styled rush	*Juncus longistylis*	—	—	—	G5	S3	NHIC	In Ontario, long-styled rush grows near calcareous seepages and riverbanks, mainly in northwestern Ontario. Some populations are recorded from the Ottawa and Chatham areas (Oldham and Brinker 2009).	Low - none were observed during surveys or past studies.	Moderate - suitable habitat may be present in Study Area.

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Vascular Plant	Prairie Dropseed	*Sporobolus heterolepis*	—	—	—	G5	S3	Range	Prairie dropseed grows in rocky or sandy open areas including alvars, prairies and calcareous shorelines.	High - observed during surveys.	Moderate - suitable habitat may be present in Study Area.
Vascular Plant	American ginseng	*Panax quinquefolius*	END	END	END	G3G4	S2	Range	In Ontario, American ginseng is found in moist, undisturbed and relatively mature deciduous woods often dominated by sugar maple. It is commonly found on well-drained, south-facing slopes. American ginseng grows under closed canopies in well-drained soils of glacier origin that have a neutral pH (ECCC 2018).	Low - none were observed during surveys or past studies.	Moderate - suitable habitat may be present in Study Area.
Vascular Plant	Black Ash	*Fraxinus nigra*	END (protections temporarily suspended)	—	THR	G5	S3	Range	Found throughout Ontario in moist ecosystems; commonly found in northern swampy woodlands (MNRF 2018). This species typically grows on mucky or peaty soils and is considered a facultative wetland species (Reznicek et al. 2011).	Low - none were observed during surveys or past studies.	Moderate - individuals may be present in wetlands in the Study Area.
Vascular Plant	Butternut	*Juglans cinerea*	END	END	END	G4	S2?	Range	In Ontario, butternut is found along stream banks, on wooded valley slopes, and in deciduous and mixed forests. It is commonly associated with beech, maple, oak and hickory (Voss and Reznicek 2012). Butternut prefers moist, fertile, well-drained soils, but can also be found in rocky limestone soils. This species is shade intolerant (Farrar 1995).	Low - none were observed during surveys or past studies.	Moderate - suitable habitat may be present in Study Area.

Notes:

[1] Endangered Species Act (ESA), 2007. General (O.Reg 242/08 last amended 27 March 2018 as O.Reg 219/18). Species at Risk in Ontario List (O.Reg 230/08 last amended 1 Aug 2018 as O. Reg 404/18, s. 1.); Schedule 1 (Extirpated - EXP), Schedule 2 (Endangered - END), Schedule 3 (Threatened - THR), Schedule 4 (Special Concern - SC)

[2] Species at Risk Act (SARA), 2002. Schedule 1 (Last amended 25 January 2020); Part 1 (Extirpated), Part 2 (Endangered), Part 3 (Threatened), Part 4 (Special Concern)

[3] Committee on the Status of Endangered Wildlife in Canada (COSEWIC) http://www.cosewic.gc.ca/

[4] Global Ranks (GRANK) are Rarity Ranks assigned to a species based on their range-wide status. GRANKS are assigned by a group of consensus of Conservation Data Centres (CDCs), scientific experts and the Nature Conservancy. These ranks are not legal designations. G1 (Extremely Rare), G2 (Very Rare), G3 (Rare to uncommon), G4 (Common), G5 (Very Common), GH (Historic, no record in last 20yrs), GU (Status uncertain), GX (Globally extinct), ? (Inexact number rank), G? (Unranked), Q (Questionable), T (rank applies to subspecies or variety). Last assessed August 2011

[5] Provincial Ranks (SRANK) are Rarity Ranks assigned to a species or ecological communities, by the Natural Heritage Information Centre (NHIC). These ranks are not legal designations. SRANKS are evaluated by NHIC on a continual basis and updated lists produced annually. SX (Presumed Extirpated), SH (Possibly Extirpated - Historical), S1 (Critically Imperiled), S2 (Imperiled), S3 (Vulnerable), S4 (Apparently Secure), S5 (Secure), SNA (Not Applicable), S#S# (Range Rank), S? (Not ranked yet), SAB (Breeding Accident), SAN (Non-breeding Accident), SX (Apparently Extirpated). Last assessed November 2017.

[6] General Habitat Protection is applied when a species is newly listed as endangered or threatened on the SARO list under the ESA, 2007. The definition of general habitat applies to areas that a species currently depends on. These areas may include dens and nests, wetlands, forests and other areas essential for breeding, rearing, feeding, hibernation and migration. General habitat protection will also apply to all listed endangered or threatened species without a species-specific habitat regulation as of June 30, 2013 (ESA 2007, c.6, s.10 (2)). Regulated Habitat is species-specific habitat used as the legal description of that species habitat. Once a species-specific habitat regulation is created, it replaces general habitat protection. Refer to O.Reg 242/08 for full details regarding regulated habitat.

[7] Refer to the individual species' federal recovery strategy for a full description of the critical habitat (http://www.sararegistry.gc.ca/sar/recovery/recovery e.cfm)

General References:

[+]Species Codes derived from the following sources: Birds – 53rd AOU Supplement (2012); Amphibians – Marsh Monitoring Program (Bird Studies Canada 2003); Fish – Golder; Reptiles – Golder.

*NHIC (Natural Heritage Information Centre); ROM (Royal Ontario Museum); OBBA (Ontario Breeding Bird Atlas); Herp Atlas (Reptiles and Amphibians of Ontario); Odonata Atlas (of Ontario); Mammal Atlas (of Ontario); BCI (Bat Conservation International); Butterfly Atlas (Ontario Butterfly Atlas)

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Appendix D

List of Vascular Plants

APPENDIX: List of Vascular Plants

Scientific Name	Common Name	Origin[a]	Global Rarity Status[b]	Ontario Rarity Status[b]	SARA[c]	ESA[d]
Abies balsamea	Balsam fir	N	G5	S5	–	–
Acer rubrum	Red maple	N	G5	S5	–	–
Acer saccharum	Sugar maple	N	G5	S5	–	–
Acer spicatum	Mountain maple	N	G5	S5	–	–
Achillea millefolium	Common yarrow	I	G5T5?	SNA	–	–
Alisma triviale	Water plantain	N	G5	S5	–	–
Alnus incana	Speckled alder	N	G5	S5	–	–
Amaranthus retroflexus	Redroot pigweed	I	GNR	SNA	–	–
Ambrosia artemisiifolia	Ragweed	N	G5	S5	–	–
Amelanchier arborea	Downy juneberry	N	G5	S5	–	–
Anthemis cotula	Stinking mayweed	I	G5	SNA	–	–
Apocynum androsaemifolium	Spreading dogbane	N	G5	S5	–	–
Aquilegia canadensis	Wild columbine	N	G5	S5	–	–
Aralia nudicaulis	Wild sarsaparilla	N	G5	S5	–	–
Arctostaphylos uva-ursi	Bearberry	N	G5	S5	–	–
Arctous rubra	Bearberry	N	G5	S5	–	–
Artemisia biennis	Biennial wormwood	I	G5	SNA	–	–
Asclepias incarnata	Swamp milkweed	N	G5	S5	–	–
Athyrium filix-femina	Lady fern	N	G5T5	S5	–	–
Atriplex patula	Halbred-leaved orache	N	G5	S5	–	–
Atriplex prostrata	Spear-leaved orache	N	G5	S5	–	–
Barbarea vulgaris	Winter cress	I	GNR	SNA	–	–
Berteroa incana	Hairy alyssum	I	GNR	SNA	–	–
Betula alleghaniensis	Yellow birch	N	G5	S5	–	–
Betula papyrifera	White birch	N	G5	S5	–	–
Bidens cernua	Nodding beggar-ticks	N	G5	S5	–	–
Bidens frondosa	Beggar-ticks	N	G5	S5	–	–
Bromus ciliatus	Fringed brome	N	G5	S5	–	–
Bromus inermis	Smooth brome	I	GNR	SNA	–	–
Calamagrostis canadensis	Canada blue-joint	N	G5	S5	–	–
Caltha palustris	Marsh-marigold	N	G5	S5	–	–
Campanula aparinoides	Marsh bellflower	N	G5	S5	–	–
Campanula rotundifolia	Harebell	N	G5	S5	–	–
Carex bebbii	Bebb's sedge	N	G5	S5	–	–
Carex communis	Common sedge	N	G5	S5	–	–
Carex crinita	Fringed sedge	N	G5	S5	–	–
Carex eburnea	Ivory sedge	N	G5	S5	–	–
Carex gracillima	Graceful sedge	N	G5	S5	–	–
Carex hystericina	Porcupine sedge	N	G5	S5	–	–
Carex interior	Inland sedge	N	G5	S5	–	–
Carex intumescens	Bladder sedge	N	G5	S5	–	–
Carex lacustris	Lake sedge	N	G5	S5	–	–
Carex lupulina	Hop sedge	N	G5	S5	–	–
Carex pseudocyperus	Cyperus-like sedge	N	G5	S5	–	–
Carex stipata	Awl-fruited sedge	N	G5	S5	–	–
Carex stricta	Tussock sedge	N	G5	S5	–	–
Carex utriculata	Bladder sedge	N	G5	S5	–	–
Carex vulpinoidea	Fox sedge	N	G5	S5	–	–
Chamaesyce maculata	Spotted spurge	I	G5?	SNA	–	–
Chelone glabra	Turtlehead	N	G5	S5	–	–
Chenopodium album	Lamb's-quarters	I	G5T5	SNA	–	–
Cichorium intybus	Chicory	I	GNR	SNA	–	–
Cicuta bulbifera	Bulb-bearing water-hemlock	N	G5	S5	–	–
Cicuta maculata	Spotted water-hemlock	N	G5	S5	–	–
Cirsium arvense	Canada thistle	I	GNR	SNA	–	–
Cirsium muticum	Swamp thistle	N	G5	S5	–	–
Cirsium vulgare	Bull thistle	I	GNR	SNA	–	–
Conyza canadensis	Horseweed	N	G5	S5	–	–
Cornus canadensis	Bunchberry	N	G5	S5	–	–
Cornus stolonifera	Red osier dogwood	N	G5	S5	–	–
Coronilla varia	Crown vetch	I	GNR	SNA	–	–
Cypripedium parviflorum	Yellow lady's slipper	N	G5T5	S5	–	–
Cypripedium reginae	Showy lady's slipper	N	G4	S4	–	–
Cystopteris bulbifera	Bulblet fern	N	G5	S5	–	–

Scientific Name	Common Name	Origin[a]	Global Rarity Status[b]	Ontario Rarity Status[b]	SARA[c]	ESA[d]
Danthonia spicata	Poverty oat-grass	N	G5	S5	–	–
Dichanthelium acuminatum	Small panic grass	N	G5T5	S4S5	–	–
Diervilla lonicera	Bush-honeysuckle	N	G5	S5	–	–
Dipsacus fullonum	Fuller's teasel	I	GNR	SNA	–	–
Doellingeria umbellata	Flat-topped aster	N	G5T5	S5	–	–
Dryopteris carthusiana	Spinulose woodfern	N	G5	S5	–	–
Dryopteris cristata	Crested fern	N	G5	S5	–	–
Dryopteris intermedia	Evergreen woodfern	N	G5	S5	–	–
Echinochloa crusgalli	Barnyard grass	I	GNR	SNA	–	–
Echium vulgare	Viper's bugloss	I	GNR	SNA	–	–
Eleocharis acicularis	Spike-rush	N	G5	S5	–	–
Elymus repens	Quack grass	I	GNR	SNA	–	–
Epilobium ciliatum	Willowherb	N	G5	S5	–	–
Epipactis helleborine	Helleborine	I	GNR	SNA	–	–
Equisetum arvense	Field horsetail	N	G5	S5	–	–
Equisetum scirpoides	Dwarf scouring-rush	N	G5	S5	–	–
Erigeron annuus	Daisy fleabane	N	G5	S5	–	–
Erigeron philadelphicus	Philadelphia fleabane	N	G5	S5	–	–
Eruca vesicaria	Rocket-salad	I	GNR	SNA	–	–
Eupatorium perfoliatum	Boneset	N	G5	S5	–	–
Euphrasia stricta	Eye-bright	I	GNRQ	SNA	–	–
Eurybia macrophylla	Large-leaved aster	N	G5	S5	–	–
Euthamia graminifolia	Grass-leaved goldenrod	N	G5	S5	–	–
Eutrochium maculatum	Joe-pye weed	N	G5TNR	S5	–	–
Fallopia convolvulus	Black bindweed	I	GNR	SNA	–	–
Fragaria virginiana	Common strawberry	N	G5	S5	–	–
Fraxinus americana	White ash	N	G5	S5	–	–
Fraxinus pennsylvanica	Green ash	N	G5	S5	–	–
Galium asprellum	Rough bedstraw	N	G5	S5	–	–
Galium mollugo	White bedstraw	I	GNR	SNA	–	–
Galium palustre	Marsh bedstraw	N	G5	S5	–	–
Galium triflorum	Sweet-scented bedstraw	N	G5	S5	–	–
Glyceria borealis	Northern manna grass	N	G5	S5	–	–
Glyceria striata	Fowl manna grass	N	G5T5	S4S5	–	–
Helianthus grosserratus	Sawtooth sunflower	I	G5	SNA	–	–
Helianthus tuberosus	Jerusalem artichoke	N	G5	S5	–	–
Heliopsis helianthoides	Ox-eye	N	G5	S5	–	–
Hieracium aurantiacum	Orange hawkweed	I	GNR	SNA	–	–
Hieracium caespitosum	Yellow hawkweed	I	GNR	SNA	–	–
Hieracium umbellatum	Canada hawkweed	N	G5	SU	–	–
Hordeum jubatum	Foxtail barley	I	G5T5	SNA	–	–
Huperzia lucidula	Shining clubmoss	N	G5	S5	–	–
Hydrocharis morsus-ranae	Frogbit	I	GNR	SNA	–	–
Hypericum ellipticum	Pale St. John's-wort	N	G5	S5	–	–
Hypericum perforatum	Common St. John’s-wort	I	GNR	SNA	–	–
Ilex verticillata	Winterberry	N	G5	S5	–	–
Impatiens capensis	Spotted jewelweed	N	G5	S5	–	–
Iris versicolor	Blue-flag	N	G5	S5	–	–
Juncus bufonius	Toad rush	N	G5	S5	–	–
Juncus effusus	Soft rush	N	G5	S5	–	–
Juncus nodosus	Knotted rush	N	G5	S5	–	–
Juncus sp.	Rush	N	G5	S5	–	–
Juniperus communis	Common juniper	N	G5	S5	–	–
Laportea canadensis	Wood nettle	N	G5	S5	–	–
Larix laricina	Tamarack	N	G5	S5	–	–
Leersia oryzoides	Rice cut-grass	N	G5	S5	–	–
Lemna minor	Duckweed	N	G5	S5	–	–
Leucanthemum vulgare	Ox-eye daisy	I	GNR	SNA	–	–
Lilium philadelphicum	Wood lily	N	G5	S5	–	–
Linnaea borealis	Twinflower	N	G5	S5	–	–
Lonicera canadensis	Fly-honeysuckle	N	G5	S5	–	–
Lonicera involucrata	Fly-honeysuckle	N	G5	S5	–	–
Lonicera oblongifolia	Swamp fly-honeysuckle	N	G4	S4S5	–	–
Lotus corniculatus	Bird’s-foot trefoil	I	GNR	SNA	–	–
Lycopus americanus	American water-horehound	N	G5	S5	–	–
Lycopus uniflorus	Northern water-horehound	N	G5	S5	–	–

Scientific Name	Common Name	Origin[a]	Global Rarity Status[b]	Ontario Rarity Status[b]	SARA[c]	ESA[d]
Lysimachia thrysiflora	Tufted loosestrife	N	G5	S5	–	–
Lythrum salicaria	Purple loosestrife	I	G5	SNA	–	–
Maianthemum canadense	Canada mayflower	N	G5	S5	–	–
Matricaria chamomilla	Stinking mayweed	I	GNR	SNA	–	–
Matricaria discoidea	Pineapple-weed	I	G5	SNA	–	–
Matteuccia struthiopteris	Ostrich fern	N	G5	S5	–	–
Medicago lupulina	Black medick	I	GNR	S5	–	–
Medicago sativa	Alfalfa	I	GNR	S5	–	–
Melilotus alba	White sweet clover	I	G5	SNA	–	–
Melilotus officinalis	Yellow sweet-clover	I	GNR	SNA	–	–
Mentha arvensis	Field mint	N	G5	S5	–	–
Mimulus ringens	Square-stemmed monkey-flower	N	G5	S5	–	–
Muhlenbergia mexicana	Mexican muhly grass	N	G5	S5	–	–
Oenothera biennis	Common evening-primrose	N	G5	S5	–	–
Onoclea sensibilis	Sensitive fern	N	G5	S5	–	–
Osmunda cinnamomea	Cinnamon fern	N	G5	S5	–	–
Oxalis stricta	Common yellow wood-sorrel	N	G5	S5	–	–
Panicum capillare	Witch grass	N	G5	S5	–	–
Panicum philadelphicum	Philadelphia panic grass	N	GNR	S4	–	–
Parthenocissus inserta	Virginia creeper	N	G5	S5	–	–
Penstemon hirsutus	Hairy beard-tongue	N	G4	S4	–	–
Persicaria hydropiper	Water-pepper	I	GNR	SNA	–	–
Persicaria maculosa	Lady's-thumb	I	G3G5	SNA	–	–
Petasites frigidus	Sweet coltsfoot	N	G5	S5	–	–
Phalaris arundinacea	Reed canary grass	N	G5	S5	–	–
Phleum pratense	Timothy	I	GNR	SNA	–	–
Phragmites australis australis	Common reed	I	GNR	SNA	–	–
Physalis heterophylla	Clammy ground-cherry	N	G5	S4	–	–
Picea glauca	White spruce	N	G6	S6	–	–
Picea glauca	White spruce	N	G5	S5	–	–
Picea mariana	Black spruce	N	G5	S5	–	–
Pinus strobus	White pine	N	G5	S5	–	–
Poa annua	Annual bluegrass	I	GNR	SNA	–	–
Poa compressa	Canada bluegrass	I	GNR	SNA	–	–
Poa palustris	Fowl bluegrass	N	G5	S5	–	–
Poa pratensis	Kentucky bluegrass	I	G5T5?	SNA	–	–
Polygala paucifolia	Fringed polygala	N	G5	S5	–	–
Populus balsamifera	Balsam poplar	N	G5	S5	–	–
Populus grandidentata	Large-toothed aspen	N	G5	S5	–	–
Populus tremuloides	Trembling aspen	N	G5	S5	–	–
Potentilla argentea	Silvery cinquefoil	I	GNR	SNA	–	–
Potentilla norvegica	Rough cinquefoil	I	G5	S5	–	–
Pteridium aquilinum	Bracken	N	G5	S5	–	–
Pyrola asarifolia	Pink pyrola	N	G5	S5	–	–
Quercus rubra	Red oak	N	G5	S5	–	–
Rhamnus alnifolia	Alder-leaved buckthorn	N	G5	S5	–	–
Rhamnus cathartica	Common buckthorn	I	GNR	SNA	–	–
Rhamnus frangula	Glossy buckthorn	I	GNR	SNA	–	–
Rhus radicans	Poison-ivy	N	G5T5	S5	–	–
Ribes americanum	Wild black currant	N	G5	S5	–	–
Ribes cynosbati	Prickly gooseberry	N	G5	S5	–	–
Ribes lacustre	Bristly black currant	N	G5	S5	–	–
Ribes triste	Swamp red currant	N	G5	S5	–	–
Robinia pseudoacacia	Black locust	I	G5	SNA	–	–
Rosa acicularis	Prickly rose	N	G5	S5	–	–
Rubus idaeus	Red raspberry	N	G5T5	S5	–	–
Rubus pubescens	Dwarf raspberry	N	G5	S5	–	–
Rudbeckia hirta	Black-eyed susan	N	G5	S5	–	–
Rudbeckia triloba	Brown-eyed susan	I	G5	SNA	–	–
Rumex verticillatus	Swamp dock	N	G5	S4	–	–
Sagittaria latifolia	Broadleaf arrowhead	N	G5	S5	–	–
Salix bebbiana	Beaked willow	N	G5	S5	–	–
Salix discolor	Pussy willow	N	G5	S5	–	–
Salix humilis	Upland willow	N	G5	S5	–	–
Salix lucida	Shining willow	N	G5	S5	–	–
Salix petiolaris	Slender willow	N	G5	S5	–	–

Scientific Name	Common Name	Origin[a]	Global Rarity Status[b]	Ontario Rarity Status[b]	SARA[c]	ESA[d]
Sambucus racemosa	Red-berried elderberry	N	G5	S5	–	–
Schedonorus arundinacea	Tall fescue	I	GNR	SNA	–	–
Schedonorus pratensis	Meadow fescue	I	GNR	SNA	–	–
Schoenoplectus tabernaemontani	Softstem bulrush	N	G5	S5	–	–
Scirpus atrovirens	Green bulrush	N	G5?	S5	–	–
Scirpus cyperinus	Wool-grass	N	G5	S5	–	–
Scutellaria lateriflora	Mad-dog scullcap	N	G5	S5	–	–
Setaria faberi	Giant foxtail	I	GNR	SNA	–	–
Setaria pumila	Yellow foxtail	I	GNR	SNA	–	–
Silene latifolia	White campion	I	GNR	SNA	–	–
Silene vulgaris	Bladder campion	I	GNR	SNA	–	–
Sinapis arvensis	Charlock	I	GNR	SNA	–	–
Solanum dulcamara	Climbing nightshade	I	GNR	SNA	–	–
Solidago canadensis	Canada goldenrod	N	G5T5	S5	–	–
Solidago gigantea	Smooth goldenrod	N	G5	S5	–	–
Solidago juncea	Early goldenrod	N	G5	S5	–	–
Solidago nemoralis	Gray goldenrod	N	G5T5	S5	–	–
Solidago rigida	Stiff goldenrod	N	G5T5	S3	–	–
Solidago rugosa	Rough goldenrod	N	G5	S5	–	–
Sonchus arvensis	Common sow-thistle	I	GNR	SNA	–	–
Sonchus asper	Spiny sow-thistle	I	GNR	SNA	–	–
Sparganium eurycarpum	Giant burreed	N	G5	S5	–	–
Spiraea alba	Meadowsweet	N	G5	S5	–	–
Sporobolus heterolepis	Prarie dropseed	N	G5	S3	–	–
Symphoricarpos albus	Snowberry	N	G5T5	S4S5	–	–
Symphyotrichum ciliolatum	Blue aster	N	G5	S5	–	–
Symphyotrichum cordifolium	Heart-leaved aster	N	G5	S5	–	–
Symphyotrichum lanceolatum	Panicled aster	N	G5T5	S5	–	–
Symphyotrichum lateriflorum	Calico aster	N	G5T?	S5	–	–
Symphyotrichum novae-angliae	New England aster	N	G5	S5	–	–
Symphyotrichum puniceum	Red-stemmed aster	N	G5	S5	–	–
Tanacetum vulgare	Common tansy	I	GNR	SNA	–	–
Thalictrum pubescens	Tall meadow-rue	N	G5	S5	–	–
Thelypteris palustris	Marsh fern	N	G5	S5	–	–
Thlaspi arvense	Penny cress	I	GNR	SNA	–	–
Thuja occidentalis	Eastern white cedar	N	G5	S5	–	–
Tiarella cordifolia	Foam flower	N	G5	S5	–	–
Tilia americana	Basswood	N	G5	S5	–	–
Trichostema brachiatum	False pennyroyal	N	G5	S4	–	–
Trifolium hybridum	Alsike clover	I	GNR	SNA	–	–
Trifolium pratense	Red clover	I	GNR	SNA	–	–
Trifolium repens	White clover	I	GNR	SNA	–	–
Tsuga canadensis	Eastern hemlock	N	G4G5	S5	–	–
Turritis glabra	Tower mustard	N	G5	S5	–	–
Tussilago farfara	Colt's-foot	I	GNR	SNA	–	–
Typha angustifolia	Narrow-leaved catttail	N	G5	SNA	–	–
Typha latifolia	Common cattail	N	G5	S5	–	–
Ulmus americana	White elm	N	G5?	S5	–	–
Verbascum thapsus	Common mullein	I	GNR	SNA	–	–
Verbena hastata	Blue vervain	N	G5	S5	–	–
Veronica anagallis-aquatica	Water speedwell	I	G5	SNA	–	–
Viburnum lentago	Nannyberry	N	G5	S5	–	–
Vitis riparia	Riverbank grape	N	G5	S5	–	–

Notes:

[a] Origin: N = Native; (N) = Native but not in study area region; I = Introduced.

[b] Ranks based upon determinations made by the Ontario Natural Heritage Information Centre.
G = Global; S = Provincial; Ranks 1-3 are considered imperiled or rare; Ranks 4 and 5 are considered secure.
SNA = Not applicable for Ontario Ranking (e.g. Exotic species)

[c] Canada Species at Risk Act (Schedule 1)

[d] Ontario Endangered Species Act (O.Reg.230/08)

Appendix E
List of Wildlife

APPENDIX: List of Wildlife

Common Name	Scientific Name	Origin[a]	Global Rarity Status[b]	Ontario Rarity Status[b]	SARA[c]	ESA[d]
Mammals						
Black bear	*Ursus americanus*	N	G5	S5	—	—
Coyote	*Canis latrans*	N	G5	S5	—	—
Eastern chipmunk	*Tamias striatus*	N	G5	S5	—	—
Grey squirrel	*Sciurus carolinensis*	N	G5	S5	—	—
Meadow vole	*Microtus pennsylvanicus*	N	G5	S5	—	—
Racoon	*Procyon lycon*	N	G%	S5	—	—
Red fox	*Vulpes vulpes*	N	G5	S5	—	—
Red squirrel	*Tamiasciurus hudsonicus*	N	G5	S5	—	—
Snowshoe hare	*Lepus americanus*	N	G5	S5	—	—
Striped skunk	*Mephitis mephitis*	N	G5	S5	—	—
White-tailed deer	*Odocoileus virginianus*	N	G5	S5	—	—
Birds						
Alder fycatcher	*Empidonax alnorum*	N	G5	S5B	—	—
American crow	*Corvus brachyrhynchos*	N	G5	S5B	—	—
American goldfinch	*Carduelis tristis*	N	G5	S5B	—	—
American kestrel	*Falco sparverius*	N	G5	S5B	—	—
American redstart	*Setophaga ruticilla*	N	G5	S5B	—	—
American robin	*Turdus migratorius*	N	G5	S5B	—	—
American woodcock	*Scolopax minor*	N	G5	S5B	—	—
Black-and-white warbler	*Mniotilta varia*	N	G5	S5B		
Black-capped chickadee	*Poecile atricapilla*	N	G5	S5B	—	—
Black-throated green Warbler	*Setophaga virens*	N	G5	S5B	—	—
Blue jay	*Cyanocitta cristata*	N	G5	S4	—	—
Brown creeper	*Certhia americana*	N	G5	S5B	—	—
Brown-headed cowbird	*Molothrus ater*	N	G5	S5B	—	—
Canada goose	*Branta canadensis*	N	G5	S4B	—	—
Cedar waxwing	*Bombycilla cedrorum*	N	G5	S5B	—	—
Chipping sparrow	*Spizella passerina*	N	G5	S4B	—	—
Common grackle	*Quiscalus quiscula*	N	G5	S4B	—	—
Common nighthawk	***Chordeiles minor***	**N**	**G5**	**S5B**	**Special concern**	**Special Concern**
Common raven	*Corvus corax*	N	G5	S5	—	—
Common yellowthroat	*Geothlypis trichas*	N	G5	S5	—	—
Cooper's hawk	*Accipiter cooperii*	N	G5	S4	—	—
Downy woodpecker	*Picoides pubescens*	N	G5	S5	—	—
Eastern kingbird	*Tyrannus tyrannus*	N	G5	S5B	—	—
Eastern whip-poor-will	***Antrostomus vociferus***	**N**	**G5**	**S5B**	**Threatened**	**Threatened**
Eastern wood-pewee	***Contopus virens***	**N**	**G5**	**S4B**	**Special concern**	**Special Concern**
European starling	*Sturnus vulgaris*	I	G5	S4B	—	—
Field sparrow	*Spizella pusilla*	N	G5	S5B	—	—
Gray catbird	*Dumetella carolinensis*	N	G5	S4B	—	—
Great blue heron	*Ardea herodias*	N	G5	S5B, S5N	—	—
Great-crested flycatcher	*Myiarchus crinitus*	N	G5	S4B		
Hairy woodpecker	*Dryobates villosus*	N	G5	S5	—	—
House wren	*Troglodytes aedon*	N	G5	S4B	—	—
Killdeer	*Charadrius vociferus*	N	G5	S5B	—	—
Least flycatcher	*Empidonax minimus*	N	G5	S4B	—	—
Nashville warbler	*Oreothlypisa ruficapilla*	N	G5	S5B	—	—
Mallard	*Anas platyrhynchos*	N	G5	S5B	—	—
Mourning dove	*Zenaida macroura*	N	G5	S4B	—	—
Northern flicker	*Colaptes auratus*	N	G5	S4B	—	—
Ovenbird	*Seiurus aurocapilla*	N	G5	S5B	—	—
Pine warbler	*Setophaga pinus*	N	G5	S5	—	—
Purple finch	*Carpodacus purpureus*	N	G5	S5	—	—
Red-eyed vireo	*Vireo olivaceus*	N	G5	S5B	—	—
Red-winged blackbird	*Agelaius phoeniceus*	N	G5	S4B	—	—
Rose-breasted grosbeak	*Pheucticus ludovicianus*	N	G5	S4B	—	—

Common Name	Scientific Name	Origin[a]	Global Rarity Status[b]	Ontario Rarity Status[b]	SARA[c]	ESA[d]
Savannah sparrow	*Passerculus sandwichensis*	N	G5	S5	—	—
Song Sparrow	*Melospiza melodia*	N	G5	S4B	—	—
Sora	*Porzana carolina*	N	G5	S4B	—	—
Spotted sandpiper	*Actitis macularia*	N	G5	S4B	—	—
Swamp sparrow	*Melospiza georgiana*	N	G5	S4B	—	—
Tree swallow	*Tachycineta bicolor*	N	G5	S4B	—	—
Turkey vulture	*Cathartes aura*	N	G5	S5B	—	—
Veery	*Catharus fuscescens*	N	G5	S4B	—	—
White-throated Sparrow	*Zonotrichia albicollis*	N	G5	S5	—	—
Wild turkey	*Meleagris gallopava*	N	G5	S5	—	—
Wilson's snipe	*Gallinago delicata*	N	G5	S4	—	—
Winter wren	*Troglodytes hiemalis*	N	G5	S5	—	—
Wood thrush	***Hylocichla mustelina***	**N**	**G5**	**S5B**	**Threatened**	**Special Concern**
Yellow-rumped warbler	*Setophaga coronata*	N	G5	S4	—	—
Yellow warbler	*Setophaga petechia*	N	G5	S5B	—	—
Herpetiles						
American toad	*Anaxyrus americanus*	N	G5	S5	—	—
Eastern gartersnake	*Thamnophis sirtalis*	N	G5T5	S5	—	—
Gray treefrog	*Hyla versicolor*	N	G5	S5	—	—
Green frog	*Lithobates clamitans*	N	G5	S5	—	—
Northern leopard frog	*Lithobates pipiens*	N	G5	S5	—	—
Northern red-bellied snake	*Storeria occipitomaculata*	N	G5T5	S5	—	—
Spring peeper	*Pseudacris crucifer*	N	G5	S5	—	—
Western chorus frog	***Pseudacris triseriata***	**N**	**G5TNR**	**S3**	**Threatened**	**—**
Wood frog	*Lithobates sylvatica*	N	G5	S5	—	—
Butterflies, Bumblebees, and Dragonflies						
Aphrodite fritillary	*Speyeria aphrodite*	N			—	—
Beaverpond baskettail	*Epitheca canis*	N	G5	S5	—	—
Black swallowtail	*Papilio polyxenes*	N	G5	S5	—	—
Brown-belted bumblebee	*Bombus griseocollis*	N	G5	S5		
Cabbage white	*Pieris rapae*	I	G5	SNA	—	—
Calico pennant	*Celithemis elisa*	N	G5	S5	—	—
Canadian tiger swallowtail	*Papilio canadensis*	N	G5	S5	—	—
Clouded sulphur	*Colias philodice*	N	G5	S5	—	—
Common eastern bumblebee	*Bombus impatiens*	N	G5	S5	—	—
Common green darner	*Anax junius*	N	G5	S5	—	—
Common ringlet	*Coenonympha tullia*	N	G5	S5	—	—
Dot-tailed whiteface	*Leucorrhinia intacta*	N	G5	S5	—	—
Dun skipper	*Euphyes vestris*	N	G5	S5	—	—
Dusky clubtail	*Gomphus spicatus*	N	G5	S5	—	—
Eastern comma	*Polygonia comma*	N	G5	S5	—	—
Eastern-tailed blue	*Cupido comyntas*	N	G5	S5	—	—
European skipper	*Thymelicus lineola*	I	G5	SNA	—	—
Little wood satyr	*Megisto cymela*	N	G5	S4	—	—
Lucy's azure	*Celastrina lucia*	N	G5	S5	—	—
Monarch	***Danaus plexippus***	**N**	**G5**	**S2N, S4B**	**Special concern**	**Special concern**
Mourning cloak	*Nymphalis antiopa*	N	G5	S5	—	—
Northern crescent	*Phyciodes cocyta*	N	G5	S5	—	—
Red admiral	*Vanessa atalanta*	N	G5	S5	—	—
Silver spotted skipper	*Epargyreus clarus*	N	G5	S4	—	—
Tiger swallowtail	*Papilio glaucus*	N	G5	S5	—	—
Tri-colored bumblebee	*Bombus ternarius*	N	G5	S5	—	—
Twelve-spotted skimmer	*Libellula pulchella*	N	G5	S5	—	—
Viceroy	*Limenitis archippus*	N	G5	S5	—	—
White admiral	*Limenitis arthemis*	N	G5	S5	—	—
White-faced meadowhawk	*Sympetrum obtrusum*	N	G5	S5	—	—
Widow skimmer	*Libellula luctuosa*	N	G5	S5	—	—

[a] Origin: N = Native; (N) = Native but not in study area region; I = Introduced.

Common Name	Scientific Name	Origin[a]	Global Rarity Status[b]	Ontario Rarity Status[b]	SARA[c]	ESA[d]

[b] Ranks based upon determinations made by the Ontario Natural Heritage Information Centre (2023).

G = Global; S = Provincial; Ranks 1-3 are considered imperiled or rare; Ranks 4 and 5 are considered secure.

SNA = Not applicable for Ontario Ranking (e.g. Exotic species)

[c]Canada Species at Risk Act (Schedule 1; checked December 2022)

[d]Ontario Endangered Species Act (O.Reg.230/08; checked December 2022)

Appendix F
Curriculum Vitae

GWENDOLYN WEEKS, H.B.Sc.Env. *Senior Ecologist / Project Manager*

SUMMARY OF PROFESSIONAL EXPERIENCE

2024 - Present — Senior Ecologist / Project Manager. Cambium Inc.
Ottawa, Ontario, Canada

Gwendolyn has been providing ecological consulting services since 2004, with particular knowledge in the field of terrestrial ecology. Supported by her depth of experience, Gwendolyn thrives on anticipating and providing pro-active solutions for clients' needs as they navigate the natural environment approvals process. She is skilled at agency and community liaison, and prides herself on providing creative, efficient and positive outcomes for her clients. Gwendolyn has authored numerous environmental impact statements, species at risk studies, natural heritage assessments, and due diligence reports for a variety of sectors, including residential development, recreational development, aggregates, energy projects (transmission lines, pipelines and renewable energy), as well as for federal, provincial and municipal governments. She has also provided terrestrial ecology peer review services. Gwendolyn's expertise is founded on years of direct in-field experience where she gained extensive skills in identifying and understanding the ecology of Ontario's flora, fauna, and plant communities. Gwendolyn is certified in both the Ministry of Natural Resources and Forestry (MNRF) Ecological Land Classification (ELC) and Wetland Evaluation systems, as well as being a certified Butternut Health Assessor

2011 - 2024 — Senior Ecologist / Project Manager. Golder Associates Ltd / WSP Canada Inc.
Ottawa, Ontario, Canada

Provided a range of terrestrial ecology services, including designing field programs and managing projects for numerous client sectors. Gwendolyn acted as natural environment component lead as well as over-all project lead for Golder's multi-disciplinary teams on numerous projects in various locations across the province. Gwendolyn conducted agency and public consultation, and lead natural environment permitting for large, complex projects. Responsible for pursuing opportunities and building client relationships in Eastern Canada.

2004-2011 — Ecologist / Project Manager. Stantec Consulting Ltd.
Guelph, Ontario, Canada

Provided a range of terrestrial ecology services, including designing and carrying out detailed field programs; natural features monitoring and species at risk surveys. Gwendolyn was also responsible for managing projects for a range of client sectors.

PROFESSIONAL ASSOCIATIONS

- Field Botanists of Ontario

EDUCATION & TRAINING

2004 — Honours Bachelor of Science in Environmental Science (with honours). University of Guelph
Guelph, Ontario, Canada

2004	Ecological Land Classification (ELC) Training Certificate. MNRF Turkey Point, Ontario, Canada
2005	Ontario Wetland Evaluation System (OWES) Training Certificate. MNRF North Bay, Ontario, Canada
2010	Wetland Creation. Toronto Zoo Toronto, Ontario, Canada
2011/2019	Certified Butternut Health Assessor. Ontario MECP Kemptville, Ontario, Canada
2014	Habitat Restoration Planning and Implementation Certificate. Northwest Environmental Training Centre Virtual Course
2014	Data Sensitivity Training. MNRF Ottawa, Ontario, Canada
2017	Ontario Stream Assessment Protocol – Headwater Drainage Features. Ontario MNRF Ottawa, Ontario, Canada
2021	Defensive Driver Training. Canada Safety Council Ottawa, Ontario, Canada
2021	Surface Miner Training. Ontario Ministry of Labour, Training and Skills Development Ottawa, Ontario, Canada
2024	Standard First Aid (CPR A / AED). St. John Ambulance Brockville, Ontario, Canada

LANGUAGES

- English

PROFESSIONAL AREA OF FOCUS

LAND DEVELOPMENT

- *UHAUL SELF-STORAGE FACILITY – OTTAWA, ON

Retained by UHaul to complete a Scoped Environmental Impact Statement for a proposed storage facility along the Carp River, Ottawa. The EIS required negotiations with the City in order to scope the study

appropriately, and included targeted studies for species at risk. The EIS assessed the significant natural features at the Site, and identified appropriate setbacks and mitigation measures to be implemented.

- *WRIGHT LANDS RESIDENTIAL DEVELOPMENT – OTTAWA, ON

Retained by The Regional Group to complete an Environmental Impact Statement for the proposed development of 788-790 River Road, Ottawa. The Site included significant natural features including headwater drainage features, a significant valley feature, and fish habitat. Gwendolyn was the over-all project manager, responsible for scoping and leading the ecological tasks as well as agency consultation, but also for managing the over-all multi-disciplinary project technical team including geotechnical, hydrogeology, contaminated lands, and archaeology.

- *VICTORIA ISLAND AND TIMBERSLIDE REMEDIATION PROJECT – OTTAWA, ON

Retained by the National Capital Commission to support the multi-million-dollar remediation program for Victoria Island, a federal brownfield in the Ottawa River between Ontario and Quebec. Project objective was to rehabilitate the island as part of the transition of stewardship of the Site to the Algonquins of Ontario. Gwendolyn provided a range of services, including Ecological Characterisation Reporting for each phase of the remediation work, and completion of a DFO Request for Project Review and habitat restoration plan for the watercourse associated with the historic Timberslide. Gwendolyn was the component lead for terrestrial natural environment.

-*OTTAWA NEW EDINBURGH CLUB BOATHOUSE RENEWAL – OTTAWA, ON

As part of the National Capital Commission's renewal project for the Ottawa New Edinburgh Club (ONEC) boathouse, a heritage building, Gwendolyn provided a range of services including Ecological Characterization Reports for the boathouse and also the servicing area, contributed to an Environmental Effects Evaluation, and worked with the NCC to prepare and submit a federal *Species at Risk Act* permit application for butternut and SAR bats. Gwendolyn was the project manager, and lead for the ecology services.

-*WESTBORO BEACH REDEVELOPMENT – OTTAWA, ON

Gwendolyn was the project manager and natural environment component lead for the National Capital Commission's proposed redevelopment of Westboro Beach. As part of the project, Gwendolyn scoped field surveys, prepared an Ecological Characterization Report, and contributed to an Environmental Effects Evaluation.

-*GALLIPEAU CENTRE REDEVELOPMENT PROJECT – SMITH'S FALLS, ON

Retained by TAG Gallipeau Corporation to assist with determining the feasibility of redeveloping the Gallipeau Centre in Smith's Falls. Gwendolyn was the natural environment component lead and was responsible for scoping field surveys and preparing an environmental constraints assessment for consideration during the planning stages of the project. Gwendolyn assisted the client in understanding the ecological constraints and opportunities, as well as laying out a path forward should redevelopment be contemplated.

-*OTTAWA NEW CENTRAL PUBLIC LIBRARY – OTTAWA, ON

Retained by the City of Ottawa to prepare an Environmental Impact Study in accordance with City of Ottawa requirements for the proposed new City of Ottawa Central Library. The scoped EIS focused on species at risk and potential impacts on the adjacent heritage aqueduct. Gwendolyn was the ecology lead.

-*MAPLEVIEW HOMES RESIDENTIAL DEVELOPMENT – BROCKVILLE, ON

Gwendolyn was retained by MapleView Homes to complete and Environmental Impact Statement for a proposed residential development. In addition to managing a multi-disciplinary technical team, including contaminated lands, geotechnical and archaeology services, Gwendolyn was responsible for scoping natural environment field surveys and preparing an Environmental Impact Study in accordance with City of Brockville and provincial policies.

-*WATERIDGE VILLAGE (FORMER CFB ROCKCLIFFE) – OTTAWA, ON

Provided multi-disciplinary support to the redevelopment of the former CFB Rockcliffe site to a multi-use urban development. In support of the application to the City of Ottawa by Canada Lands Company, the team prepared the Environmental Impact Statement and the Tree Conservation Report based on the proposed development plan. The evaluation of natural heritage features for this project site included the integration of provincial and federal regulations and associated best practices for mitigation of potential impacts. Adjacent lands owned by the National Capital Commission were also reviewed as part of this project. Gwendolyn acted as the Lead Ecologist and project manager.

-*GREYSTONE VILLAGE (FORMER OBLATES PROPERTY – OTTAWA, ON

Retained by The Regional Group for this exciting redevelopment of the historic Oblates property in Ottawa, along the Rideau River. The site was assessed for natural heritage values, and an Environmental Impact Study and Tree Conservation Report were prepared. Work included liaison with the Rideau Conservation Authority and local community groups. Gwendolyn acted as the Lead Ecologist.

-*O'BRIEN HOUSE BAT MATERNITY STUDY – CHELSEA, QC

Retained to assess the presence or absence of SAR bats using this historic building for maternity roosting prior to proposed redevelopment of the building as a boutique hotel. The study included daytime surveys to assess potential habitat and search for evidence of bats, while nighttime surveys focused on visually locating bats exiting the structure, according to standard protocols. Remote acoustic detection units were used to determine species present. Collaborated with the National Capital Commission, who is the landowner. Gwendolyn acted as the Lead Ecologist and project manager.

-*GATINEAU PARK TRAIL IMPROVEMENTS – CHELSEA, QC

Retained by the National Capital Commission to prepare an Ecological Characterization Report in support of proposed trail improvements at Trails 5, 27 and 29 within Gatineau Park (federal lands). Work included mapping of vegetation communities, a fish habitat assessment, and targeted searches for species at risk or their potential habitat along the trails. The final report outlined the existing natural environment and identified mitigation measures to be employed to protect those features from potential negative impacts. Gwendolyn acted as the Lead Ecologist and project manager.

-*CHAMPLAIN NODE PARK IMPROVEMENTS – OTTAWA, ON

Retained by the National Capital Commission to prepare an Ecological Characterization Report and Environmental Effects Evaluation (EEE) in support of proposed amenity improvements at the Champlain Node park along the Ottawa River (federal lands). Work included mapping of vegetation communities, a shoreline and fish habitat assessment, a detailed tree inventory and mapping of invasive species, a wetland assessment according to federal guidelines, and targeted botanical and wildlife surveys. The final report outlined the existing natural environment and identified mitigation measures to be employed to protect those features from potential negative impacts. Gwendolyn acted as the Lead Ecologist and project manager.

-*LAC LEAMY PARK TRAIL AND SHORELINE RESTORATION – GATINEAU, QC

Retained by the National Capital Commission to prepare an Ecological Characterization Report in support of proposed trail and shoreline improvements along the Gatineau River within the Lac Leamy Park boundary (federal lands). Work included mapping of vegetation communities, a shoreline and fish habitat assessment, and targeted botanical and wildlife surveys (including western chorus frog). The final report outlined the existing natural environment and identified mitigation measures to be employed to protect those features from potential negative impacts. Gwendolyn acted as the Lead Ecologist and project manager.

-*CLARIDGE HOMES GREENBANK ROAD LANDS DEVELOPMENT – OTTAWA, ON

Retained by Claridge Homes to prepare an Environmental Impact Study and Tree Conservation Report, including all necessary fieldwork, for this Site. Worked with the client and the City of Ottawa to address all

natural environment issues at the Site, including the potential presence of species at risk bats and birds, as well as fish habitat in the Jock River. Gwendolyn acted as the Lead Ecologist and project manager.

-*CLARIDGE HOMES MAPLEGROVE ROAD LANDS DEVELOPMENT – OTTAWA, ON

Retained by Claridge Homes to prepare an Environmental Impact Study and Tree Conservation Report, including all necessary fieldwork, for this Site. Golder worked with the client and the Ministry of Natural Resources and Forestry to provide solutions that met the clients needs as well as natural heritage policy requirements at the municipal and provincial levels. Species at risk encountered at the Site included butternut, and the potential for Blanding's turtle which was addressed through the preparation of an Information Gathering Form. Gwendolyn acted as the Lead Ecologist and project manager.

-*CLARIDGE HOMES RIVERSIDE SOUTH LANDS DEVELOPMENT – OTTAWA, ON

Designed and undertook a comprehensive field program at the Site to characterize the natural features present. An Environmental Impact Statement and Tree Conservation Report in support of Claridge Homes' proposed residential development was then prepared which identified mitigation measures to limit potential impacts to the significant natural features identified. Those features included wetlands, headwater drainage features, woodlands, and species at risk including butternut. Gwendolyn acted as the Lead Ecologist and project manager.

-*OTTAWA POLICE SERVICES SOUTH CAMPUS – OTTAWA, ON

Retained by Ottawa Police Services to prepare an Environmental Impact Study for the proposed South Campus institutional development project. Located adjacent to the Rideau River, the assessment included consideration of a number of species at risk, including Blanding's turtle, as well as fish habitat and surface water setbacks. Gwendolyn acted as the Lead Ecologist and project manager.

-*NATIONAL EQUESTRIAN PARK REDEVELOPMENT – OTTAWA, ON

Retained by Wesley Clover Parks to support the proposed redevelopment of portions of the National Equestrian Park in Ottawa. Gwendolyn supported the natural environment studies to meet the needs of municipal, provincial and federal stakeholders, including development of the compensation plan for Bobolink. The recent developments have included an outdoor festival and concert venue and a FIFA 2-Star Soccer facility. Gwendolyn acted as the Lead Ecologist and project manager.

-*ENVIRONMENTAL MANAGEMENT PLAN FOR URBAN EXPANSION AREAS 9A/B – OTTAWA, ON

Retained by Claridge Homes and Urbandale to prepare an Environmental Management Plan (EMP) for two parcels of land, which included coordination and incorporation of materials from a number of external partners. The EMP provided a framework for future development of the area through a range of detailed

studies, and included extensive consultation with City and Conservation Authority staff. Gwendolyn acted as the Lead Ecologist and project manager.

-*CITY OF BROCKVILLE EMPLOYMENT LANDS – BROCKVILLE, ON

Designed a natural heritage study of a 130 acre property in the City of Brockville, with the intention of determining the potentially developable area in consideration of the natural environment features present at the Site, on behalf of the City of Brockville. Results were presented in a preliminary Environmental Impact Study for consideration as part of a Secondary Plan study for the Site. Gwendolyn acted as the Lead Ecologist and project manager.

-*CLARIDGE HOMES 4789 BANK STREET DEVELOPMENT – OTTAWA, ON

Retained by Claridge Homes to prepare an Environmental Impact Study and Tree Conservation Report, including all necessary fieldwork, for this Site. Worked with the client, City of Ottawa, South Nation Conservation and the Ministry of Natural Resources and Forestry to provide solutions that met the clients needs as well as natural heritage policy requirements at the municipal and provincial levels. Gwendolyn acted as the Lead Ecologist and project manager.

-*PATHWAYS RESIDENTIAL DEVELOPMENT EIS and EMP – OTTAWA, ON

Provided natural heritage expertise in assisting the Regional Group to clear conditions for this draft-approved subdivision in Ottawa. This challenging project included a full inventory of the flora and fauna at the Site in order to prepare an Environmental Management Plan, Environmental Impact Study and Tree Conservation Report for the site. Golder worked with the client, City of Ottawa, South Nation Conservation and the Ministry of Natural Resources and Forestry to navigate this challenging project and provide solutions that met the clients needs as well as natural heritage policy requirements at the municipal and provincial levels. The project also required annual ecological monitoring of a constructed channel to confirm it was functioning as designed. Monitoring focused on flow conveyance, presence of wildlife (amphibian monitoring), vegetation monitoring (in-stream and riparian), and identification of remediation needs, if any. Gwendolyn acted as the Lead Ecologist.

-*DALLAN LANDS RESIDENTIAL DEVELOPMENT – GUELPH, ON

Gwendolyn was retained by Victoria Wood to prepare an Environmental Impact Study for a proposed residential development. Multi-year field inventories related to flora and fauna were performed, including species at risk (Jefferson Salamander), and wetland boundaries were evaluated in co-operation with the Grand River Conservation Authority. Review of potential impacts was undertaken and presented in an Environmental Impact Statement. On-going consultation with public interest groups, University of Guelph

experts, and City staff to develop a design plan in respect of complicated natural heritage features. Gwendolyn acted as the Lead Ecologist and project manager.

-*UNIVERSTIY OF WATERLOO NORTHWEST CAMPUS STUDY – WATERLOO, ON

Gwendolyn was retained by the University of Waterloo to undertake a review and assessment of the natural heritage components associated with the subject lands, including floral, faunal and community investigations. The information gathered was used to create an updated Greenspace System on the subject lands and to propose trail linkages between the site and adjacent lands. Reviewed the draft plan of development in relation to the subject lands in order to identify potential environmental effects and recommend mitigation measures. Gwendolyn acted as the Lead Ecologist and project manager.

PEER REVIEW

- *204 LAVAL STREET DEVELOPMENT – CLARENCE-ROCKLAND, ON

Retained in 2023 by the City of Clarence-Rockland to conduct a peer review of an Environmental Impact Statement for the proposed residential development of 2040 Laval Street, Clarence-Rockland. Provided a letter commenting on the adequacy of scope and appropriateness of conclusions made in the report. Gwendolyn acted as the Lead Ecologist and project manager.

- *1401 CARON STREET DEVELOPMENT – CLARENCE-ROCKLAND, ON

Retained in 2023 by the City of Clarence-Rockland to conduct a peer review of an Environmental Impact Statement for the proposed residential development of 1401 Caron Street, Clarence-Rockland. Provided a letter commenting on the adequacy of scope and appropriateness of conclusions made in the report. Gwendolyn acted as the Lead Ecologist and project manager.

-*OTTAWA INTERNATIONAL AIRPORT PIT – OTTAWA, ON

Retained in 2020 by Thomas Cavanagh Construction Ltd. to provide a peer review of a Natural Environment Level II report prepared for the proposed aggregate pit to be developed on the Ottawa International Airport Lands. The site is on federal lands so federal policies had to be addressed in the typically provincial context of an NELII report. Provided a letter commenting on the adequacy of scope and appropriateness of conclusions made in the report. Gwendolyn acted as the Lead Ecologist and project manager.

-*DAVIS TANNERY LANDS DEVELOPMENT – KINGSTON, ON

Retained in 2019 by the City of Kingston to review an Environmental Impact Study (EIS) for the proposed remediation and development of the former Davis Tannery lands on the Cataraqui River in the City of

Kingston. Provided a letter commenting on the adequacy of scope and appropriateness of conclusions made in the report. Gwendolyn acted as the Lead Ecologist and project manager.

-*CATARAQUI REGION CONSERVATION AUTHORITY SEVERANCE – KINGSTON, ON

Retained in 2016 by the City of Kingston to review an Environmental Impact Study (EIS) for the severance of a parcel of land from the Little Cataraqui Creek Conservation Area, and provided comments with respect to the adequacy of scope and appropriateness of conclusions made in the report. Gwendolyn acted as the Lead Ecologist and project manager.

-*PROPOSED LAND DEVELOPMENT - COUNTY OF PETERBOROUGH, ON

Retained in 2010 by the County of Peterborough to provide environmental peer review services. Reviewed Environmental Impact Studies (EIS) for residential and recreational developments within the County, and provided comments with respect to the adequacy of scope, and appropriateness of conclusions made in the reports. Gwendolyn acted as the Lead Ecologist and project manager.

-*PROPOSED LAND DEVELOPMENT – COUNTY OF FRONTENAC, ON

Retained in 2008/2009 by the County of Frontenac to provide environmental peer review services. Reviewed Environmental Impact Studies (EIS) for residential and recreational developments within the County, and provided comments with respect to the adequacy of scope, and appropriateness of conclusions made in the reports. Gwendolyn acted as the Lead Ecologist and project manager.

ECOLOGICAL STUDIES

- *SPECIES AT RISK SURVEYS – VARIOUS LOCATIONS, ON

Gwendolyn has been involved in the design and undertaking of numerous studies for various species at risk in Ontario, and assessments of their habitats. Surveys followed accepted, standardized protocols and habitats were assessed against established criteria, where available. Species for which these types of studies have been undertaken include, but are not limited to: Fowler's Toad, Western Chorus Frog, Jefferson Salamander, Black Rat Snake, Eastern Hog-nosed Snake, Massasauga Rattlesnake, Short-eared Owl, Barn Swallow, Bobolink, Eastern Meadowlark, Eastern Whip-poor-will, Peregrine Falcon, Least Bittern, West Virginia White, American Badger, Little Brown Bat, Northern Myotis, Tri-coloured Bat, Eastern Small-footed Myotis, Eastern Foxsnake, Spiny Softshell, Blanding's Turtle, Butternut, American Hart's Tongue Fern, and American Ginseng. Gwendolyn has successfully navigated the over-all benefit permitting process under the *Endangered Species Act* and registered activities under the Act. Gwendolyn's work with SAR has involved close liaison with the MECP, experts from academia, and involvement of public interest groups such as the Sierra Club of Canada and local Field Naturalist clubs.

-*CONNAUGHT RANGE TURTLE NESTING SURVEY – OTTAWA, ON

Retained by PWGSC to assess current SAR turtle nesting at the Connaught Range, and design a strategy to prevent future nesting, while at the same time offering alternate nesting habitat. The protection and enhancement plan was designed in consideration of rigorous shooting range requirements, while offering a safe nesting area for turtles away from the active range. Gwendolyn acted as the Lead Ecologist, chief investigator, and project manager.

- *DCC SAULT STE. MARIE ARMOURY SPECIES AT RISK STUDY – SAULT STE. MARIE, ON

Retained by Defence Construction Canada to complete a species at risk (SAR) and a Migratory Bird (MB) survey at the Sault Saint Marie Armoury. Compiled and documented a SAR and MB inventory including potential habitat(s) on the entire Site, with the purpose of determining which SAR and MB were present, if any suitable residences or critical habitats were present and to produce a report that provided clear direction and management recommendations to ensure DND would be duly diligent in managing SAR and MB species at the Site. The study culminated in a list of mitigation measures that can be employed at the Site to assist DND in making management decisions for the property that may affect SAR, MB, other wildlife, or associated habitats. Gwendolyn acted as the Lead Ecologist and project manager, as well as being the Source List manager for DCC.

-*DCC SUDBURY ARMOURY SPECIES AT RISK STUDY – SUDBURY, ON

Retained by Defence Construction Canada to complete a species at risk (SAR) and a Migratory Bird (MB) survey at the Sudbury Armoury. Compiled and documented a SAR and MB inventory including potential habitat(s) on the entire Site, with the purpose of determining which SAR and MB were present, if any suitable residences or critical habitats were present and to produce a report that provided clear direction and management recommendations to ensure DND would be duly diligent in managing SAR and MB species at the Site. This study was carried out over two years. Gwendolyn acted as the Lead Ecologist and project manager, as well as being the Source List manager for DCC.

-*DCC CFB BORDEN TICK STUDY – SIMCOE COUNTY, ON

Retained by Defence Construction Canada to complete a study of abundance and distribution of ticks at Canadian Forces Base Borden. The study consisted of mapping areas of higher risk of encountering a tick based on mapping and analysis of suitable habitats, followed by targeted tick surveys along designated transects in the higher risk areas. Black-legged ticks collected as part of the study were sent for analysis to determine if they carried the bacterium responsible for Lyme Disease.

-*DCC CFB TRENTON SPECIES AT RISK STUDY – TRENTON, ON

Retained by Defence Construction Canada to perform targeted surveys for species at risk and migratory birds at Canadian Forces Base Trenton. Over the course of two years, an area being considered for future development was surveyed. Where species at risk were confirmed, suitable habitat and/or candidate critical habitat (as defined under the *Species at Risk Act*) were mapped. The purpose of the study was to identify areas of higher ecological sensitivity and importance for consideration during project planning.

-*CITY OF HAMILTON NATURE COUNTS PROGRAM – HAMILTON, ON

Performed Ecological Land Classification (ELC) within the City of Hamilton's boundary, from Ancaster to Puslinch. Designated Areas of Natural and Scientific Interest (ANSI) were inventoried for flora, fauna and disturbance level, and classified using ELC. The purpose of the study was to map vegetation communities in all large, natural habitats in the watershed. Gwendolyn acted as field crew lead.

CONSTRUCTION MATERIALS

-*RENFREW GOLF PIT – RENFREW, ON

Prepared a Natural Environment Report for Thomas Cavanagh Construction Ltd. according to the *Aggregate Resources Act* requirements for a new sand pit operation. Work included discussions with the MNRF and MECP, field studies, and authoring the reporting. Integration of various studies by multiple disciplines to determine potential impacts of extraction and preparation of appropriate mitigation plans and rehabilitation plans. Gwendolyn acted as the natural environment component lead.

- *GILBERT QUARRY EXTENSION – SOUTH FRONTENAC, ON

Prepared a Natural Environment Report for G. Tackaberry and Sons Construction Company Ltd.'s proposed Gilbert Quarry extraction area expansion within the licensed area of their existing quarry. Gwendolyn acted as the natural environment component lead.

-*STITTSVILLE II QUARRY EXPANSION – OTTAWA, ON

Prepared a Natural Environment Report for R.W. Tomlinson Ltd. according to the *Aggregate Resources Act* requirements for a limestone quarry expansion. Work included discussions with the City of Ottawa, MNRF and MECP, field studies, and authoring the reporting. Integration of various studies by multiple disciplines to determine potential impacts of extraction and preparation of appropriate mitigation and rehabilitation plans. Work included evaluation of wetlands according to the updated Ontario Wetland Evaluation System (OWES). Gwendolyn acted as the natural environment component lead.

-*BANK STREET QUARRY EXTENSION – OTTAWA, ON

Prepared a Natural Environment Level II report for Thomas Cavanagh Construction Ltd. according to the *Aggregate Resources Act* requirements for a small limestone quarry expansion. Work included discussions with the MNRF and MECP, field studies, and authoring the reporting. Integration of various studies by multiple disciplines to determine potential impacts of extraction and preparation of appropriate mitigation and rehabilitation plans. Gwendolyn acted as the natural environment component lead.

-*HIGHLAND LINE PIT – LANARK, ON

Prepared a Natural Environment Report for Thomas Cavanagh Construction Ltd. according to the *Aggregate Resources Act* requirements for a new sand pit operation. Work included discussions with the DFO, MNRF, and MECP, field studies, and authoring the reporting. Integration of various studies by multiple disciplines to determine potential impacts of extraction and preparation of appropriate mitigation plans and rehabilitation plans. Gwendolyn acted as the natural environment component lead.

-*WEST CARLETON QUARRY EXPANSION – OTTAWA, ON

Prepared a Natural Environment Report for Thomas Cavanagh Construction Ltd. according to the *Aggregate Resources Act* requirements for a small limestone quarry expansion. Work included discussions with the City of Ottawa, MNRF and MECP, field studies, and authoring the reporting. Integration of various studies by multiple disciplines to determine potential impacts of extraction and preparation of appropriate mitigation and rehabilitation plans. Gwendolyn acted as the natural environment component lead.

- *NAVAN QUARRY EXPANSION – OTTAWA, ON

Prepared a Natural Environment Level II report for Lafarge Canada Inc. according to the *Aggregate Resources Act* requirements for a limestone quarry expansion. Work included discussions with the City of Ottawa, MNRF and MECP, field studies, and authoring the reporting. Integration of various studies by multiple disciplines to determine potential impacts of extraction and preparation of appropriate mitigation and rehabilitation plans. Gwendolyn acted as the natural environment component lead.

-*ARNOTT PIT – LANARK, ON

Prepared a Natural Environment Level II report for Thomas Cavanagh Construction Ltd. according to the *Aggregate Resources Act* requirements for a new aggregate pit operation. Work included discussions with the MNRF and MECP, field studies, and authoring the final report. Integration of various studies by multiple disciplines to determine potential impacts of extraction and preparation of appropriate mitigation and rehabilitation plans. Gwendolyn acted as the natural environment component lead.

-*RIDEAU ROAD QUARRY EXPANSION – OTTAWA, ON

Prepared a Natural Environment Level II report for R.W. Tomlinson Ltd. according to the *Aggregate Resources Act* requirements for a small limestone quarry expansion. Work included discussions with the MNRF, field studies, and authoring the final report. Integration of various studies by multiple disciplines to determine potential impacts of extraction and preparation of appropriate mitigation and rehabilitation plans. Gwendolyn acted as the natural environment component lead.

-*CANAAN QUARRY EXPANSION – OTTAWA, ON

Prepared a Natural Environment Level I report for Cornwall Sand and Gravel according to the *Aggregate Resources Act* requirements for a limestone quarry expansion. Work included a review of all published materials relating to the natural heritage features at the site, undertaking a scoped in-field review of the on-site features, and authoring the final report. Gwendolyn acted as the natural environment component lead.

-*KENNEDY PIT – OTTAWA, ON

Prepared a Natural Environment Level II report for Karson Aggregates according to the *Aggregate Resources Act* requirements for a new sand pit operation. Work included discussions with the MNRF, designing and undertaking the field studies, and authoring the final report. Integration of various studies by multiple disciplines to determine potential impacts of extraction and preparation of appropriate mitigation and rehabilitation plans. Worked with the Mississippi Valley Conservation Authority to develop an environmental monitoring program. Gwendolyn acted as the natural environment component lead.

-MCMACHEN PIT SPECIES AT RISK – RIDEAU LAKES, ON

Designed and undertook a baseline study and mitigation plan for a sensitive species at risk on G. Tackaberry and Sons Construction Company Ltd.'s proposed aggregate pit expansion lands in accordance with O.Reg. 242/08 under the *Endangered Species Act*. Gwendolyn acted as the natural environment component lead.

INFRASTRUCTURE

-*MANOTICK WATERMAIN PHASE I AND II – OTTAWA, ON

Retained by J.L. Richards, Gwendolyn was the natural environment component lead for the proposed Manotick Watermain project that included installation of a new watermain under the Rideau River. She was responsible for scoping field studies and preparing the Natural Environment Existing Conditions and Impact Assessment report. Reporting included an assessment of significant natural features and associated provincial and municipal policies, as well as recommended mitigation measures and permitting

requirements. The presence of butternut at the site required preparation of a Butternut Health Assessment and a mitigation and monitoring plan in accordance with O.Reg. 242/08 under the *Endangered Species Act*.

-LEMIEUX ISLAND WATER INTAKE REPLACEMENT – OTTAWA, ON

Retained by Jacobs on behalf of the City of Ottawa, Gwendolyn was the natural environment component lead for the proposed new water intake at Lemieux Island in the Ottawa River. Gwendolyn was responsible for preparing a natural environment baseline and impact assessment report in support of the detailed design stage of the project. Gwendolyn scoped field surveys and was responsible for authoring the Natural Environment Existing Conditions and Impact Assessment report. This project required permitting coordination from federal, Ontario and Quebec agencies for in-water drilling. The presence of species at risk required preparation and submission of an Information Gathering Form to the MNRF. As part of the project, Gwendolyn was also responsible for preparing and submitting a DFO request for review for construction of the project. As a portion of the temporary construction infrastructure was located on federally-owned lands managed by the National Capital Commission, Gwendolyn was responsible for scoping and undertaking an Ecological Characterization and Tree Inventory for that portion of the Site.

-*GRAHAM CREEK INFRASTRUCTURE RENEWAL – OTTAWA, ON

Retained by J.L. Richards on behalf of the City of Ottawa, Gwendolyn was the natural environment component lead for the renewal of the Graham Creek storm infrastructure in Ottawa. She was also responsible for scoping field studies and preparing the Natural Environment Existing Conditions and Impact Assessment report. Reporting included an assessment of significant natural features and associated provincial and municipal policies, as well as recommended mitigation measures and permitting requirements. Gwendolyn managed submission of a DFO Request for Review for the project.

-*WHITCHURCH-STOUFFVILLE WATER AND WASTEWATER MASTER STUDY – WHITCHURCH-STOUFFVILLE, ON

Gwendolyn was the technical project manager as well as the component lead for Natural Sciences for the Master Study prepared by GM BluePlan. In addition to managing the multi-disciplinary contribution to the project, she was also responsible for scoping field studies and preparing the Natural Environment Existing Conditions report. Reporting included an assessment of significant natural features and associated provincial and municipal policies, as well as recommended mitigation measures and permitting requirements.

-*WHITCHURCH-STOUFFVILLE WATER SYSTEM UPGRADES – WHITCHURCH-STOUFFVILLE, ON

Gwendolyn was responsible for scoping field studies and preparing a Natural Environment Existing Conditions report for proposed water system upgrades for the Town of Whitchurch-Stouffville as part of a Municipal Class EA. Reporting included an assessment of significant natural features and associated provincial and municipal policies, as well as recommended mitigation measures and permitting requirements.

-*LONGWORTH AVENUE EXTENSION – CLARINGTON, ON

Gwendolyn was the component lead for Natural Sciences for the Municipal Class EA for the proposed Longworth Avenue Extension. She was responsible for scoping field studies and preparing the Natural Environment Existing Conditions report. Reporting included an assessment of significant natural features and associated provincial and municipal policies, as well as recommended mitigation measures and permitting requirements.

-*EARL ARMSTRONG ROAD EXTENSION – OTTAWA, ON

Retained by Parsons on behalf of the City of Ottawa, Gwendolyn was the Golder Associates Ltd. project manager as well as the wetlands and headwaters component lead in support of the Environmental Assessment for the proposed Earl Armstrong Road Extension. This involved managing Golder's multi-disciplinary input to the Municipal Class EA, being prepared by Parsons, as well as scoping and managing deliverables for wetlands and headwaters. As part of this project, Gwendolyn co-authored a formal wetland evaluation under the provincial Ontario Wetland Evaluation System.

-*THIRD CROSSING OF THE CATARAQUI RIVER – KINGSTON, ON

Retained by J.L. Richards on behalf of the City of Kingston to assist in preparing the preliminary design for the third crossing bridge over the Cataraqui River. Worked with a multi-disciplinary team to identify potential natural environment constraints that helped to inform the proposed design. The key natural features in the Study Area included the Cataraqui River Marshes provincially significant wetland, fish habitat in the Cataraqui River, shoreline wetlands and woodlands, and potential habitat for species at risk. Provided input to the lighting design for the bridge structure that respected the sensitive nature of the area, and also provided input to the landscaping plan that incorporated micro-habitats and native species. The team worked closely with the City of Kingston and Parks Canada. Gwendolyn acted as the Lead Ecologist.

-*TRAIL WASTE FACILITY STAGE V – OTTAWA, ON

Retained by the City of Ottawa to assist with the update to the existing Environmental Assessment for the implementation of a new landfill cell at the Trail Road Waste Facility. Gwendolyn was the component lead

in updating the species at risk assessment for the project, including recommendations for mitigation. Worked closely with the MECP to determine impacts to species at risk and implement appropriate avoidance and mitigation measures to eliminate the need for permitting under the *Endangered Species Act*.

-*NORTH DUNDAS BOYNE LANDFILL EXPANSION – NORTH DUNDAS, ON

Retained by the Township of North Dundas to prepare an Environmental Assessment of the Boyne Road Landfill expansion project. Gwendolyn was the component lead responsible for preparing a comprehensive assessment of the significant natural features present in the Study Area to help inform strategic development of alternative methods of expansion and their evaluation. Assessed impacts from the alternatives on the natural environment to assist in identifying the preferred alternative. On completion of the EA, Gwendolyn lead implementation of EA natural heritage commitments as well as natural heritage permitting.

-*ALGONQUINS OF PIKWAKANAGAN FIRST NATION – PIKWAKANAGAN, ON

Provided natural environment consulting services in support of a Solid Waste Feasibility Study for the AofPFN. Tasks included reviewing the site, as well as published natural heritage information for the vicinity, to identify significant natural features, including species at risk, that are or have the potential to be present. Studies were undertaken to determine present / absence of species at risk. Reporting included identifying mitigation measures to protect natural features during project planning and development. Gwendolyn acted as the Lead Ecologist.

-*WEST CARLETON LANDFILL EXPANSION – OTTAWA, ON

Retained by Waste Management to conduct an update to the ecological and species at risk findings of an approved Environmental Assessment for the proposed expansion of the West Carleton Landfill, located in Ottawa. Additional tasks included implementing commitments made in the approved EA, as well as engaging agencies to ensure any required permits relating to natural heritage were in place to support construction. Gwendolyn was the lead ecologist, responsible for preparing a road map for the client, scoping and leading ecological update, and contacting agencies to identify and negotiate permitting requirements for species at risk. Specific tasks included preparing a bank swallow compensation and monitoring plan, negotiating with the MECP to determine the need for permits for each phase of construction, and performing fish, turtle and amphibian rescues within the construction footprint.

-*HYDRO ONE NATION RISE WINDFARM LINE TAP – WINCHESTER, ON

Gwendolyn was the natural environment component lead for Hydro One to support the Environmental Effects Evaluation process for the construction of the electrical transmission line and connection to the wind farm.

-*TCE NEW COMPRESSOR STATION – BLAINVILLE, QC

Gwendolyn was the natural environment component lead for an Environmental Effects Evaluation for the construction and operation of a new greenfield compressor station, as well as modification to an existing station. The impact assessments were prepared under the Canadian Energy Regulator Act and its Interim Filing Guidance.

-*ENBRIDGE ALMONTE REINFORCEMENT PROJECT – ALMONTE, ON

Gwendolyn was the natural environment component lead for a proposed natural gas line under the Mississippi River in Almonte. Gwendolyn scoped the field surveys and prepared the baseline reporting in support of the Environmental Effects Evaluation for the project, including preparation of an Information Gathering Form for species at risk. Responded to comments from stakeholders as part of public consultation.

-*TCE EASTERN MAINLINE PROJECT – MARKHAM TO CORNWALL, ON

The Project included up to approximately 370 km of pipeline and related components, including valve sites and new and modified compression facilities at existing compressor stations along the proposed route. Work included designing and undertaking portions of the environmental field program, as well as contributing to reporting for the Environmental Assessment (EA) pursuant to the requirements of the National Energy Board Act and CEAA 2012.

-*CLARINGTON WIND POWER PROJECT – CLARINGTON, ON

Retained by Leader Resources Services Corp. to complete various studies in support of the REA application for an onshore Class 4 wind turbine generating project. These included a Natural Heritage Assessment, a Water Body Assessment, *Endangered Species Act* permit applications, Environmental Effects Monitoring Plan and a Noise Study Report. Wildlife and wildlife habitat investigations focused on bat maternity roosting habitat, grassland bird habitat, landbird migratory stopover areas, marsh bird breeding habitat, amphibian breeding habitat and snake hibernacula. Use of the property by avian wildlife was assessed over several years during various seasons including breeding and migration. Species at risk habitat was identified and focused field surveys were completed as required. The Natural Heritage Assessment was approved by the MNRF. Gwendolyn acted as the Lead Ecologist and project manager.

-*LINDSAY-OPS LANDFILL SITE RENEWABLE ENERGY GENERATION FACILITY – LINDSAY, ON

Retained by the City of Kawartha Lakes to conduct the site investigation component of a Natural Heritage Assessment (NHA) as per section 26 of Ontario Regulation (O. Reg.) 359/09 for a proposed biogas facility at the Lindsay-Ops Landfill site, City of Kawartha Lakes, Ontario. A Site Investigation Report was prepared based on these investigations, followed by an Evaluation of Significance (EOS) and Environmental Impact Statement (EIS) report as per sections 27 and 38 (2) of O. Reg. 359/09. Gwendolyn acted as the Lead Ecologist and project manager.

-*SOUTH BRANCH WIND FARM – SOUTH DUNDAS, ON

Environmental compliance monitoring during construction of this wind project for EDP Renewables - North America. Undertook a review of all environmental approvals and permits associated with the Project and prepared a comprehensive Compliance Manual based on the review. Also reviewed construction plans and procedures prepared by the Contractor for the Project in order to assess their compliance with agency guidelines and their related Acts, Codes and Regulations. Gwendolyn oversaw monthly construction monitoring events to monitor compliance. Following the completion of Project construction, and all associated monitoring events, a Compliance Assessment Summary Report was prepared. Gwendolyn acted as the Lead Ecologist and project manager.

-*WESTNEY ROAD BRIDGES REHABILITATION – TORONTO, ON

Retained by MTO, Gwendolyn was the terrestrial sciences lead and project manager for Golder Associates Ltd. multi-disciplinary team for the rehabilitation of the Highway 401 bridges over Westney Road. Fieldwork and reporting were undertaken according to MTO regulations and guidelines. Deliverables included a Fisheries and Aquatic Ecosystems Report and a Terrestrial Ecosystems Report.

-*WHITE RIVER BRIDGE REPLACEMENT – MCCRON TOWNSHIP, ON

Retained by the MTO, Gwendolyn was the project manager for the terrestrial and fisheries assessments associated with a proposed bridge replacement project. Fieldwork and reporting were undertaken according to MTO regulations and guidelines. Deliverables included a terrestrial summary and Project Notification Form for fisheries. Gwendolyn acted as the component lead for terrestrial sciences and over-all Golder project manager.

-*WINDY POINT BRIDGE REHABILITATION – WATTEN TOWNSHIP, ON

Retained by the MTO, Gwendolyn was the project manager for the terrestrial and fisheries assessments associated with a proposed bridge replacement project. Fieldwork and reporting were undertaken according to MTO regulations and guidelines. Deliverables included a terrestrial summary and Project Notification

Form for fisheries. Gwendolyn acted as the component lead for terrestrial sciences and over-all Golder project manager.

-*HIGHWAY 11/17 ROUTE PLANNING – KAKABEKA FALLS, ON

Route Planning Study for the four-laning of Highway 11/17 between Kakabeka Falls and Shabaqua Corners. The purpose of the study was to review and evaluate various route alternatives for a new four-lane divided Highway 11/17. Terrestrial investigations characterized vegetation communities in the study area according to Ecological Land Classification (ELC) for southern Ontario, and the Forest Ecosystems of Central Ontario. Observations of ecological linkages, wildlife and wildlife habitats were also made. Sensitive vegetation communities within a provincial park were reviewed. Fieldwork and reporting were undertaken according to MTO regulations and guidelines. Gwendolyn acted as the component lead for terrestrial sciences.

-*HIGHWAY 69 SITE SELECTION FOR MAINTENANCE PATROL YARDS – PARRY SOUND TO SUDBURY, ON

This study was undertaken in order to assess a number of alternative locations for patrol yards within the study area, and to identify preferred alternatives at three locations. Performed Ecological Land Classification within each identified patrol yard alternative. Identification of flora and fauna, and habitat descriptions. The study area contained significant features including Provincially Significant Wetlands and required surveys and habitat assessments for Massassauga Rattlesnake, which was present in the study areas. Fieldwork and reporting conducted in accordance with MTO regulations and guidelines. Concurrent with the submission of the Fisheries and Aquatic Ecosystems Report, a Terrestrial Ecosystems Report was submitted to characterize existing conditions, and to address predicted impacts and required mitigation to on-site vegetation communities, terrestrial wildlife and their habitats, and adjacent ecological linkages. Gwendolyn acted as the component lead for terrestrial sciences.

-*HIGHWAY 6 IMPROVEMENTS – GUELPH, ON

The purpose of this study was to identify the location and configuration for new interchanges to provide access to the Hanlon Expressway. Performed Ecological Land Classification along the study corridor. Identification of flora and fauna, and habitat description. The study area contained a wide range of upland forest habitats, wetlands and cultural communities. Fieldwork and reporting conducted in accordance with MTO regulations and guidelines. Concurrent with the submission of the Fisheries and Aquatic Ecosystems Report, a Terrestrial Ecosystems Report was submitted to characterize existing conditions, and to address predicted impacts and required mitigation to on-site vegetation communities, terrestrial wildlife and their habitats, and adjacent ecological linkages. Gwendolyn acted as the component lead for terrestrial sciences.

**Assignment completed with previous employers.*

FERGUS NICOLL Dip.T.

Ecological Specialist

SUMMARY OF PROFESSIONAL EXPERIENCE

2024 – Present

Ecological Specialist. Cambium Inc.

Ottawa, Ontario, Canada

Fergus Nicoll is an ecological professional based out of Ottawa, Ontario. He provides expertise in wetland ecology, species at risk, ornithology, botany, aquatic surveys, and general terrestrial ecology. He has extensive experience in developing field programs (very large to very small), managing, and leading field crews collecting various types of wildlife, fish and aquatic species, wetland, and botanical data, throughout Ontario, Quebec, and the rest of Canada. In addition, Fergus has wide-ranging experience in wetland and terrestrial habitat classification and assessment throughout various ecoregions in Eastern Canada using classification systems such as the Ontario Wetland Evaluation System (OWES), and various other ecological land classification systems. This includes leading and submitting multiple wetland evaluations and wetland boundary exercises using OWES. Fergus is also proficient in, and has demonstrated experience in, project and client management, business development, data management, and proposal and report writing. Fergus has experience in the development and logistical support of ecological projects. This includes the application of ecology in land use planning through interpretation of site characteristics, including species at risk, against applicable legislation, policies, and guidance documents (municipal, provincial, and federal).

2008 – 2024

Ecological Technical Specialist. Golder Associates Ltd.

Responsible for study design, data collection, and reporting on flora and fauna, including wetland, terrestrial, aquatic, and other environmental components for various projects amongst all client sectors. This includes risk assessments, environmental impact statements, environmental assessments, aggregate resources act natural environment reports, ecological surveys and inventories, species at risk inventories and authorizations, tree conservation plans, pollinator habitat design and inventory, and construction compliance monitoring. Provide technical expertise for assessing wetlands including expertise on the Ontario Wetland Evaluation System (OWES). Involved with regulatory and land use approvals, at municipal, provincial, and federal levels. Successfully participated in an Ontario Land Tribunal hearing. Also responsible for project management, proposal writing, and business development.

2002 - 2008

Field Station Coordinator/Species at Risk and Avian Biologist. Bird Studies Canada

Port Rowan, Ontario, Canada

Responsible for the operation and maintenance of three field research stations for the purpose of avian monitoring, at Long Point Bird Observatory. Supervised dozens of staff and volunteers. Conducted extensive spot and territory mapping of breeding birds and 'at risk' herptiles in Long Point National Wildlife area. Operation of boat and outboard motor for regular long trips. Also responsible for monitoring, assisting with capturing, banding, and applying satellite transmitters to Bald Eagles and Short Eared Owls and other listed species in southwestern Ontario. Collecting point count data (>1000-point counts) and supervising field crews as part of Ontario's Boreal Forest Bird Program and the Ontario Breeding Bird Atlas. Habitat mapping, vegetation and wetland surveys and invasive species management. Other responsibilities included report writing, field season planning, and study design, hiring field assistants, and quality control and assurance of field data.

2001-2002	Aquatic and Fisheries Technician. Laurentian University.
2000 - 2001	Ecologist. Environment and Climate Change Canada.
1999 - 2000	Field Biologist. University of New Brunswick.
1998 - 1999	Mammal Species at Risk Biologist. United Stated Geological Survey
1998 - 1999	Fisheries Ecologist. Ontario Ministry of Natural Resources and Forestry.
1996 - 1998	Tree Planter. Osgoode Forestry Services.

PROFESSIONAL ASSOCIATIONS

- Bird Studies Canada
- Field Botanists of Ontario
- Ontario Field Ornithologists
- Toronto Entomological Association
- Mississippi Valley Land Trust
- Mississippi Valley Field Naturalists

EDUCATION & TRAINING

2001	Fisheries and Wildlife Management Diploma. Sault College. Sault Ste. Marie, Ontario.
2001	Parks and Outdoor Recreation Management Diploma. Sault College. Sault Ste. Marie, Ontario.
1996	Pleasure Craft Operator Card. Canadian Marine Safety Course. Sudbury, Ontario
2008	Ecological Land Classification for Southern Ontario. Ontario MNRF. Peterborough, Ontario.
2010	Butternut Health Assessment Certification. Ontario MNRF. Kemptville, Ontario
2010	ATV Training Certificate. Canadian Safety Council. Calabogie, Ontario.

2011	Small Non-Pleasure Vessel Basic Safety (MED A3). XXXX Toronto, Ontario.
2011	Ontario Wetland Evaluation System Certification. Ontario MNRF. North Bay, Ontario.
2012	Reptile and Amphibian Field Survey Training. Ontario MNRF. Kingston, Ontario.
2013	Data Sensitivity Training. NHIC. Ottawa, Ontario.
2017	Ontario Stream Assessment Protocol (all modules). RVCA/MNRF. Manotick, Ontario
2021	Surface Miner Training. Ontario MLITSD
2021	Defensive Driver Training. Canada Safety Council Ottawa, Ontario
2022	Pollinator Steward Certification. Pollinator Partnership Canada Cornwall, Ontario
2023	Backpack Electrofishing Certification. WSP Canada Inc. Ottawa, Ontario
2024	Marine and Basic First Aid, CPR Level C, and AED. Canadian Red Cross. Ottawa, Ontario

LANGUAGES

- English

PROFESSIONAL AREA OF FOCUS

LAND DEVELOPMENT

LANDLAB INC., LAKEPORT BEACH DEVELOPMENT. LAKEPORT, ONTARIO

Field Lead/Ecology Component Lead. To support an ongoing proposed residential development application, retained to prepare an Environmental Impact Statement including all relevant studies. Developed and implemented a multi-taxa field program, lead, and supervised field crews. This included the preparation of wetland mapping and a wetland evaluation using the Ontario Wetland Evaluation System, and co-authoring of the EIS. Worked closely with a multi-discipline team, and environmental planners on the project.

ROSEFELLOW HOLDINGS, COMMERCIAL DEVELOPMENT, 405 HUNTMAR DRIVE, OTTAWA, ONTARIO

Field Lead/Project Team Member. Scoped Environmental Impact Statement for a commercial development. Conducted ecological field surveys, prepared a tree conservation report, and assisted with reporting.

REGIONAL GROUP PATHWAYS (REMER LANDS) RESIDENTIAL DEVELOPMENT, OTTAWA, ONTARIO.

Field Lead/Field Coordinator. The project was to assist Regional Group to clear conditions for their draft-approved subdivision in Ottawa. This included an Environmental Management Plan, Tree Conservation Report, Environmental Impact Statement, wetland monitoring, design input on and post-construction monitoring of a constructed naturalized channel. Lead and coordinated multiple field programs, ecology, and others. Assisted with proposal, and report writing, including the lead on the tree conservation report. Worked on a team as part of an Endangered Species Act permit for butternut, conducted butternut health assessments and reporting on 180 trees. Participated in multiple agency and stakeholder meetings, including site visits.

FINDLAY CREEK PROPERTIES, FINDLAY CREEK DEVELOPMENT, OTTAWA, ONTARIO

Ecology Component Lead/Field Lead. Provided support to Findlay Creek Properties, for several aspects of their residential development. This included input on design of a channel realignment of Findlay Creek, pre and post construction fish surveys. It also included the development of a long-term monitoring program of constructed aquatic and terrestrial habitat areas, as well as long-term monitoring in the adjacent Provincially Significant Wetland. Worked closely with Fisheries and Oceans Canada, as well as the Ministry of the Environment, Ministry of Natural Resources, and South Nation Conservation.

ENERGY – TRANSMISSION AND POWER GENERATION

ONTARIO POWER GENERATION (OPG), OTTO HOLDEN GENERATION STATION, MATTAWA, ONTARIO

Project Manager/Field Lead. species at risk and biodiversity study. Responsible for management, as well as study design, conducting and overseeing multi-taxa field program (birds, bats, mammals, herptiles, fish, pollinators), ecological land classification and plant community mapping, reporting and provide recommendations to OPG.

HYDRO ONE, WAASIGAN TRANSMISSION LINE PROJECT, NORTHERN ONTARIO

Component Lead/Field Crew Lead. Responsible for study plan development and overseeing field crews as part of a larger Environmental Assessment of a proposed transmission line. Conducted helicopter reconnaissance of routes, assisted other components with implementation of their desktop and field programs. Co-authored baseline and existing conditions reporting.

ONTARIO POWER GENERATION (OPG), GRASSY BAY ECOLOGICAL MONITORING, CALABOGIE, ONTARIO

Project Manager/Field Lead. Lead studies related to effects of water level changes on ecology of Grassy Bay Provincially Significant Wetland and Calabogie Lake. Included a marsh monitoring program (birds and frogs), monitoring of overwintering herptiles, and monitoring of wild rice population, water levels, and water chemistry parameters. Responsible for client and project management, as well as study design, conducting and overseeing multi-taxa, four-season field program and field staff. Author of several monitoring reports.

AGGREGATES AND MINING

R.W. TOMLINSON LTD., STITTSVILLE II QUARRY, OTTAWA, ONTARIO

Ecology Field Lead/Coordinator. Developed and lead multi-tax field multi-year program for a Natural Environment Report under the Aggregate Resources Act. Co-authored two evaluations using the Ontario Wetland Evaluation System and participated as a main expert witness on a successful Ontario Land Tribunal hearing, arguing that two small wetlands were not part of the larger Provincially Significant Wetland. Assist with reporting, and agency comment responses.

CBM AGGREGATES., POLLINATOR MONITORING, SOUTHERN, ONTARIO

Project Manager/Field Lead. Designed and implemented a long-term pollinator monitoring program at two quarry sites near Peterborough, and Guelph Ontario. Included a monitoring program, and summary reporting, with recommendations for future monitoring and habitat improvement.

GREEN INFRASTRUCTURE PARTNERS (FORMERLY KARSON AGGREGATES) KENNEDY PIT, OTTAWA, ONTARIO.

Ecology Field Lead/Project Coordinator. Developed and lead multi-taxa field program for a Natural Environment Level II Study and Report, under the Aggregate Resources Act. Assisted with proposal writing, and scope/cost. Assisted with report writing and providing input to multi-discipline team. Assist with responses to agency comments, including authorizations related to endangered species. Attended agency meetings, and public open house. Responsible for implementing long term annual monitoring in an adjacent Provincially Significant Wetland, including writing of annual reports. The pit is currently licensed and active, with wetland monitoring ongoing.

OSISKO HAMMOND REEF GOLD MINE ENVIRONMENTAL ASSESSMENT. ATIKOKAN, ONTARIO

Component Lead/Project Support. Provided support and lead field crews for ecology aspects of the submission of an Environmental and Social Impact Assessment for the development of the mine and associated infrastructure. Supervised and completed all aspects of terrestrial and aquatic field program in a remote part of northern Ontario.

Use of OWES to evaluate large northern wetlands. Assisted on final reporting, including writing, as well as responding to agency comments.

TRANSPORTATION AND INFRASTRUCTURE

MARTEN FALLS FIRST NATION COMMUNITY ACCESS ROAD ENVIRONMENTAL ASSESSMENT, NORTHWESTERN ONTARIO

Discipline Lead-Birds/Assistant to other disciplines. Responsible for the bird component of a joint federal/provincial Environmental Assessment of an all-season access road to the remote community of Marten Falls (Ogoki Post). Designed and implemented a massive multi-season, multi-year bird program over a large 200km long remote Study Area (helicopter access only). Included a variety of survey types in all seasons for all groups of birds such as breeding birds, fall migration, overwintering birds, aerial surveys, and automated recording units (ARUS). Conducted many surveys, including helicopter surveys, and responsible for managing a large team of multiple crews. Required working with several other disciplines (ecology and others), as part of a large complex project team. Also lead field surveys, and provided input on several other disciplines (e.g., aquatics, vegetation and peatlands, ungulates, wolverine, bats, pollinators, and other wildlife). Responsible for bird baseline, and existing conditions reporting under the EA. Also assisted with other disciplines baseline, and existing conditions reporting. Included interacting with agencies, local First Nations communities, and the public, by responding to comments, giving presentations, and being in agency and public meetings.

GREEN INFRASTRUCTURE PARTNERS (GIP) FORMERLY AECON CONSTRUCTION EAST, HIGHWAY 417 EXTENSION, RENFREW COUNTY, ONTARIO

Project Manager/Field Lead. Responsible for overseeing and conducting ecology program for an Ontario Ministry of Transportation highway lane expansion, culvert replacement, and overpass construction project. Provided the client with support on several natural environment related aspects, including migratory birds, fish habitat and fish rescue, and sediment and erosion control monitoring. Included planned work and on-call work, as well as monthly compliance reporting to the Ontario Ministry of Transportation.

CANADIAN NATIONAL RAIL COMPANY (CN), MILE 109 RECLAMATION PROJECT. RENFREW COUNTY, ONTARIO

Ecology Component Lead. Provided ecology support on large remediation project of abandoned rail line, at eastern end of Algonquin Park. Responsible for overseeing and implementing wetland and aquatic ecosystem monitoring, fish rescues, SAR surveys including turtles, and construction mitigation (including ESA permitting requirements), and related reporting. Assisted with surface water program, agency consultation and meetings.

AECON CONSTRUCTION EAST, CARP RIVER RESTORATION. OTTAWA, ONTARIO.

Project Manager/Field Lead. Developed, managed, and implemented a construction monitoring program for a river restoration project to meet conditions of a Fisheries and Oceans Canada authorization, and requirements from other agencies (e.g., City of Ottawa, Conservation Authority). Includes extensive fish sampling and fish rescue in all seasons. SAR training, SAR related construction monitoring, erosion and sediment control monitoring, water quality monitoring, provided input on rehabilitation and vegetation plans, and provided on-call advise and services at all phases of the project.

WASTE MANAGEMENT

OTTAWA VALLEY WASTE RECOVERY CENTRE, ENVIRONMENTAL COMPLIANCE APPROVAL MONITORING, PEMBROKE, ONTARIO.

Ecology Component Lead. As required by conditions under an Environmental Compliance Approval Permit, helped to develop and implement a long-term sediment and benthic monitoring program adjacent to a landfill Site. Responsible for leading field programs, data management, prepping of Fergus Nicoll Fergus Nicoll benthic and sediment samples, and annual reporting. Lead a team of ecologists on all aspects of the field program, analysis, and reporting on the findings.

TOWNSHIP OF NORTH DUNDAS, BOYNE LANDFILL EXPANSION ENVIRONMENTAL ASSESSMENT. NORTH DUNDAS, ONTARIO.

Field Lead/Project Team Member. Ecological Studies, impact assessment, and reporting, as part of an Environmental Assessment for a proposed landfill expansion. Responsible for developing and leading a multi-taxa, multi-year field program. Aided with proposal writing, scoping, reporting, impact assessment, and consultation with agencies.

ALGONQUINS OF PIKWAKANAGAN FIRST NATION SOLID WASTE FEASIBILITY STUDY, PIKWAKANAGAN, ONTARIO

Field Lead. Natural Environment Support, for a larger feasibility study, for a landfill expansion. Conducted species at risk and other ecological field surveys. Aided with background review and reporting.

TAGGART MILLER ENVIRONMENTAL SERVICES, CAPITAL REGION RESOURCE RECOVERY CENTRE ENVIRONMENTAL ASSESSMENT, OTTAWA, ONTARIO

Responsible for designing and implementing a multi-taxa, multi-season field program as part of the Environmental Assessment. Lead headwater drainage feature assessments, and a field program as part of a request for review,

by the Department of Fisheries and Oceans Canada. Also assisted in data analysis, reporting, and obtaining approvals from South Nation Conservation, Fisheries and Oceans Canada, and the Ministry of Natural Resources and Forestry.

FEDERAL PROPERTIES

NATIONAL CAPITAL COMMISSION, OTTAWA, ONTARIO, GATINEAU, QUEBEC

Field Lead/Project Manager/Project Team Member. Conducted natural environment characterization studies at multiple National Capital Commission properties, throughout the Ottawa Capital Region. Project Manager on some sites, field lead on all sites. This included various species at risk surveys, wetland surveys, botanical inventories, and tree inventories. Assisted with report writing and providing recommendations. Examples of properties include Rideau Hall, 24 Sussex, RCMP headquarters, Gatineau Park, Victoria Island, New Edinburgh Club Boathouse, Westboro Beach, Champlain Node, O'Brian House, Harrington Lake, and Lac Leamy Park.

PUBLIC WORKS AND GOVERNMENT SERVICES CANADA., MULTIPLE SITES, CANADA

Ecology Component Lead. Conducted species at risk, habitat, and plant health assessments at various sites throughout most provinces and territories in Canada. Included desktop work, field work, and reporting. Assessments were included as lines of evidence in human health and ecological risk assessments at federally owned and managed sites.

DEFENSE CONSTRUCTION CANADA, CFB 8 WING TRENTON, TRENTON, ONTARIO

Defense Construction Canada, CFB 8 Wing Trenton, Trenton, Ontario

Field Lead. Species at risk and migratory birds study north of Hangar 1, at CFB 8 Wing Trenton. Responsible for helping to develop and lead a species at risk and migratory bird field program, over two years. Also assisted with reporting and proving mitigation recommendations.

Project Manager/Field Lead. Responsible for developing, managing, and implementing a multi-taxa, multi-year species at risk study and assessment at proposed expansion lands for the base. Also included interacting with landowners, and other stakeholders, reporting and providing mitigation recommendations.

FISHERIES AND OCEANS CANADA, SPECIES AT RISK AND HABITAT ASSESSMENTS, MULTIPLE SITES, ONTARIO, AND BRITISH COLUMBIA

Project Team Member. Responsible to conduct background review, habitat assessments, and species at risk screenings at multiple properties owned by Fisheries and Oceans Canada. Co-authored final deliverable.