APPENDIX 4

NATURAL ENVIRONMENTAL ASSESSMENT MEMO

Growth Related Roads Detailed Design 2022 – Mill Street

Natural Environment Assessment Memo

Prepared for:
Town of Caledon

RVA 205388

December 22, 2022

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1.0 PROJECT OVERVIEW

R.V. Anderson Associates Limited (RVA) was retained by the Town of Caledon (Town) to undertake a Municipal Class Environmental Assessment (MCEA) Study and Detailed Design for the Town's 2022 Growth Related Roads program. As part of the Growth Related Roads program, upgrades to sections of Mill Street, Main Street, and Kennedy Road have been proposed (**Table 1.1**). In support of this work, Natural Environment Assessments were completed for each of the three road segments. This memorandum documents the findings of the Mill Street Natural Environment Assessment.

Table 1.1 – Growth Related Roads 2022

Road	Class EA Schedule	Road Improvements	From	To
Mill Street	B	Urban reconstruction	Mississauga Road	Creditview Road
Main Street	A+	Rural road upgrade	Caledon East Garafraxa Town Line	Highpoint Sideroad
Kennedy Road	A+	Rural road upgrade	Highpoint Sideroad	Beechgrove Sideroad

Notes: Roads shown in grey scale are documented under a separate cover.

As part of the Natural Environment Assessment, an inventory of existing natural environment conditions was undertaken in support of the MCEA process, to assist with the evaluation of alternative solutions. This memorandum summarizes the results of the preliminary background review, includes the results of the field investigations, provides a screening of Species at Risk (SAR) potential within the Study Area, examines the potential impacts of the project on the natural environment, and documents the measures necessary to mitigate these impacts.

1.1 Study Area

The Study Area is located in a rural landscape within the southern portion of the Town of Caledon, in the Hamlet of Cheltenham. The general Study Area extends southwest along Mill Street (1.5 km), from Mississauga Road to the west and Creditview Road to the east and includes the right-of-way (ROW) plus 120 m on either side of the road segment (**Figure 1.1**). The detailed inventory of natural heritage features was limited to the ROW and the immediately adjacent area (Scoped Study Area). Within the Study Area, Mill Street is a two-lane asphalt rural roadway with no sidewalk.

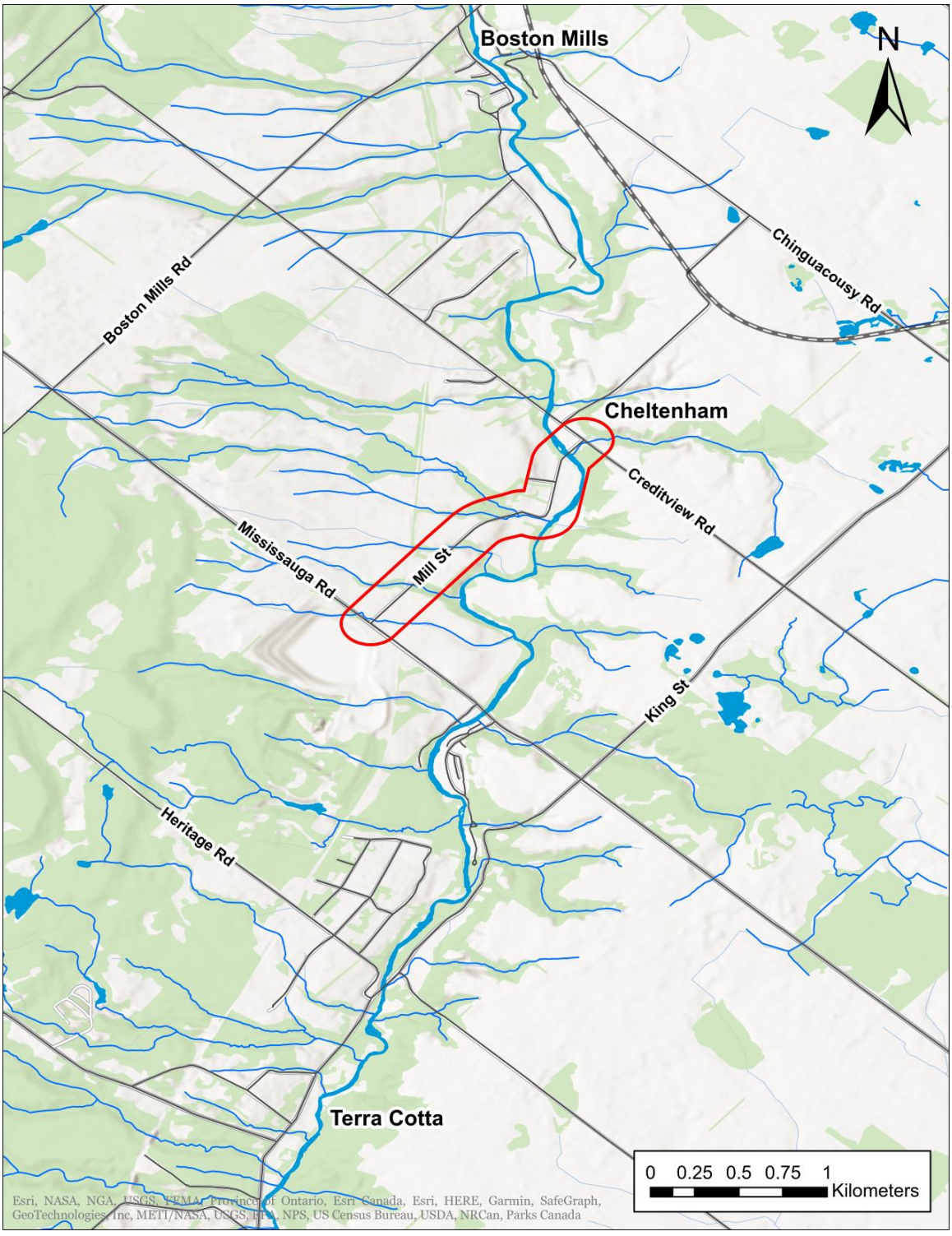

Figure 1.1 – Mill Street Study Area

1.2 Proposed Work

The objective of the project is to rehabilitate the existing pavement with minor safety upgrades and improve overall drainage within the Study Area. To accommodate the

road rehabilitation, upgrades and drainage improvements; culvert work including culvert cleanouts, extensions, replacements, and retaining walls will be required within the existing road ROW. These works will require minor vegetation clearing and grading.

2.0 DESKTOP REVIEW

2.1 Information Sources

Existing background information concerning the natural environment within and surrounding the Study Area, including SAR, was compiled from the following sources:

- Natural Heritage Information Center database accessed via MNRF's Make-a-Map: Natural Heritage Areas application (Government of Ontario 2021);
- Fisheries and Oceans Canada (DFO) online aquatic Species at Risk mapping tool (Government of Canada 2021);
- Land Information Ontario (LIO) Aquatic Resources Data provided by the Ministry of Natural Resources and Forestry (MNRF) (Government of Ontario 2021);
- Town of Caledon Official Plan (Town of Caledon 2018);
- Ontario Breeding Bird Atlas (OBBA) Archives (Bird Studies Canada *et al.* 2006);
- Ontario Reptile and Amphibian Atlas (ORAA) (Ontario Nature 2020);
- Ontario Butterfly Atlas (Macnaughton *et al.* 2020);
- Ontario Moth Atlas (Kaposi *et al.* 2020); and,
- iNaturalist web application.

Review of these sources indicated the presence of SAR within the vicinity of the Mill Street Study Area. A table listing rare and at-risk species potentially present in the vicinity of the Study Area was compiled from these sources. This table, along with a preliminary map of the Study Area, was submitted to agencies as part of consultation, which can be found in **Appendix A**.

2.2 Agency Consultation

Information Requests pertaining to natural heritage resources within the vicinity of the Study Area were submitted to the Ministry of Natural Resources and Forestry (MNRF) Aurora District, and the Ministry of Environment, Conservation and Parks (MECP) Species at Risk Branch on November 10, 2020. As the Study Area falls within the jurisdiction of the Credit Valley Conservation Authority (CVC), consultation with CVC was initiated on November 17, 2020, in the form of a project initiation meeting and is

ongoing. Agency correspondence containing non-sensitive information can be found in **Appendix B**[1].

2.3 Summary of Background Information

Review of the information sources listed in **Section 2.1** indicated the presence of SAR within the vicinity of the Mill Street Study Area. Consultation with MECP identified additional SAR protected under the *Endangered Species Act* (ESA, Government of Ontario 2007), as well as generic concerns for at-risk birds and plants that could be impacted by vegetation clearing and culvert work. MECP confirmed the aquatic SAR identified by the background review are considered historical within the vicinity of the Study Area, as well as highlighting specific nearby SAR habitat. MECP noted that the province has not been fully investigated for SAR and that other species could be present within the Study Area.

As noted by MNRF and CVC, multiple sensitive watercourses cross through the Scoped Study Area. MNRF did not note the presence of nearby wetlands within the project area. Provincial Policy Statement (PPS) (Ontario Ministry of Municipal Affairs & Housing (OMMAH) 2020). Sections of the Study Area are also designated as Environmental Policy Areas by the Town's Official Plan, and the Study Area is within the provincial Greenbelt Area boundary and the Niagara Escarpment Plan boundary.

Within the Study Area, the lands west of the Mill Street bridge crossing over the Credit River fall within the Cheltenham to Glen Williams subwatershed, while the Credit River and the lands east of the river crossing contribute to the Forks of the Credit to Churchville subwatershed. Sections of the Study Area are regulated by the CVC under the Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses, Ontario Regulation (O. Reg.) 160/06 (Government of Ontario 1990). While consultation with CVC is on-going, CVC has provided guidance to avoid impacting sensitive areas through design and construction approaches.

3.0 FIELD REVIEW

Terrestrial and aquatic field investigations were conducted during the 2021 field season and included a single-season floral inventory, incidental wildlife observations, and fish habitat assessments to support the Natural Environment Assessment (**Table 3.1**). A reconnaissance site visit was also undertaken in the spring of 2022 to review the Credit River Tributary, which may be realigned, under high flow conditions. A tree inventory was not completed as part of this assignment.

[1] MECP correspondence that contains sensitive information is not included in Appendix B.

Table 3.1 – Field Investigations Schedule

Survey Type	Date	Weather	RVA Staff
Single-season floral inventory /ELC	August 26, 2021	25°C Part-sun	Paul Mikoda
Fish Habitat	August 26, 2021	24°C Sunny	Natasha Welch Courtney Row
	September 2, 2021	22°C Sunny	
Reconnaissance Site Visit	April 12, 2022	15°C Part-sun	Natasha Welch Courtney Beneteau Paul Mikoda
Incidental Observations	All site visits	Various	All Staff

A list of Crossings assessed as part of this assignment, including structure details and the potential work associated with each culvert location, is provided in **Table 3.2** and shown in **Appendix C – Map 4**.

Table 3.2 – Culvert Locations and Proposed Works

Structure ID (Station)	Watercourse Name	Fish Habitat	Lat. / Long.	Existing	Proposed Works
				Dia. / Length	Dia. / Length
M3-1 (1+017)	Credit River Tributary	Direct	43.742363 -79.931572	Twin 600 mm 15.84 m	Cleanout
M3-2 (1+276)	Credit River Tributary	Direct	43.744139 -79.929619	1600 mm 29.14 m	TBD
M3-3 (1+556)	Credit River Tributary	Direct	43.746162 -79.927403	Twin 800 mm 17.97 m | 15.75 m	800 mm 19.34 m
M3-4 (1+812)	Credit River Tributary/ Regulated Ditch	Direct	43.747587 -79.925126	700 mm 14.63 m	750 mm 18.66 m
M3-5 (1+837)	Drainage	Direct	43.747639 -79.924918	400 mm 12.23 m	Reinforce slope
M3-6 (1+885)	Credit River Tributary/ Regulated Ditch	Direct	43.747857 -79.924157	Twin 900 mm 15.08 m | 15.17 m	Twin 900 mm 15.90 m | 15.84 m
M3-7 (1+914)	Credit River Tributary/ Regulated Ditch	Direct	43.747830 -79.923882	Twin 900 mm 6.03 m | 6.01 m	Twin 900 mm 6.03 m | 6.01 m
M3-8 (1+968 Rt)	Credit River Tributary/	Direct	43.747658 -79.923273	1300 mm 4.65 m	1300 mm 4.65 m

Structure ID (Station)	Watercourse Name	Fish Habitat	Lat. / Long.	Existing	Proposed Works
				Dia. / Length	Dia. / Length
	Regulated Ditch				
M3-9 (1+977 Rt)	Credit River Tributary/ Regulated Ditch	Direct	43.747637 -79.923113	Triple 900 mm 9.12 m | 9.15 m | 9.25 m	2.4 m x 1.2 m concrete box 10.70 m
M3-10 (1+988)	Drainage	Direct	43.747675 -79.922959	400 mm 12.36 m	450 mm 13.65 m
M3-11 (2+102 Lt)	Drainage	NFH (not fish habitat)	43.748643 -79.922476	300 mm 9.42 m	450 mm 12.90 m
M3-12 (2+240)	Drainage	NFH	43.749847 -79.922171	300 mm 9.73 m	450 mm 9.73 m
Mill Street Bridge (2+375)	Credit River	Direct	43.750882 -79.921745	N/A	N/A
M3-13 (2+435 Rt)	Roadside Ditch	Indirect	43.751260 -79.921108	300 mm 6.26 m	Cleanout
M3-14 (2+460 Rt)	Roadside Ditch	Indirect	43.751438 -79.920906	300 mm 3.13 m	Cleanout

4.0 EXISTING CONDITIONS

The landscape within the general Study Area is dominated by agricultural lands, with residential properties adjacent to the road and remnant natural areas associated with watercourses and their valleylands. The Credit River, and several tributaries that drain to the Credit River, cross through the Mill Street Study Area.

4.1 Designated Natural Areas

Within the Study Area, lands surrounding the Credit River are identified provincially as components of the Natural Heritage System, including the vegetated valleylands associated with its various local Credit River tributaries, which are identified as Woodlands. The Study Area is also located within the boundaries of both the Greenbelt Plan and Niagara Escarpment Plan, with the latter of the two policies taking priority as shown on Schedule S of the Town's Official Plan. Schedule A of the Town's Official Plan denotes Environmental Policy Areas that generally coincide with watercourses, valleylands and areas of unmaintained vegetation, as well as a buffer around the Credit River (Town of Caledon 2018). No wetlands, Areas of Natural or Scientific Interest (ANSI) or other features were identified by the background review.

4.2 Terrestrial Environment

4.2.1 Vegetation and Vegetation Communities

A single-season floral inventory and Ecological Land Classification (ELC) was completed for the Scoped Study Area. Vegetation communities were classified as per Ecological Land Classification for Southern Ontario: First Approximation and Its Application (Lee *et al.* 1998). Vegetation communities within the Scoped Study Area were delineated with the assistance of historical Ortho Imagery (University of Toronto 1954) and included in **Appendix C – Map 3**.

Typical of southern Ontario, land use in the Town of Caledon, as a percentage of area, has been and continues to be predominantly agricultural, as was noted in the extensive clearing and lot division visible via fencerows in historical imagery (University of Toronto 1954). Since that time, formerly agricultural lands along Mill Street have been severed for single residential development, though some near the Credit River were existing. As a result of this history, nearly all vegetation communities within the Scoped Study Area are cultural/successional in nature, though this does not reduce their value on the landscape. Representative photos are included in **Appendix D**.

Active agriculture, residential lands and Cultural Meadow compose the bulk of the Scoped Study Area. Remaining vegetation communities classified outside of the Cultural Community Class are remnant Deciduous Forest (FOD) associated with valleylands that were difficult to till. A list of all floral species identified within the ROW during field investigations is included in **Appendix E**. One floral species-at-risk (SAR), Butternut (*Juglans cinerea*, Endangered) was observed at three locations within the Scoped Study Area.

4.2.2 Wetlands

There are no provincially or locally significant wetlands noted within the Study Area. North of the bridge over the Credit River, along the western bank within the floodplain, an area of mixed meadow and wetland vegetation was observed. This area was described as a Mineral Cultural Meadow/Mineral Meadow Marsh community (CUM1-1/MAM2).

4.2.3 Wildlife and Wildlife Habitats

Wildlife

During field investigations, terrestrial wildlife, including call and signs, were recorded. As discussed previously, the local area has a history of large-scale disturbance. Birds recorded have been assumed to either be breeders or residents. It should be noted that

most birds, as well as their nests, eggs and young, are protected nationally by the *Migratory Birds Convention Act* (Government of Canada 1994). Additionally, various wildlife species are protected provincially from unauthorized hunting or harm by the Fish and Wildlife Conservation Act (Government of Ontario 1997). One SAR, Eastern Wood-pewee (*Contopus virens* S4, Special Concern) was documented during site visits associated with the remnant woodlands near the center of the Study Area. The remainder of wildlife species observed are common and secure/ apparently secure within the Study Area. A list of all wildlife species identified during field investigations is included in **Appendix E**.

Significant Wildlife Habitat

Significant Wildlife Habitat (SWH) was assessed based on the collection of targeted and incidental field data and comparisons to thresholds set out in the Significant Wildlife Habitat Criteria Schedule for Ecoregion 6E (OMNR 2015). SWH is protected through the Provincial Policy Statement (PPS; OMMAH 2020). Based on the vegetation communities within the Study Area, there are candidate habitats for various types of wildlife, mainly those associated with water and woodland habitats. Confirmational studies were not conducted as these habitats will persist following the conclusion of the project and as impacts are proposed to be limited to habitat edges along the existing roadway.

No provincially rare vegetation communities were observed, nor were any candidate or confirmed point-source areas of wildlife concentration/specialized habitats, such as reptile hibernacula, turtle nesting areas or terrestrial crayfish burrows. Small mammal burrows (chipmunk or similar) were noted in a few locations near the road; however, these small features have a low likelihood of supporting hibernating reptiles as they are unlikely to be below the frost line or be close enough to the water table to supply sufficient moisture for hibernating reptiles. Though Eastern Wood-pewee (Special Concern) was recorded within the Study Area during field investigations, most woodland habitat for this species is located outside of the Study Area. Roadside trees, including healthy or dead/decaying individuals, may provide SWH for bat maternity colonies, as well as habitat for at-risk bats.

4.3 Aquatic Environment

4.3.1 Fish and Fish Habitat

In the summer of 2021, fisheries assessments were undertaken to identify fish habitat within the Study Area to determine the potential of the project to result in death of fish and/or a harmful alteration, disruption, or destruction (HADD) of fish habitat. It should be noted that regional conditions were unseasonably dry during the summer of 2021, with the Study Area falling within a drought area classified by the AAFC's National

Agroclimate Information Service (NAIS) as abnormally dry (D0) as of July 31, 2021 (Government of Canada 2021). Due to the unseasonably dry summer in 2021, a reconnaissance site visit was also undertaken in the spring of 2022 to review the regulated watercourse between Stations 1+812 and 1+988 under flowing conditions. In total, the 14 culverts identified in **Table 3.2** were assessed for fish habitat potential. Of the 14 culverts, 12 were identified to support either direct or indirect fish habitat and are discussed in detail below. The Credit River was also reviewed at the Mill Street crossing and at the confluence with the regulated watercourse noted above, to determine the potential risks of the project to this water feature. Representative photos of the crossings found to support fish habitat are included in **Appendix D** and a summary of the observed aquatic habitat features is included as **Appendix F**.

Credit River

The Credit River is a large watercourse that generally meanders southwest through the Study Area, crossing Mill Street 85 m west of Creditview Road. Approximately 250 m upstream of the Mill Street crossing, the Credit River is conveyed southwest under Creditview Road before turning southeast towards the Mill Street Bridge crossing (Sta. 2+375), which appeared to have been recently replaced. Downstream of the Mill Street Bridge, the Credit River bends southwest to abut the road alignment from the west side of the bridge, west to Station 2+000 where the roadway turns northwest, away from the river. Due to the width of the channel, limited riparian cover was observed within the Study Area, even in areas where trees line the riverbanks.

At the Mill Street Bridge, the Credit River morphology consisted of runs, riffles, and pools. The wetted channel, which varied in width from 24.7 m to 29.9 m within the ROW, was comprised of coarse and unconsolidated material. Watercress was observed along the west upstream bank. Along the east bank, the ditch associated with the M3 –13 (Sta. 2+435 Rt) and M3-14 (Sta. 2+460 Rt) culverts (see description of ditch below), abuts the south side of the road alignment and drains southwest down a steep gradient before discharging into the Credit River.

Beyond the ROW, approximately 400 m downstream of the bridge, an old weir structure was observed and likely obstructs upstream fish passage during periods of low flow. Immediately downstream of this structure, the regulated watercourse associated with the M3-4 (Sta. 1+812) to M3-10 (Sta. 1+988) culverts converges with the Credit River. As discussed below, three additional tributaries drain to the Credit River further downstream.

Within the Study Area, the Credit River is a coldwater system that supports a diverse cool to cold water fish community, including Brook Trout (*Salvelinus fontinalis*) a sensitive fish species.

M3-1 (1+017) – Regulated Ditch / Credit River Tributary

At the western limit of the Study Area, approximately 15 m east of Mississauga Road, twin corrugated plastic pipe (CPP) culverts convey flow southeast diagonally under Mill Street. Upstream of the crossing, this watercourse flows through a straightened channel on private lands to the west before crossing under Mississauga Road, where it combines with the roadside ditch along the east side of Mississauga Road/north side of Mill Street. Downstream, the channel continues through a retained natural area towards the Credit River, approximately 600 m southeast of the M3-1 crossing.

On August 26, 2021, the channel was dry and presented as a vegetated swale northwest (upstream) of Mill Street, and a fire hydrant was observed within the flow path. Southeast (downstream) of the roadway, a dry pool area was observed at the outlets, which were slightly perched. The pool area narrowed into a defined channel formed by cobble, gravel, sand, and silty clay substrate, with a few boulders noted throughout. Extensive undercutting, as deep as 75 cm along the southwest bank, was observed at the outlet. Bank slumping was also present along the downstream channel suggesting bank instability where it extends through a thicket area, which provided complete shade to the channel. As the tributary continued southeast channel definition was lost and flows are eventually constrained into a narrow strip of vegetation bordered by agricultural fields before entering the Credit River.

Given the presence of a defined channel downstream, the M3-1 crossing likely supports intermittent flow. As there was no flow at the time of investigation, this tributary may provide seasonal direct fish habitat in the spring and likely provides indirect fish habitat to the Credit River throughout the rest of the year.

M3-2 (1+276) – Credit River Tributary

Approximately 275 m northeast of Mississauga Road, a large, corrugated steel pipe (CSP) culvert conveys flow east diagonally under Mill Street. Due to site topography, the M3-2 culvert is situated at the bottom of a steep road embankment. Northwest of the crossing, the channel flows southeast, within a mapped woodland bordered by agricultural fields, before crossing under the Caledon Trailway Path through a concrete culvert that outlets ahead of the M3-2 culvert inlet. East of Mill Street, the watercourse extends through a mapped Natural Heritage System (Niagara Escarpment Plan) towards the Credit River approximately 200 m southeast of the Mill Street crossing.

On August 26, 2021, the channel was dry except for shallow isolated depressions at the culvert inlet and outlet where water had pooled. Due to property access restrictions, the channel west of the Caledon Trailway Path was not assessed during the field review. While the upstream reach was not assessed, the Caledon Trailway Path culvert was not

conveying flow into the ROW from the upstream reach at the time of investigation, and a large tire was observed within the channel at the inlet. Within the ROW, west of the roadway, a 2 m opening separated the Caledon Trailway Path culvert outlet from the M3-2 culvert inlet, and wood planks were observed to extend between the culvert openings along the north side of the short upstream channel. At the inlet, the M3-2 culvert was slightly perched, which may allow flow to pass under the culvert.

East of the roadway, the culvert extended more than a meter from the road embankment to overhang the dry channel. The outlet was perched approximately 2 m above the channel bed, preventing upstream fish passage. Erosion around the CSP where the culvert protrudes from the embankment was also observed to cut deep into the slope below the culvert, further exposing the culvert barrel. While dry, the culvert appears to discharge into a large pool area receiving additional flow from a deep, narrow ditch that extends parallel to the road northeast of the culvert. Downed trees were also observed to cross the dry channel, downstream of the culvert, and likely function as instream cover under bankful conditions.

Due to the presence of a defined channel southeast of Mill Street the M3-2 crossing appears to support intermittent flow. As there was no flow at the time of investigation, this tributary may function as seasonal direct fish habitat southeast of the roadway in the spring and likely provides indirect fish habitat to the Credit River. The channel southeast of the roadway should be treated as direct fish habitat, and the northwest channel treated as indirect fish habitat.

M3-3 (1+556) – Credit River Tributary

Approximately 550 m east of Mississauga Road, a CPP culvert conveys flow east diagonally under Mill Street. West of the crossing, the channel extends southeast from an agricultural field into woodland before it is directed southeast under the Caledon Trailway Path, approximately 180 m northwest of the M3-3 crossing. Upstream of the M3-3 inlet, the watercourse is mapped through a Natural Heritage System that continues southeast of Mill Street and encompasses the Credit River and surrounding natural area. East of Mill Street, the watercourse meanders through the forested Natural Heritage System to confluence with the Credit River less than 300 m downstream.

On August 26, 2021, the watercourse was experiencing low flow conditions. While no flow was observed within the upstream channel, west of the roadway, water was observed to pool at the inlet and continuously drain into the culvert suggesting the presence of a seep. Upstream, a distinct channel, with a saturated bare earth bottom and poorly defined banks extended through a retained natural corridor that transitioned from a forest to a meadow marsh vegetation community within the ROW. A dry ditch was also present northeast of the crossing, which collects runoff from the roadway to the

southeast and an agricultural field to the northwest before conveying flow into the channel, ahead of the inlet.

East of the roadway, flow discharged from the culvert into a pool before continuing east down a gradual slope through a narrow unstable channel. At the culvert, erosion was noted beneath the perched outlet and along the north bank immediately adjacent to the road. Erosion was also observed along the south downstream bank in the form of undercutting, slumping, and scour, exposing tree roots and toppling trees, which would provide cover to fish during periods of high flow. Downstream of the pool, fine and coarse substrates form the channel bed, including rip rap indicating past efforts to stabilize this reach.

Due to the presence of a defined channel upstream and continuous flow downstream, the M3-3 crossing appears to support intermittent flow to the west and permanent flow to the east of the roadway. As the channel was experiencing low flow conditions at the time of investigation, this tributary may provide seasonal direct fish habitat in the spring and likely provides indirect fish habitat to the Credit River year-round when flowing.

M3-4 (1+812) to M3-10 (1+988) – Regulated Ditch / Credit River Tributaries

Within the Study Area, a regulated ditch extends along the south side of Mill Street from Sta. 1+812 to Sta. 2+200 before continuing southeast to confluence with the Credit River, approximately 30 m from the roadway. Based on provincial mapping, the M3-4 and M3-6 culverts are associated with watercourses that flow through retained natural areas within an agricultural landscape, north of the roadway. South of the roadway, the M3-4 and M3-6 tributaries drain into the regulated ditch. On September 2, 2021, all culverts associated with the regulated ditch were reviewed for fish habitat potential and are discussed in detail below. Due to the channel being dry in the late summer of 2021, a reconnaissance site visit was undertaken at these locations on April 12, 2022, during high flow conditions. While fish had been recorded within the channel by MNRF and CVC in the past, RVA staff observed fish within the regulated ditch in the Spring of 2022, confirming this feature continues to directly support fish and fish habitat when flowing.

These individual crossings are discussed in more detail below:

M3-4 (1+812) – At this location, a CSP culvert conveys flow southeast diagonally under Mill Street, approximately 560 m west of Creditview Road. In the summer of 2021, ground cover along the west upstream bank had been cleared leaving only the riparian trees, suggesting the upstream reach was recently altered. Due to the west bank being exposed and manicured lawn forming the east bank, little cover was provided to the upstream reach. At the culvert, dense vegetation and boulders were present and slumping was observed around the inlet, which encroached on the roadway. Though no

flow was observed within the upstream reach, water was pooling at the inlet, which trickled through the culvert, suggesting the presence of groundwater. While failed silt fence had washed down into the culvert at the inlet, no erosion and sediment controls were observed within the vicinity of the crossing.

Downstream, the culvert discharges into a regulated ditch, which is channelized to conform with the shape of the road alignment, extending northeast adjacent to the eastbound side of the roadway. Due to low flow conditions, while water was conveyed through the culvert during the summer site visit, flow was not observed throughout the downstream reach, which was predominantly dry with water restricted to shallow pool areas. South of the roadway, vegetation covered the outlet, which was slightly perched and discharging into a pool area before turning sharply northeast, extending towards the M3-6 outlet. Erosion was present along both the north and south banks in the form of bank scour, undercutting, and slumping; however, scour along the north bank was observed to encroach towards the roadway at multiple locations. Riparian trees stabilized the south bank, and completely shaded the channel, with vascular plants dominating the north slope. In the Spring of 2022, the riparian vegetation along the north downstream bank had been cut, and flow was observed throughout the channel.

The M3-4 crossing appears to convey intermittent flow supporting seasonal direct fish habitat and indirect fish habitat when under low flow conditions.

M3-5 (1+837) – At this location a CPP culvert diagonally crosses Mill Street, approximately 30 m northeast of the M3-4 crossing. While the M3-5 culvert was designed to carry flow southeast under the roadway to the regulated ditch, recent drainage modeling indicates the culvert does not convey flow. In the event runoff from the abutting woodland, the roadway, or adjacent residential property drains to the culvert inlet north of the road, the collected drainage would be conveyed through the culvert to the regulated ditch, downstream of the M3-4 crossing. Along the north bank of the regulated ditch, the M3-5 culvert outlets into direct fish habitat; however, due to the outlet being perched, fish cannot access this structure during periods of low flow. Although the culvert was dry on September 2, 2021, fish may access the culvert outlet during periods of high water; however, the slope of the culvert would function as a barrier to upstream fish passage, restricting fish to the submerged portion of the outlet within the bankful channel. In the event the culvert conveys ephemeral flow, the culvert should be treated as indirect fish habitat. While the culvert does not function as direct fish habitat, the culvert outlet is in direct fish habitat.

M3-6 (1+885) – At this location, twin CPP culverts convey flow south under Mill Street, discharging into the regulated ditch when flowing. Upstream of the culvert, a defined channel extends south through private property towards the crossing, bending slightly

east before widening ahead of the culverts. Erosion was observed at multiple locations throughout the upstream reach, exposing the banks, and resulting in woody debris falling into the channel. Woody debris had also accumulated at the culvert inlets and was blocking the east most culvert. Within the upstream channel, substrate was comprised of cobble and gravel overlayed by silt and sand, with boulders and detritus observed throughout. Sand, silt, and gravel were also observed to extend into the culverts. South of the roadway, clay overlayed by gravel was observed at the culvert outlet where the watercourse conveyed by the M3-6 culvert converged with the regulated ditch. At the confluence, the regulated ditch turns south towards the Credit River. While forest provided shade to the upstream reach, downstream the channel opened into a vegetated ditch where the occasional large riparian tree along the west bank provided some shade to the channel. Downstream of the M3-6 crossing, vegetated riprap was observed along the west bank up to the M3-7 crossing. Although the channel was dry in the summer of 2021, watercress was observed within the downstream channel around the outlet, indicating the presence of groundwater, suggesting the area is typically wet. In the Spring of 2022, the riparian vegetation around the crossing inlet and outlet had been cut, and flow was observed throughout the channel.

The M3-6 crossing conveys intermittent flow that supports direct fish habitat under high flow conditions and indirect fish habitat under low flow conditions.

M3-7 (1+914 Rt) – At this location, twin CSP driveway culverts convey the regulated ditch south along the western edge of the 1331 Mill Street property parcel, east of the roadway. Vegetated riprap formed both the upstream and downstream reach, while large riparian trees provided some shade to the channel from the west bank; however, the majority of both the west and east banks were maintained lawn. Within the culverts, cobble, gravel, and saturated fine sediments were present suggesting the culvert recently conveyed flow. As the ditch continued south towards the M3-8 crossing, minor slumping was observed along the west bank by the outlet. Due to the channel being dry in the summer of 2021 but flowing in the spring of 2022, the M3-7 crossing conveys intermittent flow that supports direct fish habitat during periods of high flow and indirect fish habitat when under low flow conditions.

M3-8 (1+968 Rt) – South of the M3-7 outlet, a wooden foot bridge was noted within the vegetated channel, north of the M3-8 driveway crossing, located at 1347 Mill Street. The dominant vegetation type changed from grass to broad-leaved plants within the vicinity of the foot bridge, which transitioned into dense vegetation ahead of the M3-8 crossing. The M3-8 crossing conveys flow south through a large flat bottom CSP culvert, that outlets immediately ahead of the M3-9 crossing. Similar to the channel at M3-7, the channel banks are maintained by the abutting property owner and the few riparian trees overhanging the channel were observed along the west bank. Landscaping was also

noted along the banks at both the culvert inlet and outlet, and minor erosion was present along the east upstream bank. Due to the channel being dry in the summer of 2021 but flowing in the spring of 2022, the M3-8 crossing conveys intermittent flow that supports direct fish habitat during periods of high flow and indirect fish habitat when under low flow conditions.

M3-9 (1+977 Rt) – Approximately 10 m east of the M3-8 culvert outlet, flow is conveyed southeast under the driveway located at 1357 Mill Street by three large CPP culverts. Ahead of the inlets, downcutting was noted along the west bank and erosion was observed on the east bank encroaching the roadway. The ditch widened at the crossing to accommodate the three pipes, which had accumulated sediment within the middle and east most culverts. As the ditch continued southeast, vegetation within the channel and along the banks became dense as it extended towards a wooden pedestrian bridge that crossed the watercourse 15 m west of the Credit River confluence. Erosion was noted in various locations along the upstream and downstream banks, and a groundwater seep was present along the east downstream bank. Water was present within the downstream reach of the regulated ditch in all seasons, as it neared the Credit River confluence, providing permanent direct fish habitat.

M3-10 (1+988) – At this location a catch basin along the north side of the road alignment collects runoff from the road and surrounding residential properties. While the culvert was dry on September 2, 2021, ephemeral flow collected by the catch basin is conveyed southwest under Mill Street by a CPP culvert that outlets from the east bank into the regulated ditch, downstream of the M3-9 driveway culverts. Although the M3-10 culvert discharges into direct fish habitat, the outlet is perched above the ditch bottom, preventing fish from accessing this structure. Because the culvert contributes ephemeral flow to the downstream regulated ditch it functions as indirect fish habitat; however, the absence of an upstream channel limits the quantity and quality of the associated flow. While the culvert does not support fish directly, the culvert outlet is located within direct fish habitat.

M3-13 (2+435 Lt) – Roadside Ditch

At this location a large CSP culvert, along the south side of the road alignment conveys flow southwest under a residential driveway. In the Spring of 2022, upstream of the culvert, flow was observed to trickle through cobble into the culvert where it pooled, but the channel immediately downstream of the outlet, was dry. Further downstream, water was observed to flow down the steep gradient of the ditch channel, littered with cobble, boulders, woody debris, and detritus, towards the Credit River. The ditch appears to convey ephemeral flow collected by upstream catch basins that outlet into the roadside

ditch. Due to the connection to the Credit River downstream, this crossing conveys indirect fish habitat.

M3-14 (2+460 Lt) – Roadside Ditch

At this location a concrete box culvert conveying flow under Creditview Road and a residential driveway daylights southwest of Creditview Road. In the spring of 2022, flow was observed to exit the culvert into a cobble lined ditch channel, with some boulders noted throughout, towards the M3-13 (2+435 Lt) crossing downstream. An upstream channel was not present within the ROW; however, a catch basin believed to contribute flow to the culvert, was observed east of Creditview Road within the ROW. Due to the connection to the Credit River downstream, this crossing conveys indirect fish habitat.

4.4 Species at Risk

While no aquatic SAR were identified within the Study Area, Eastern Wood-Pewee (a provincial and federal species of Special Concern) and three Butternut (a provincial and federal Endangered species) were observed within the Scoped Study Area.

5.0 PRELIMINARY IMPACT ASSESSMENT

A high-level, preliminary impact assessment was undertaken to identify activities that may be required to complete the work, recommend measures that can be applied to mitigate or avoid a potential negative effect, and determine the potential residual effects these activities could have on the natural environment.

5.1 Assessment of Potential Impacts

Potential impacts to the natural environment, fish and wildlife habitats and the communities therein, can be identified as a direct loss of habitat, direct injury to the organism as a result of construction, or indirect changes to the habitat that may occur in the long term and/or over a larger area.

In general, pavement rehabilitation and stormwater management (i.e., retaining walls, headwalls, ditch cleanout, and culvert works) are likely to cause impacts to the surrounding vegetation, changes to existing slopes and surface drainage, localized impacts to the streambed and fish habitat in potential areas of direct disturbance, and potentially more widespread impacts as a result of sedimentation and thermal changes.

5.1.1 Vegetation Removal

Vegetation removal is anticipated within the roadside vegetation, including residential lands, Mineral Cultural Meadow, Thicket and Woodland communities as well as

Deciduous Forest communities. These communities are locally common and secure provincially. Butternut (Endangered) individuals or their protected habitat may be impacted by activities related to this project, including removal.

Removal of vegetation from riparian areas can negatively impact aquatic habitats by reducing shading, potentially affecting the water temperature of surface flows, as well as reduce the natural shedding of organic materials into the habitat, which provide food, cover and nutrients to aquatic ecosystems. Vegetation clearing also exposes soils and increases the likelihood of erosion and release of sediments into nearby water features. Release of sediment into the watercourses associated with the culvert crossings discussed in **Section 4.3** could have significant detrimental impacts to water quality and fish habitats at these locations, as well as to the Credit River downstream. Lastly, disturbance of existing established vegetation can potentially create space for problematic invasive species to establish.

5.1.2 Excavation, Grading, and Industrial Equipment

Excavation and grading is anticipated to improve drainage, extend and/or replace culverts, and install retaining walls. These activities create exposed soils and other materials (granular, loose asphalt) and alter slopes and grades, which can affect drainage patterns. Consequently, there is potential for debris, dust and/or sediment to be released into the environment and nearby terrestrial and aquatic environments. Dust on vegetation can reduce plant productivity through reduction in metabolic processes. Additionally, the heavy industrial equipment used to accomplish these activities has the potential to release deleterious substances such as oil, fuel or grease that could be conveyed into nearby aquatic environments. Heavy machinery will also need to access streambeds to carry out activities associated with the replacement and/or extension of culverts and re-grade ditches. This equipment can also incidentally compact soils, negatively affecting existing and future vegetation, displace aquatic substrates and vegetation, and kill or injure fish and wildlife.

5.1.3 In-Water Activities

To accommodate culvert works (replacement, extension, cleanout) and ditch cleanout, in-water work that alters the existing aquatic habitat will be required. To facilitate in-water work, worksites will need to be temporarily isolated from the watercourse, completely restricting flow through the work area, temporarily blocking fish passage and migration. To isolate the work area, materials, such as cofferdams, will be placed in the open water, which can disturb and re-suspend the sediments. Once isolated, water contained within the work area would be extracted so that in-channel work may proceed under dry conditions. Pumping associated with water extraction activities may lead to the

entrainment and/or impingement of fish, or strand fish within the unwatered work area, resulting in the death of fish. Site isolation and construction unwatering may also result in temporary changes in flow, which can erode banks, scour the creek bed, alter substrate composition, and change sediment and nutrient input concentrations.

Where culverts are replaced by a longer structure, the existing aquatic habitat within the new culvert footprints will be permanently changed from open to closed systems. While permanent changes in flow are not anticipated, with the slight increases in culvert diameters, and flow velocity within culverts increase, fish passage has potential to become impeded, and local water chemistry, food supply, and habitat availability altered.

5.2 Recommended Mitigation

General mitigation measures to minimize incidental impacts to fish and wildlife, protect adjacent sensitive habitats (woodlands, watercourses, regulated areas), and manage sediment and erosion during construction include:

Vegetation Removals

- To prevent incidental impacts to nesting birds, (including at-risk and rare species) as well as bat maternity colonies, clearing of unmaintained and/or woody vegetation should be restricted to outside of the migratory bird nesting and maternity bat roosting seasons, generally combined as April 1 through October 31. If vegetation clearing must occur within this window, a qualified ecological professional should be retained to ensure no birds or bats are incidentally harmed by vegetation removals.
- Education of construction staff regarding the potential of encountering wildlife, and appropriate actions (i.e., allow the animal to leave on its own, contact a wildlife professional, etc.) is an effective mitigation against unintended impacts to turtles and other wildlife.
- Limiting construction activities to daylight hours will reduce the impacts to behaviour changes (avoidance) of local wildlife in response to the project.
- Contractors should employ Clean Equipment Protocols to prevent movement of exotic invasive species to and throughout the project area (Halloran *et al.* 2013).
- Impacts to Butternut (Endangered) must be determined and appropriate compensation and mitigation measures employed before impacts to these trees or their protected habitat.

Works Near or In-Water

- In-water work (work below the high water mark) is only permitted between June 15 and September 15 of a given year.
- All work below the highwater mark to be completed in isolation of the watercourse, under dry conditions, to ensure sediment generated during construction activities are contained to the worksite.
- Cofferdams are to be constructed using clean materials, free of particulate matter, to isolate the worksite, in accordance with DFO's Interim code of practice: Temporary cofferdams and diversion channels.
- Prior to unwatering activities, retain a qualified biologist to relocate fish trapped within the isolated area to suitable habitat downstream, under a Licence to Collect Fish for Scientific Purposes issued by the MNRF.
- During all unwatering activities, place screens at the end of all pump intakes, in accordance with DFO's Interim code of practice: End-of-pipe fish protection screens for small water intakes in freshwater, to prevent the potential entrainment of fish and other aquatic animals during water extraction.
- Treat unwatering effluent (i.e., via settlement pond, filter bag, flowing through vegetated land, etc.) to remove suspended sediments prior to re-entry into the stream. Release treated water back into the system in a manner that prevents erosion and sediment inputs into the receiving waterbody.
- Install flow by-pass systems to maintain upstream to downstream flow around isolated areas to ensure downstream habitats are not affected by the temporary flow restriction.
- Design new culvert structures to provide adequate drainage that maintains existing culvert velocities – new culverts are proposed to be the same size as the existing, or slightly larger and/or longer.
- To avoid impacting fish and fish habitat, culvert replacements should implement the mitigation measures identified by CVC’s 2017 Fish and Wildlife Crossing Guidelines (CVC 2017), and culverts should be sufficiently embedded.
- Riparian vegetation removal should be kept to a minimum, as required for construction and access only. Vegetation scheduled for removal should have proper clearing techniques implemented to protect and retain the surrounding vegetation and root masses should be left in place for stabilization, where feasible.

- Vegetation clearing impacts to the watercourse slopes and banks should be mitigated by ESCs (e.g., silt fence, fibre filtration tubes, etc.) in place during construction, and access limitations.
- To prevent any deleterious substances from entering the watercourse, operate, store, and maintain all equipment, vehicles, and associated materials at a minimum of 30 m away from any watercourse or wetland.
- A Spill Response and Action Plan shall be prepared by the contractor in advance of work that describes actions to be taken in the event of a spill, and a spill kit containing appropriate absorbent materials will be kept on site at all times to be used in the event deleterious materials are released into a watercourse.
- Should any deleterious substances enter the watercourse, including sediment, this must be reported to the MECP Spills Action Centre (1-800-268-6060).
- Travel paths, stockpile areas and staging areas, within the vicinity of watercourses, should be pre-planned and followed.

Erosion, Sediment and Dust Control

- Design and implement erosion and sediment controls (ESC) to contain/isolate the construction zone, manage site drainage and prevent erosion of exposed soils and migration of sediment to adjacent watercourses/waterbodies during all phases of the project.
- Inspect and maintain all ESC measures to ensure they are functioning as intended throughout the construction period and until such time that disturbed areas have stabilized.
- The impacts of dust on the surrounding ecosystem can be mitigated by dust suppression measures such as moistening dry soils with water as required during construction and adhering to erosion and sediment management measures as described below.
- Good site housekeeping, including control of sediment into ditches and off site by equipment with appropriate ESC measures will prevent incidental impacts to nearby sensitive aquatic habitats.
- Manage and treat dewatering effluent to prevent erosion and/or release of sediment-laden or contaminated water to the waterbody. Additional dewatering considerations:

- Use of appropriately designed and sited temporary settling basin, filter bag, overland through 30 m of vegetation, etc., such that sediment is filtered out prior to the water entering a waterbody.
- Use of energy dissipation measures to prevent bank and bed erosion.

Site Restoration

- Restoration plan – all exposed soils should be immediately stabilized following final grading with a suitable seed and cover mix, and riparian areas should be replanted with native trees and shrubs to provide/replace stream shading.
- Revegetation using a native seed mix would confer habitat benefits to pollinators and other wildlife.
- Revegetation/restoration of the Deciduous Forest (FOD5) where stormwater improvements are proposed should include native shrub and tree species, either pre-existing or complimentary to the community to reduce long-term impacts from the vegetation removals.

5.3 Preliminary Effects Assessment

5.3.1 Vegetation and Vegetation Communities

The three Butternut trees are protected individually and receive habitat protection in the form of a 25 m to 50 m radius to protect the tree and area of potential propagation, respectively. This protection applies to trees that are determined to be of native stock (hybrids are not protected) and are in reasonable health (Category 2 or 3) as determined by a Butternut Health Expert. On occasion, due to existing conditions and biological factors related to the growth of trees, impacts may occur within 25 m of a Butternut without requiring compensation. These instances are site-specific and are determined through direct correspondence with MECP staff.

5.3.2 Wildlife and Wildlife Habitat

No individuals of, or habitats for, at-risk wildlife species protected under the ESA were observed during field studies. One Special Concern species, Eastern Wood-Pewee, was noted within the Study Area. Proposed impacts to Eastern Wood-Pewee habitat are anticipated to be minor and are not expected to impact the ability of the species to continue to use the area. Roadside vegetation provides habitat for a variety of other common wildlife species, as noted in **Appendix E**, and may also provide habitat for at-risk bats and their active-season maternity colonies located in dead/dying or injured trees. It is anticipated that vegetation clearing will be limited to relatively small areas of vegetation along the roadway, as such, the ability of these species to continue to use the

area post-construction is not expected to be impacted. Incidental direct impacts to individuals as a result of the project can be mitigated through the measures discussed **Section 5.2**.

5.3.3 Fish and Fish Habitat

As noted above, both land and water based activities associated with the potential works have the potential to directly or indirectly impact fish and fish habitat if the mitigation measures identified in **Section 5.2** are not implemented or cannot completely remove a potential effect. Provided appropriate mitigation measures are implemented prior to commencing work, impacts associated with most of the activities discussed in **Section 5.1** can likely be avoided. However, there is the potential for residual effects to occur for work proposed to replace and extend the culverts. A summary of the residual effects associated with the potential work includes the following:

- Temporary reduction in nutrient concentrations from the loss of energy inputs and organic components due to the removal of vegetation and organic material within the ROW, which may be required to access culverts for cofferdam placement and dewatering, as well as for culvert replacement and/or extension.
- Permanent removal of fish habitat within the footprint of new culverts due to culvert extension, which will result in the permanent loss of riparian vegetation and native streambed.

While the potential areas of impact to the watercourses associated with the project are relatively small in relation to the overall size of available habitat, the project activities may permanently alter fish habitat and as such, have the potential to result in the death of fish or the HADD of fish habitat.

6.0 PERMITTING AND APPROVAL REQUIREMENTS

In the event the Project cannot avoid the impacts described in **Section 5.0,** the proposed improvements to Mill Street will have the potential to impact the natural environment if work cannot be fully mitigated by the measures and operational constraints described above. Such impacts may require agency permitting and/or approvals, and may include alterations within conservation authority regulated habitat, impacts to SAR, and impacts to fish and fish habitat.

Candidate features identified within the Study Area were evaluated against the applicable federal, provincial, and municipal planning policies. To support the project, the following permits and approvals may be required in detailed design from various agencies:

DFO – A Request for Review (RFR) application submitted to DFO will be required to request project specific review of the project impacts below the high water mark of the watercourses (i.e., culvert replacements, retaining walls, etc.).

MNRF – For in-water works, a License to Collect Fish for Scientific Purposes will be required to relocate fish.

MECP – For Butternut located within 25 m of areas of grading, vegetation clearing or other construction activities beyond the existing gravel shoulder, assessment by a certified Butternut Health Expert is required to determine appropriate protection and compensation measures. Based on initial assessment, it is likely that impacts from this project can be registered online through the provincial ONe-key system.

CVC – The project includes development within lands regulated under Ontario Regulation 160/06 Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses, which requires a permit.

7.0 CONCLUSIONS

This Natural Environment Assessment Memo documents the existing conditions within the Mill Street Study Area, and preliminary impact review of the project, supported by field studies carried out in 2021 and 2022. These studies included a single season review for rare and at-risk species, wetlands, and fish habitat, as well as wildlife habitat assessment and incidental wildlife observations, with a focus on species and features noted in background data and agency correspondence. A site reconnaissance visit was undertaken in the spring of 2022 to specifically identify the presence of fish and fish habitat in the regulated ditch/ Credit River tributary, where realignment was being considered.

Based on a high-level review, project impacts on terrestrial environment components within the Study Area are anticipated to be minor, and the overall function of the larger system is not expected to be significantly impacted by the proposed project. Vegetation and habitats with the potential to be lost are mainly anthropogenic (roadsides, hedgerows and residential landscapes), which provide habitats that are present throughout the surrounding landscape beyond the project area.

Three Butternut trees (Endangered) protected under the ESA were identified during field work. Grading is proposed within 25m of two of these trees beyond the existing roadbed, and as such will require further review in the form of a Butternut Health Assessment. Following assessment, appropriate protection and compensation measures will be determined and implemented appropriately, either through registration of the

project or application for an overall benefit permit under the ESA. Design modifications to reduce impact to the habitat of these trees have been implemented.

At-risk bats may utilize any tree larger than 10 cm in diameter at breast height, but these individual features are not protected beyond periods of active use. Appropriate mitigation measures will be incorporated into the construction contract including ESCs, as well as contractor education, and appropriate timing of activities should serve to further reduce impacts to the Natural Heritage System. No other impacts to the terrestrial environment are anticipated as a result of the proposed project.

There were no aquatic SAR identified in the Study Area. It is anticipated the proposed project will impact the aquatic environment components of the Study Area through culvert replacements, ditch cleanout, and construction of retaining walls. As such, an RFR application is required to be submitted to DFO in detailed design to determine if the proposed work will result in death of fish and/or a HADD of fish habitat under the fish and fish habitat protection provisions of the *Fisheries Act* (Government of Canada 1985).

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Appendix A

Preliminary Study Area and Potentially Present Rare and At-Risk Species

Legend

Study Limit (Road)

Central Coordinate

Coordinate	Name
17N 572441 4859164	Main St
17N 578220 4861237	Kennedy Rd
17N 586562 4844408	Mill St

Kennedy Road

Main Street

Mill Street

THE TOWN OF CALEDON

arva

Caledon Growth Roads 2022

Figure 1 - Map of Study Areas 2022

0 1 2 3 Kilometers

DATE JANUARY 29, 2021	MAP PAGE 1 OF 2
JOB NUMBER 205388	DESIGNED CER

Table 1: Rare and At-Risk Species Potentially Present in the Vicinity of the Study Area

Common Name	Scientific Name	S-Rank	ESA Status	Source*	Last Observed (Year)
FLORA					
Schweinitz's Sedge	*Carex schweinitzii*	S3		INAT	2019
Butternut	*Juglans cinerea*	S2?	END	INAT	2020
Grooved Yellow Flax	*Linum sulcatum*	S1		INAT	2019
Great St. John's-wort	*Hypericum ascyron*	S3		INAT	2017
Meadow Evening-primrose	*Oenothera pilosella*	S2		INAT	2019
Black Ash	*Fraxinus nigra*	S3		INAT	2018
Fan Moss	*Forsstroemia trichomitria*	S1		INAT	2019
FUNGI AND LICHENS					
A Lichen	*Viridothelium virens*	S3		INAT	2018
A Lichen	*Acrocordia conoidea*	S3		INAT	2019
BIRDS					
Caspian Tern	*Hydroprogne caspia*	S3B	NAR	INAT	2019
Eastern Wood-pewee	*Contopus virens*	S4B	SC	NHIC, OBBA	2005
Wood Thrush	*Hylocichla mustelina*	S4B	SC	NHIC, OBBA	2005
Common Nighthawk	*Chordeiles minor*	S4B	SC	OBBA	2005
Golden-winged Warbler	*Vermivora chrysoptera*	S4B	SC	OBBA	2005
Canada Warbler	*Cardellina canadensis*	S4B	SC	OBBA, CVC NAI	2009
Grasshopper Sparrow	*Ammodramus savannarum*	S4B	SC	OBBA	2005
Chimney Swift	*Chaetura pelagica*	S4B,S4N	THR	OBBA	2005
Bank Swallow	*Riparia riparia*	S4B	THR	OBBA	2005
Barn Swallow	*Hirundo rustica*	S5B	THR	OBBA, CVC NAI	2009
Bobolink	*Dolichonyx oryzivorus*	S4B	THR	OBBA, CVC NAI	2005
Eastern Meadowlark	*Sturnella magna*	S4B	THR	OBBA, CVC NAI	2005
Purple Martin	*Progne subis*	S3S4B		OBBA	2005
Buff-breasted Sandpiper	*Calidris subruficollis*	SNA	DD	OBBA	2005
Forster's Tern	*Sterna forsteri*	S2B	DD	OBBA	2005
REPTILES AND AMPHIBIANS					
Snapping Turtle	*Chelydra serpentina*	S4	Special Concern	ORAA	2019
INVERTEBRATES (excludes mussels)					
Monarch	*Danaus plexippus*	S2N,S4B	SC	INAT	2020
Pronghorn Clubtail	*Phanogomphus graslinellus*	S3		INAT	2019

Common Name	Scientific Name	S-Rank	ESA Status	Source*	Last Observed (Year)
Spatterdock Darner	*Rhionaeschna mutata*	S2		INAT	2017
Azure Bluet	*Enallagma aspersum*	S3		INAT	2019
River Bluet	*Enallagma anna*	S2		INAT	2019
Yellow-banded Bumble Bee	*Bombus terricola*	S3S5	SC	INAT	2018
Red-chested Cuckoo Nomad Bee	*Epeolus scutellaris*	S3		INAT	2018
Hoary Long-horned Bee	*Peponapis pruinosa*	S2S3		INAT	2019
	Eumenes verticalis	S1		INAT	
West Virginia White	*Pieris virginiensis*	S3	SC	OBA	1991
FISH AND MUSSELS					
Atlantic Salmon	*Salmo salar*	SNA		ARA	2015
Redside Dace	*Clinostomus elongatus*	S1	END	ARA	2015
Northern Brook Lamprey	*Ichthyomyzon fossor*	S3	SC	ARA	2015
American Brook Lamprey	*Lethenteron appendix*	S3		ARA	2015

*Source Abbreviations:
INAT – iNaturalist.ca (filtered for Research Grade and Threatened)
NHIC – Natural Heritage Information Center
ARA – Aquatic Resource Area (OntarioGeoHub)
ORAA – Ontario Reptile and Amphibian Atlas (Ontario Nature)
OBA – Ontario Butterfly Atlas (Toronto Entomological Society)
OMA – Ontario Moth Atlas (Toronto Entomological Society)
OBBA – Ontario Breeding Bird Atlas (Birds Canada)
DFO – Department of Fisheries and Oceans Species at Risk Mapping Application
CVC NAI – Credit Valley Conservation Natural Areas Inventory

Appendix B

Agency Correspondence

From: Varga, Steve (MNRF) <steve.varga@ontario.ca>
Sent: March 3, 2021 10:16 AM
To: Courtney Beneteau <cbeneteau@rvanderson.com>
Subject: FW: 205338 - Information Request - Town of Caledon - Growth Related Roads 2022

Hi Courtney

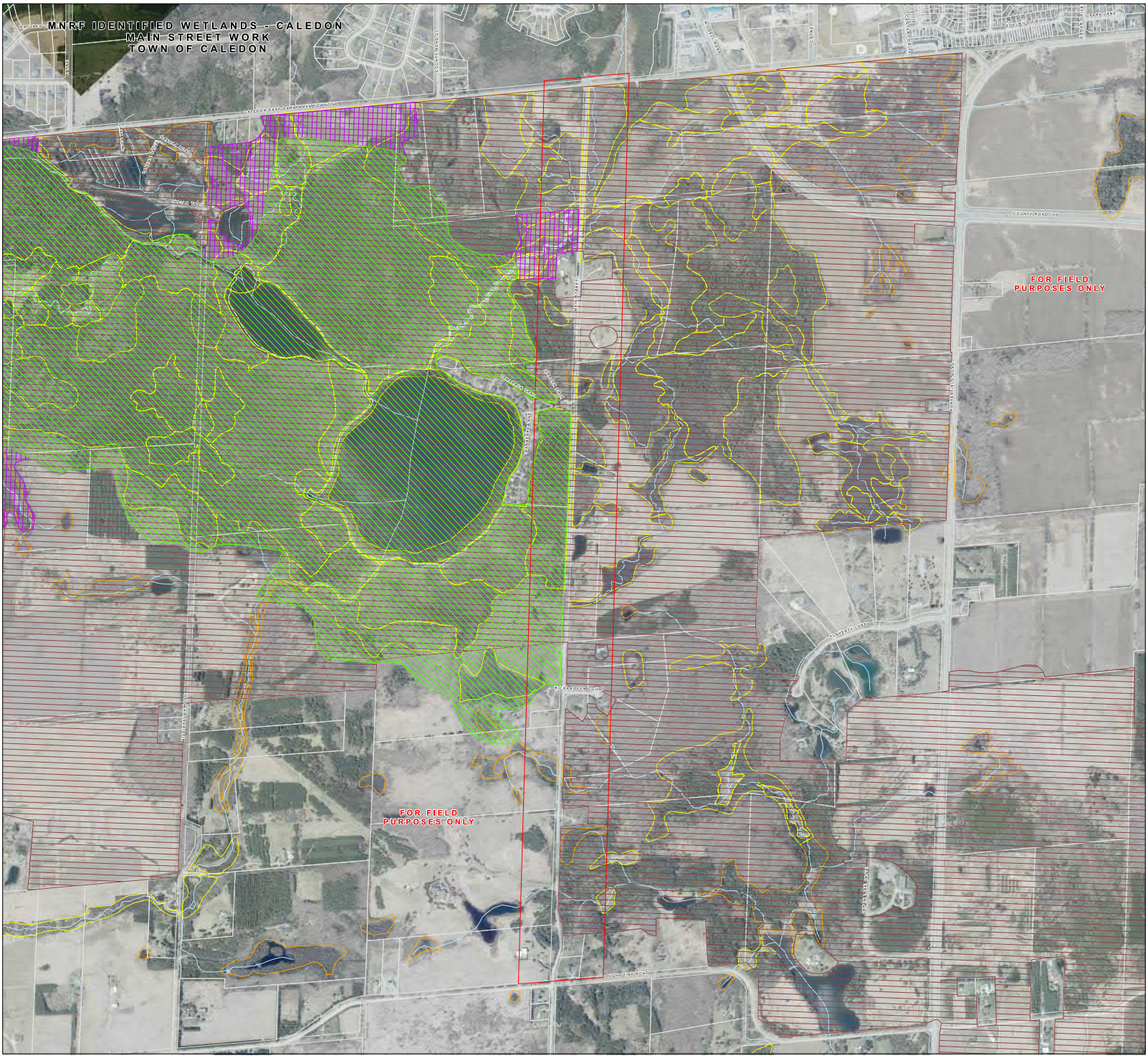
As mentioned in the MNRF response from the Aurora District office I'm enclosing an air-photo base map for the area around the Main Street study area in the Town of Caledon. Outlined in green diagonal lines is the approved Provincial Caledon Forest Life Science Area of Natural and Scientific Interest (ANSI) which comes up to the road allowance on the west side of the Main Street study area. Outlined in purple diagonal lines are candidate provincial extensions of the approved ANSI, one of which comes up to the road allowance on the west side of the Main Street study area. Around the northern part of the Main Street study area and outlined in yellow is the provincially significant Caledon Lake Wetland Complex. Many of these wetlands come right up to Main Street. It is recommended that any of these wetlands that come up to the road allowance be delineated in the field by a professional surveyor and an Ontario Wetland Evaluation System (OWES) certified evaluator (enclosed is a pdf outlining suggested steps for doing a wetland survey). Outlined in orange are additional unevaluated or identified wetlands.

All these features with the exception of the candidate ANSI are in our publicly available provincial database (Land Information Ontario- LIO).

If you have any questions on this material please give me a call on my work cell at 289-221-8157 or email me at steve.varga@ontario.ca.

All the best
Steve Varga
Management Biologist
MNRF Aurora District

MNRF IDENTIFIED WETLANDS -- CALEDON
MAIN STREET WORK
TOWN OF CALEDON



Ontario

Scale 1:4,000 (approx.)

2021-13-ST

0 0.2 0.4 0.8 1.2 KM

Legend

- Watercourse
- Earth Science, Approved
- Earth Science, Candidate
- Life Science, Approved
- Life Science, Candidate
- MNRF Evaluated Wetland
- MNRF Identified Wetland
- Study_Area
- Parcel Fabric

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March 2, 2021

Cartography by Aurora District Geomatics.

Universal Transverse Mercator (6 degree) projection, Zone 17. North American Datum 1983

SOURCE OF INFORMATION

Information provided by the Ministry of Natural Resources & FOrestryDistrict office in Aurora.
Ministry of Natural Resources & Forestry Aurora District 50 Bloomington Road West, Aurora, ON L4G 0L8

Base information derived from the Ontario Base Map, 1983 at a scale of 1:10,000 and the Natural Resources Values Information System (NRVIS).

NOTE:

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should be viewed as illustrative only. Do not rely on it as being a precise indicator of routes, locations of features, nor as a guide to navigation.

For detailed information on natural features such as their location, size or status, the individual files held by the Aurora district office of the Ministry of Natural Resources & Forestry should be consulted.

Suggested Steps in Wetland Boundary Surveys for the Greater Toronto Area (MNRF Aurora District)

If contemplating a wetland boundary survey in the Greater Toronto Area (York, Durham, Peel, Halton & Toronto) please forward an air-photo showing the location of the subject property and its parcel roll number at least a few weeks before the survey to the Ministry of Natural Resources and Forestry, Aurora District at steve.varga@ontario.ca. MNRF can assist with background materials on the extent, location and status of wetlands on and adjacent to the subject property. This could include providing an aerial field image showing our best estimate of the location and extent of wetlands, a digital wetland evaluation if the wetland is evaluated, any existing wetland surveys for the subject property or adjacent properties and suggesting an optimum time to survey the wetlands.

Wetland boundary surveys should be done in concert with a professional surveyor, Conservation Authority staff, the proponent and their consultant if they wish to hire one. Staff from the local municipality should also be given the opportunity to attend. The wetland boundary should be demarcated by numbered stakes which are placed wherever the boundary changes direction. The surveyor will then survey these staked points to create a surveyed line of the wetland boundary. At least one individual attending the survey should be an Ontario Wetland Evaluation System (OWES) certified evaluator. All parties should agree to the wetland boundary using the provincial standard 50% rule as outlined in the OWES Southern Manual. If for some reason parties can't agree please inform MNRF. With our current travel restrictions, MNRF staff can only attend under special circumstances.

Since wetland boundary delineations are focussed on the determination of upland versus wetland plant species and their relative cover, wetland surveys are confined to the growing season and can commence in early to mid-June, depending on the season, and go until the first frosts, which can vary from mid-September to early October. Herb marshes and vernal wetlands are best delineated in late summer. For example, communities of smartweed (*Persicaria* sp.), beggar-ticks (*Bidens* sp.), asters (*Symphyotrichum* sp.), clearweed (*Pilea* sp.) and spotted jewelweed (*Impatiens capensis*) flower and reach their maximum extent in the summer or late summer. Graminoid marshes are also best surveyed in mid-summer while cattail marshes and swamps can be surveyed throughout the growing season.

When surveying a wetland, the consultant for the proponent should document the survey by providing a series of photos along the wetland boundary and a vegetation description justifying the wetland delineation. This is especially critical for any additions or deletions to an existing evaluated wetland boundary. If you are adding a new community to an evaluated wetland, or documenting a new wetland unit, please use the OWES standard for describing the vegetation community or communities. In an excel table note the forms and the dominant form that make up the community, the dominant species in each form, the site type, a description of the soils, and any wildlife observations or significant species at the local, regional or provincial level. The wetland survey should be provided to MNRF as soon as it has been completed. We ask that any staked lines be submitted as an ESRI Shapefile Georeferenced to UTM NAD83, Zone 17. This will allow us to quickly incorporate the staked line into our provincial dataset and avoid any unnecessary delays. A shape file is the standard file format for ESRI software ARCGIS version 9.3, which we use here at MNRF. Unfortunately, a straight CAD file cannot be read in our software properly and we cannot establish a coordinate system to allow us to reference it to our data.

From: Fortini, Natosha (MNRF) <Natosha.Fortini@ontario.ca>
Sent: March 1, 2021 9:10 AM
To: Courtney Beneteau <cbeneteau@rvanderson.com>
Subject: RE: 205338 - Information Request - Town of Caledon - Growth Related Roads 2022

Hi Courtney,

Please see below MNRF's response to your information request for the above noted project.

Kennedy Road Study Area

The study area is intersected by two cold water tributaries of the Credit River. For the northern tributary, our records contain the following fish community information:
Blacknose Dace,Blacknose Shiner,Bluntnose Minnow,Brook Trout,Finescale Dace,Johnny Darter,Northern Pearl Dace,Northern Redbelly Dace,Rainbow Trout. For the southern tributary, our records contain the following fish community information: Brook Stickleback,Central Mudminnow,Northern Redbelly Dace,Blacknose Dace,Blacknose Shiner,Brassy Minnow,Brook Trout,Creek Chub,Fathead Minnow,Finescale Dace,Johnny Darter,Longnose Dace,Pumpkinseed,White Sucker

There are no identified ANSIs on record. The provincially significant Speersville Wetland Complex is associated with your study area.

In LIO one locally significant riparian wetland is bisected by the road and several unevaluated wetlands come close to the road. The evaluation for this locally significant wetland is only in hard copy form in our Aurora District office and due to COVID restrictions it is currently not open to the public. An examination of spring 2018 did not find any additional wetlands beyond those already mapped in LIO. Any unevaluated wetlands encountered during field visits should be characterized using OWES methodology. Attached are some guidelines for doing a wetland boundary delineation. It should be noted that this study area is in the Niagara Escarpment Planning Area. You should also consult the Niagara Escarpment Commission.

Main Street Study Area

The study area is intersected by a number of cold water tributaries of the Credit River. Our records contain the following fish community information which is the same for all tributaries:
Blacknose Dace,Bluntnose Minnow,Brassy Minnow,Brook Stickleback,Brook Trout,Carps and Minnows,Central Mudminnow,Common Shiner,Creek Chub,Fathead Minnow,Finescale Dace,Golden Shiner,Iowa Darter,Largemouth Bass,Longnose Dace,Northern Pearl Dace,Northern Redbelly Dace,Pumpkinseed,Rainbow Trout,Rock Bass,Unidentifiable,White Sucker,Yellow Perch

This road for most of its northern and central length bisects a highly sensitive provincially significant wetland complex that surrounds Caledon Lake. This wetland complex is noted for its provincially rare fens and groundwater-fed swamps. The evaluation for the Caledon Lake Wetland Complex is only in hard copy form in our Aurora District office and due to COVID restrictions it is currently not open to the public. There are also several unevaluated wetlands to the south that come up to the road allowance. All these wetlands are shown in LIO. An examination of spring 2018 did not find any additional wetlands beyond those already mapped in LIO. Any unevaluated wetlands encountered during field visits should

be characterized using OWES methodology. Attached are some guidelines for doing a wetland boundary delineation. It should be noted that this study area is in the Greenbelt Plan.

The southeast corner of the Provincial Caledon Forest Life Science Area of Natural and Scientific Interest (ANSI) abuts the west side of the road allowance. The ANSI sets aside a high quality large marl lake fringed by fens and grading into large conifer organic swamps. A detailed ANSI inventory report by Gould 1988 is only available in hard copy form in the Aurora District Office and due to COVID restrictions it is currently not open to the public. In addition to the approved provincial ANSI there may be additional surrounding areas of candidate provincial ANSI. Our GIS specialist is looking for this layer. If there is any candidate ANSI in the vicinity of Main Street I will send you an air-photo base map showing its location.

Mill Street Study Area

The Credit River and a number of its tributaries intersect the study area. For the main Credit River, our records indicate the following fish community: American Brook Lamprey,Atlantic Salmon,Blacknose Dace,Bluntnose Minnow,Brook Stickleback,Brook Trout,Brown Bullhead,Brown Trout,Carps and Minnows,Central Mudminnow,Common Shiner,Creek Chub,Fantail Darter,Fathead Minnow,Golden Shiner,Goldfish,Hornyhead Chub,Iowa Darter,Johnny Darter,Johnny Darter x Tesselated Darter,Lampreys,Largemouth Bass,Longnose Dace,Mottled Sculpin,North American Catfishes,Northern Brook Lamprey,Northern Hog Sucker,Northern Redbelly Dace,Perches,Pumpkinseed,Rainbow Darter,Rainbow Trout,Redside Dace,River Chub,Rock Bass,Sculpins,Sea Lamprey,Slimy Sculpin,Spottail Shiner,Stonecat,Suckers,White Sucker. The various tributaries have similar fish communities as the Credit River, as per our records. All watercourses within the study area are identified as cold water.

There are no identified ANSIs within your study area.

An examination of spring 2018 did not find any wetlands along the road. It should be noted that this study area is in the Niagara Escarpment Planning Area. You should also consult the Niagara Escarpment Commission.

Species at Risk: As MNRF no longer has carriage of *the Endangered Species Act*, please contact MECP at SAROntario@ontario.ca for species at risk information.

Sincerely,

Natosha

Natosha Fortini
Management Biologist | Aurora District | Ontario Ministry of Natural Resources and Forestry | 50 Bloomington Rd. W., Aurora, ON, L4G 0L8 | P: 289-380-6181| F: 905.713.7361 | natosha.fortini@ontario.ca

Ontario

From: Courtney Beneteau <cbeneteau@rvanderson.com>
Sent: February 23, 2021 10:40 AM
To: Scientific Collection Permits Aurora (MNRF) <scp.aurora@ontario.ca>
Cc: Jawaid, Maria (MNRF) <Maria.Jawaid@ontario.ca>; Paul Mikoda <pmikoda@rvanderson.com>
Subject: FW: 205338 - Information Request - Town of Caledon - Growth Related Roads 2022

Good morning,

We sent an information request in November, but have not heard back. Is it possible to get a review of the project information provided and a response?

Thank you,
Courtney

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Courtney Beneteau, M.Sc., CAN-CISEC
Pronouns: she / her
Fisheries Biologist
P: (519) 681-9916 ext. 5039
C: (519) 819-2023
R.V. Anderson Associates Limited
557 Southdale Road East, Suite 200, London, ON N6E 1A2
rvanderson.com

From: Courtney Beneteau
Sent: November 10, 2020 2:59 PM
To: maria.jawaid@ontario.ca
Cc: Shun.cheung@caledon.ca; Winnie Wong <Winnie.Wong@rvanderson.com>; Andrew McGregor <AMcGregor@rvanderson.com>; John P. Does <jdoes@rvanderson.com>; Tisha Doucette <TDoucette@rvanderson.com>; Paul Mikoda <pmikoda@rvanderson.com>
Subject: 205338 - Information Request - Town of Caledon - Growth Related Roads 2022

Good afternoon Maria,

The Town of Caledon has retained R.V. Anderson Associates (RVA) to undertake a Class Environmental Assessment (Class EA) for proposed upgrades to sections of Kennedy Road (from Highpoint Side Road to Beechgrove Side Road), Main Street (Caledon East Garafraxa Town Limit to Highpoint Side Road), and Mill Street (Mississauga Road to Creditview Road), as shown in the **Study Area Map** (attached). This project falls within the jurisdiction of Credit Valley Conservation (CVC) as well as the Ministry of the Environment, Conservation and Parks (MECP) Halton-Peel District, and the Ministry of Natural Resources and Forestry (MNRF) Aurora District.

RVA has undertaken a desktop review of the following information sources as pertains to the Study Area, as per the Natural Heritage Information Request Guide (MNRF, December 2018) and Draft Guide to Preliminary Screening for SAR (MECP, May 2019) including:

- Natural Heritage Information Center database (accessed via MNRF's Make-a-Map: Natural Heritage Areas application (NAD83 Atlas 1km squares: 17NJ8545, 17NJ8544, 17NJ7358, 17NJ7258, 17NJ7158, 17NJ7961, 17NJ7661, 17NJ7962);
- Fisheries and Oceans Canada (DFO) online aquatic Species at Risk mapping tool;
- Ontario Breeding Bird Atlas (OBBA) Archives (Atlas square: 17NJ84, 17NJ75, 17NJ76);
- Ontario Reptile and Amphibian Atlas (ORAA) (Atlas square: 17NJ84, 17NJ75, 17NJ76);

- AgMaps (drainage features and classifications);
- Ontario GeoHub (Aquatic resource area polygon segment);
- Ontario Butterfly Atlas; Moth Atlas (Atlas square: 17NJ84, 17NJ75, 17NJ76); and
- iNaturalist.

According to these records, 7 Species at Risk (SAR) and 10 Species of Special Concern (SOCC) were identified as potentially occurring within the vicinity of the Study Area, as well as 19 rare (S1-S3) species. Details regarding the records of these species, including their associated S-ranks and status under the Endangered Species Act are shown in **Table 1** (attached). Provincially recognized natural areas or other notable features that were identified in the Study Area including Speersville and Caledon Lake Provincially Significant Wetlands (PSW) and the Caledon Lake Forests Life Science ANSI.

At this time, we would like to request any natural heritage information that may be available in addition to those sources. We are particularly interested in the following information:

1) Aquatic habitat – watercourse names, thermal regime, important habitats (e.g., spawning), habitat sensitivity, barriers, in-water timing windows, water quality/quantity data, and groundwater discharge areas
2) Wildlife information – rare/at-risk species, significant wildlife habitats, species lists/inventory data including fish, mussels, birds, reptiles, birds, amphibians, and insects
3) Terrestrial habitat – vegetation community information, including ELC mapping if available, and species lists/floral inventories
4) Designated natural heritage features, such as ANSIs, PSWs, ESAs, Provincial Parks, Conservation Reserves and Wildlife Management Areas
5) Additional reports or management plants pertinent to the area (Natural Area Reports, EIS/EIA reports, etc.).

Please feel free to contact me if you have any questions or concerns with this request. If there is a more appropriate contact for this type of request, would you please inform who we should direct these emails to in future? A response to acknowledge your receipt of this email would be greatly appreciated.

Thank you,
Courtney

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Courtney Beneteau, M.Sc.
Fisheries Biologist

P: (519) 681-9916 x.5039
C: (519) 819-2023

R.V. Anderson Associates Limited
557 Southdale Road East, Suite 200 London, ON N6E 1A2

www.rvanderson.com

From: Snell, Shamus (MECP) <Shamus.Snell@ontario.ca>
Sent: Sunday, March 7, 2021 1:21 PM
To: Courtney Beneteau <cbeneteau@rvanderson.com>
Cc: Tisha Doucette <TDoucette@rvanderson.com>; Winnie Wong <Winnie.Wong@rvanderson.com>
Subject: MECP SARB: Redside Dace Stream Occupancy - Town of Caledon Growth Related Roads 2022 & 2023

Hi Courtney,

The following road segments do not appear to intersect with or be adjacent to Redside Dace habitat.

- Main Street
- Mountainview Road

The Caledon Creek where it intersects the Willoughby Road is considered occupied habitat of Redside Dace. Any tributaries which connect to Caledon Creek should be considered contributing habitat for Redside Dace.

The Caledon Creek directly to the south east of Kennedy Road is listed a the occupied habitat of Redside Dace but this creek does not appear to directly intersect the road. Any tributaries which connect to this creek should be considered contributing habitat for Redside Dace.

Where the Wester Humber River intersects Humber Station Road is considered the contributing habitat of Redside Dace and has the high potential to be occupied.

Roger's Creek where it intersects Mill Street is considered part of the historic habitat of Redside Dace.

The information on the Aquatic Resources Area (ARA) layers can be used to help inform on the potential species occurrences but additional research has be done to confirm the actual presence and/or absence of a species. The ARA layers often list all the species that were ever detected within a waterbody and doesn't often differentiate between current observations and historic ones. This is likely why Redside Dace show up as often as they do in the ARA species lists. In addition, much of the general information on the ARA layers (species lists, thermal codes, sensitivity) has not been peer reviewed. This is comparable to the Department of Fisheries and Oceans (DFO) Species at Risk (SAR) Redside Dace mapping has been extensively reviewed and researched. I would urge you to use the information contained within the ARA layers in conjunction with other information sources to ensure it is correct and accurate. It is also worthwhile to mention that while the ARA layers may identify the presence of SAR, the

layers were not designed or are intended to inform on the legislative requirements (SAR habitat mapping, sensitive areas) of the Endangered Species Act (ESA).

I have attached MECP's "Guidance for Development Activities in Redside Dace Protected Habitat" to assist you in the development of your avoidance and mitigation measures.

As I have mentioned before this review represents MECP's best currently available information, it is important to note that a lack of information for a site does not mean that SAR or their habitat are not present. There are many areas where the Government of Ontario does not currently have information, especially in areas not previously surveyed. On-site assessments and surveys are required to better verify site conditions, identify and confirm the presence of SAR and/or their habitats.

It is the responsibility of the proponent to ensure that SAR are not killed, harmed, or harassed, and that their habitat is not damaged or destroyed through the proposed activities to be carried out on the sites.

Regards,

Shamus Snell
A/ Management Biologist
Species at Risk Branch
Ministry of Environment, Conservation and Parks
Email: shamus.snell@ontario.ca

From: Courtney Beneteau <cbeneteau@rvanderson.com>
Sent: February 23, 2021 11:27 AM
To: Snell, Shamus (MECP) <Shamus.Snell@ontario.ca>
Cc: Tisha Doucette <TDoucette@rvanderson.com>; Winnie Wong <Winnie.Wong@rvanderson.com>
Subject: RE: MECP SARB Review: Information Request Town of Caledon Growth Related Roads 2023

Hi Shamus,

Thank you for this information! As a reminder there were two emails, one for 2022 and one for 2023, each with three road segments. In your response emails, you provided this information regarding Redside Dace:
"SARB's information on file suggest that **reaches of Caledon Creek** should be considered occupied habitat for Redside Dace." And "SARB's information on file suggest that **reaches of West Humber River** should be considered occupied habitat for Redside Dace."

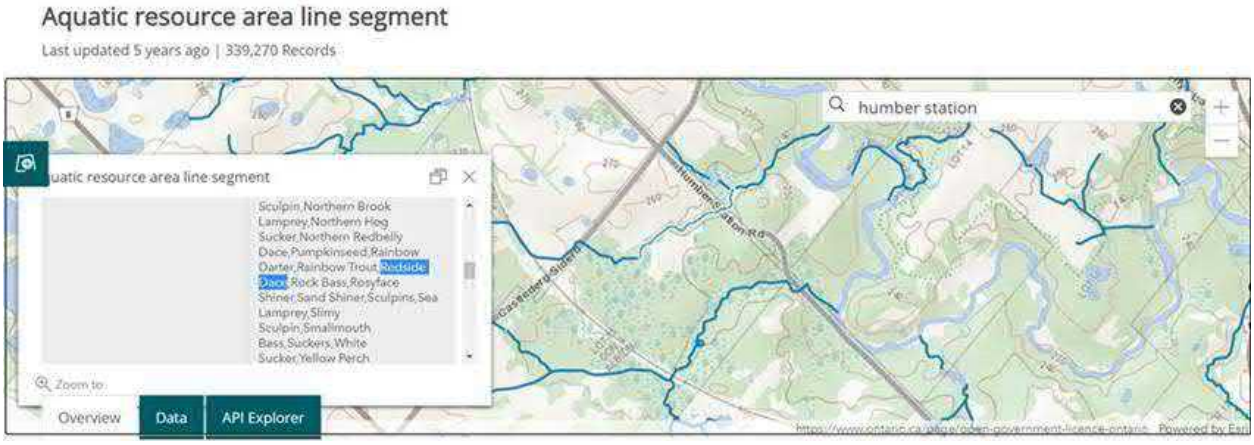
At this time, I have two clarification requests:

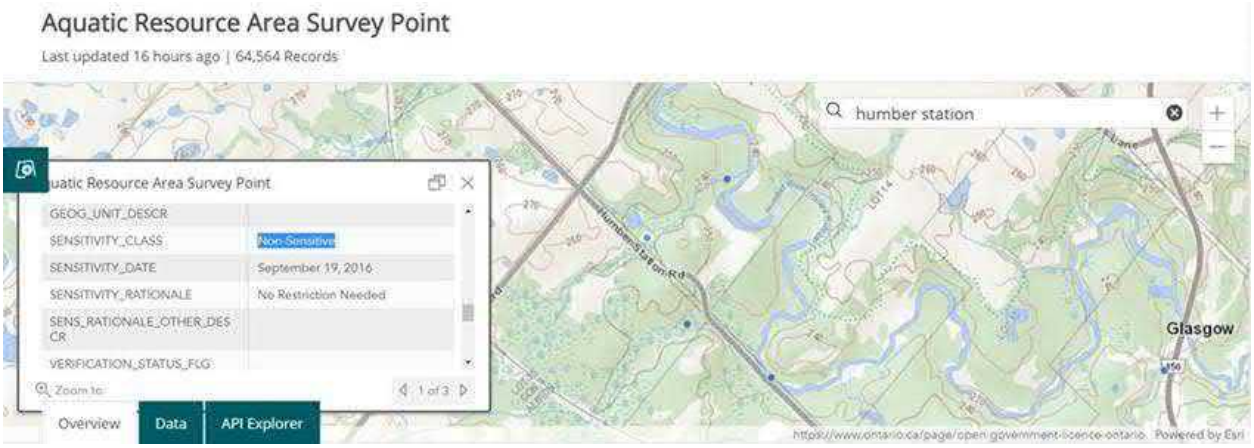
1) Can you please confirm whether or not there are any watercourses that cross the six road segments (study areas shown in the attached maps) that are considered Redside Dace habitat?

There Caledon Creek tributaries that cross Mountainview Road and Kennedy Road, and there are West Humber tributaries that cross Humber Station Road.

2) Can you please confirm whether the fish data provided on the GeoHub Aquatic Resource Line Segment data should be used in determining the potential locations of Redside Dace? I've noticed that this database often shows fish SAR in watercourse segments that are not consistent with the DFO SAR mapping, and the Survey Point data.

   For example, should this Humber River tributary be treated as a Redside Dace occupied watercourse since the species is noted in the list for the highlighted line segment? I think what may be confusing me is that the Survey Point data (three points on this tributary – see below) all describe the watercourse as "Non-Sensitive" and do not have records of Redside Dace.





Please fee free to call me anytime to discuss – 519-819-2023.

Thanks,
Courtney

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Courtney Beneteau, M.Sc., CAN-CISEC
Pronouns: she / her
Fisheries Biologist
P: (519) 681-9916 ext. 5039
C: (519) 819-2023
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557 Southdale Road East, Suite 200, London, ON N6E 1A2
rvanderson.com

From: Snell, Shamus (MECP) <Shamus.Snell@ontario.ca>
Sent: February 1, 2021 8:17 AM
To: Courtney Beneteau <cbeneteau@rvanderson.com>
Cc: Shun Cheung <shun.cheung@caledon.ca>; Winnie Wong <Winnie.Wong@rvanderson.com>; Andrew McGregor <AMcGregor@rvanderson.com>; John P. Does <jdoes@rvanderson.com>; Tisha Doucette <TDoucette@rvanderson.com>; Paul Mikoda <pmikoda@rvanderson.com>
Subject: MECP SARB Review: Information Request Town of Caledon Growth Related Roads 2023

Hi Courtney,

The Ministry of Environment, Conservation and Parks (MECP) Species at Risk Branch (SARB) has conducted a review of the Town of Caledon's Growth Related Roads for 2023, and the areas adjacent to them for Species at Risk (SAR) occurrences. The SARB has detected the following SAR occurrences in addition to those already identified in the information request:

- American Ginseng (*Panax quinquefolius*);
- Blanding's Turtle (*Emydoidea blandingii*);
- Eastern small-footed myotis (*Myotis leibii*);
- Eastern Whip-poor-will (*Antrostomus vociferous*);
- Hill's Pondweed (*Potamogeton hillii*);
- Least Bittern (*Ixobrychus exilis*);
- Little brown myotis (*Myotis lucifugus*);
- Red-headed Woodpecker (*Melanerpes erythrocephalus*);
- Rusty-patched Bumble Bee (*Bombus affinis*);
- Tricolored Bat (*Perimyotis subflavus*);
- Yellow-banded Bumble Bee (*Bombus terricola*).

While this review represents MECP's best currently available information, it is important to note that a lack of information for a site does not mean that SAR or their habitat are not present. There are many areas where the Government of Ontario does not currently have information, especially in areas not previously surveyed. On-site assessments and surveys are

required to better verify site conditions, identify and confirm the presence of SAR and/or their habitats.

Please note that American Ginseng is considered a restricted species and cannot be listed within any public documents and must should be kept confidential.

The location of the study areas overlaps numinous observations of Bobolink and Eastern Meadowlark and the habitat adjacent to the roads suggests there is a very high potential they could be using these area as nesting habitat. It is recommended that species specific surveys be conducted if the proposed project has the potential to impact these habitats.

Should vegetation removal be required as part of the proposed project MECP recommends that a qualified biologist with botany expertise be retained to survey for the SAR plants and to conduct habitat studies for the remaining species. A number of the plant species listed have the potential to occur directly within the study area and could be impacted by any vegetation removal.

Targeted surveys for Barn Swallow are recommended prior to commencing construction activities, as there is the potential that Barn Swallow could using any bridges or culverts within the study area as nesting habitat. These surveys should be performed by a qualified professional with experience identifying bird species and their nests.

SARB's information on file suggest that reaches of West Humber River should be considered occupied habitat for Redside Dace. Some additional information on the occurrences of Redside Dace can be found on the government of Canada's website here: https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/cosewic-assessments-status-reports/redside-dace-2017.html. However, please be aware that the Department of Fisheries and Oceans Canada is working to update their Recovery Strategy and Action Plan for Redside Dace which could provide some additional information on the occupation of streams.

There are Blanding's Turtle (BLTU) occurrences which are adjacent to the study area along the Humber Station Road. These occurrences trigger the habitat protection for Blanding's Turtle under the Endangered Species Act (ESA). Based on the descriptions of the habitat categories within the General Habitat Description (GHD) for BLTU any areas adjacent aquatic habitat would be considered either Category 2 or 3 BLTU habitat. There is also the potential that category 1 habitat (nests) could exist within the subject property. A copy of the GHD for BLTU has been attached to this email to assist with mapping of these different categories of habitat within the subject property.

Please note that MECP is not tasked with confirming non-SAR related information or reviewing aspects of the information request that fall outside of the ESA legislative requirements. I would recommend you reach out to the Ministry of Natural Resources and Forestry (MNRF) as they remain the ministry responsible for reviewing and confirming features like Significant Wildlife

Habitat and Provincially Significant Wetlands. The local conservation authority may also be able to provide information on non-SAR related features.

It is the responsibility of the proponent to ensure that SAR are not killed, harmed, or harassed, and that their habitat is not damaged or destroyed through the proposed activities to be carried out on the sites. If the proposed activities can not avoid impacting protected species and their habitats then the proponent will need to apply for a authorization under the Endangered Species Act.

Please be advised that it is also the proponent's responsibility to be aware of and comply with all other relevant provincial or federal legislation, municipal by-laws, or required approvals from other agencies.

Regards,

Shamus Snell
A/ Management Biologist
Species at Risk Branch
Ministry of the Environment, Conservation and Parks
Email: shamus.snell@ontario.ca

From: Courtney Beneteau <cbeneteau@rvanderson.com>
Sent: November 11, 2020 10:32 AM
To: Species at Risk (MECP) <SAROntario@ontario.ca>
Cc: Shun Cheung <shun.cheung@caledon.ca>; Winnie Wong <Winnie.Wong@rvanderson.com>; Andrew McGregor <AMcGregor@rvanderson.com>; John P. Does <jdoes@rvanderson.com>; Tisha Doucette <TDoucette@rvanderson.com>; Paul Mikoda <pmikoda@rvanderson.com>
Subject: 205421 - Information Request - Town of Caledon - Growth Related Roads 2023

Good morning,

This request is similar to the one sent yesterday afternoon, but please note that the project is different. Town of Caledon has retained R.V. Anderson Associates (RVA) to undertake a Class Environmental Assessment for proposed upgrades to sections of Willoughby Road (from Beachgrove Sideroad to Charleston Side Road), Mountainview Road (Charleston Side Road to Granite Stones Drive), and Humber Station Road (Castlederg Sideroad to Healey Road), as shown in the **Study Area Map** (attached). This project falls within the jurisdiction of Toronto Region Conservation Authority (TRCA) and Credit Valley Conservation (CVC) as well as the Ministry of the Environment, Conservation and Parks (MECP) Halton-Peel District, and the Ministry of Natural Resources and Forestry (MNRF) Aurora District.

RVA has undertaken a desktop review of the following information sources as pertains to the Study Area, as per the Natural Heritage Information Request Guide (MNRF, December 2018) and Draft Guide to Preliminary Screening for SAR (MECP, May 2019) including:

- Natural Heritage Information Center database (accessed via MNRF's Make-a-Map: Natural Heritage Areas application (NAD83 Atlas 1km squares: 17NJ9858, 17NJ9859, 17NJ0055, 17NJ0056, 17NJ0057, 17NJ8660, 17NJ8561, 17NJ8760, 17NJ8759, 17NJ8859, 17NJ8858, 17NJ8958, 17NJ7756, 17NJ8057);
- Fisheries and Oceans Canada (DFO) online aquatic Species at Risk mapping tool;
- Ontario Breeding Bird Atlas (OBBA) Archives (Atlas square: 17PJ05, 17NJ95, 17NJ85, 17NJ86, 17NJ75);
- Ontario Reptile and Amphibian Atlas (ORAA) (Atlas square: 17PJ05, 17NJ95, 17NJ85, 17NJ86, 17NJ75);
- AgMaps (drainage features and classifications);
- Ontario GeoHub (Aquatic resource area polygon segment);
- Ontario Butterfly Atlas; Moth Atlas (Atlas square: 17PJ05, 17NJ95, 17NJ85, 17NJ86, 17NJ75); and
- iNaturalist.

According to these records, 15 Species at Risk (SAR) and 10 Species of Special Concern (SOCC) were identified as potentially occurring within the vicinity of the Study Area, as well as 5 rare (S1-S3) species. Details regarding the records of these species, including their associated S-ranks and status under the Endangered Species Act are shown in **Table 1** (attached). Provincially recognized natural areas or other notable features that were identified in the Study Area including a Mixed Wader Nesting Colony, Humber River Natural Area, Speersville Provincially Significant Wetlands (PSW) Mono Mills-Caledon Meltwater Channels Earth Science ANSI, Greenbelt and Niagara Escarpment Plans NHS Area, Oak Ridges Moraine Conservation Plan-Core Area.

this time, we would like to request any natural heritage information that may be available in addition to those sources. We are particularly interested in the following information:

1) Aquatic habitat – watercourse names, thermal regime, important habitats (e.g., spawning), habitat sensitivity, barriers, in-water timing windows, water quality/quantity data, and groundwater discharge areas;
2) Wildlife information – rare/at-risk species, significant wildlife habitats, species lists/inventory data including fish, mussels, birds, reptiles, birds, amphibians, and insects;
3) Terrestrial habitat - Vegetation community information, including ELC mapping if available, and species lists/floral inventories;
4) Designated natural heritage features, such as ANSIs, PSWs, ESAs, Provincial Parks, Conservation Reserves and Wildlife Management Areas; and
5) Additional reports or management plants pertinent to the area (Natural Area Reports, EIS/EIA reports, etc.).

Please feel free to contact me if you have any questions or concerns with this request. A response to acknowledge your receipt of this email would be greatly appreciated.

Sincerely,
Courtney

RVA IS GROWING!

Our NEW Halton and Halifax offices are now open.

Courtney Beneteau, M.Sc.
Fisheries Biologist

P: (519) 681-9916 x.5039
C: (519) 819-2023

R.V. Anderson Associates Limited
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From: Snell, Shamus (MECP) <Shamus.Snell@ontario.ca>
Sent: Wednesday, September 29, 2021 8:31 AM
To: Natasha Welch <nwelch@rvanderson.com>
Cc: Courtney Beneteau <cbeneteau@rvanderson.com>
Subject: RE: MECP SARB: Aquatic SAR Follow-up - Town of Caledon Growth Related Roads 2022 & 2023 (205388 & 205421)

Hi Natasha,

The ARA is not regularly checked by biologist for accuracy of the information it contains nor are species regularly removed once they are added. A good example of this is the American Eel record which was identified for Centreville Creek (ARA Ident: AU-0411-HUM; OGF ID 127171314). The species record for this ARA segment states "Strange Find. May be only record" and lists the observation as occurring sometime in 1978. A further search does not turn up any more recent records of American Eel in adjacent ARA segments or do any other information sources. Given that this record is ~45 years old and the comments suggest it is unusual, it is unlikely to be a reliable occurrence. While it is possible for American Eel to migrate into inland streams many of their historic migration routes have been blocked preventing upstream migration. This fact combined by the age of the observation suggests it is unlikely that American Eel currently occupy the stream systems in this area. Having said that I still recommend carrying out fish community surveys to confirm American Eel continues to be absence from this stream. It is also worth noting that ARA segments are quite often not aligned with the official names and/or their correct locations that are assigned by The Ontario Geographic Names Board.

It appears that there has been a miss communication regard the occupied habitat intersecting the Willoughby Road. The known occupied habitat doesn't intersect the road here. The downstream occupied habitat ends at NAD 83 Zone 17T 580837 4850469 and then starts again at NAD 83 Zone 17T 581749 4856560.

I have Mill Street as being intersected by Roger's Creek at NAD 83 Zone 17T 586813 4844766 and can confirm is it historic habitat which is not afforded any protection under the Endangered Species Act.

The habitat regulation for Redside Dace states that contributing habitat is "v. a stream, permanent or intermittent headwater drainage feature, groundwater discharge area or wetland that augments or maintains the baseflow, coarse sediment supply or surface water quality of a part of a stream or other watercourse described in subparagraph i or ii, provided the part of the stream or watercourse has an average bankfull width of 7.5 metres or less."

In essence, if the watercourse in question has any contributing mechanism (wetlands, forested areas, spring activity) then is would be considered contributing habitat. It is up to the consultant to determine if there are any contributions to the occupied watercourse at **any time of year**. Contributing habitat receives the full protection of the habitat regulation

Regards,

Shamus Snell
A/ Management Biologist
Species at Risk Branch
Ministry of Environment, Conservation and Parks
Email: shamus.snell@ontario.ca

From: Natasha Welch <nwelch@rvanderson.com>
Sent: September 15, 2021 1:20 PM
To: Snell, Shamus (MECP) <Shamus.Snell@ontario.ca>
Cc: Courtney Beneteau <cbeneteau@rvanderson.com>
Subject: MECP SARB: Aquatic SAR Follow-up - Town of Caledon Growth Related Roads 2022 & 2023 (205388 & 205421)

Hi Shamus,

I hope you are doing well!

I'm reaching out regarding the Town of Caledon Growth Related Roads 2022 (205388) & 2023 (205421) projects. Courtney Beneteau (cc'd) had previously contacted you regarding aquatic SAR. I have attached your previous email chain, as well as our original information requests to provide context to my below inquiry.

I have included a map (attached) showing the watercourses associated with our roads of interest for your review. RVA was hoping MECP could verify if the identified watercourses function as SAR habitat for 5 of the 6 roads proposed for improvement, which includes Growth Related Roads 2022 (Mill St., Main St., and Kennedy Rd.) and 2023 (Mountainview Rd. and Willoughby Rd.). Please note this inquiry does not include Humber Station. Specifically, I was hoping you could clarify the following,

1. There appears to be a few discrepancies in the naming convention of Caledon Creek tributaries with regards to Willoughby Road and Kennedy Road. A few watercourses are called "Caledon Creek Tributary" by the ARA Point Layer that are tributaries of the Credit River, so we wanted to make sure we are all on the same page with what is regulated as Redside Dace Occupied/Contributing habitat. In the attached map, I have colour coded watercourses based on my current understanding, which assumes these tributaries of the Credit River do not function as Redside Dace Contributing habitat.
    a. Blue – Not aquatic SAR Habitat
    b. Red – Redside Dace Occupied
    c. Orange – Redside Dace Contributing

2. You mentioned in the attached email (MECP SARB: Redside Dace Occupancy) that “Roger’s Creek where it intersects Mill Street is considered part of the historic habitat of Redside Dace”, but Roger’s Creek does not appear to cross through our study area. Can you confirm if any of the watercourses that cross or abut our Mill Street study area function as existing or historic Redside Dace habitat. If historic Redside Dace habitat is present, can you confirm if it is regulated as Redside Dace habitat per O. Reg. 242/08 subsection 29.1 (2).
3. There was a record for American Eel identified in the species list we provided in our original request (205421 – Information Request). Can you confirm if Centreville Creek, which flows parallel to Mountainview Rd. towards the southern extent of our study area, supports American Eel. There are a couple culverts that contribute flow to Centreville Creek, which also happens to be less than 30 m from the road in certain locations. As you mentioned before, the ARA layers “were not designed or are intended to inform on the legislative requirements”; however, our American Eel record, which was pulled from this resource, was also identified by MNRF for Centreville Creek. NHIC did not identify records for American Eel within our study area.

On a closing note, I was also hoping MECP could provide some guidance on Redside Dace **contributing** habitat and its legislative requirements. Please let me know if you would prefer to set up a call to discuss. The “Guidance for Development Activities in Redside Dace Protected Habitat” does not specify what the restrictions are for work within and/or adjacent to Redside Dace contributing habitat, only that we can not impact downstream occupied habitat. My question is, is Redside Dace contributing habitat managed as aquatic SAR habitat as per O. Reg. 242/08 subsection 23.4 (i.e., only the lands within 30 m of a watercourse are afforded protection), or is only the watercourse itself regulated as habitat? If only the watercourse is regulated as habitat under the ESA, and not the riparian area, would the 100 m^2 of permissible damage/destruction of lands below the bankfull width still apply in this case? Or is this reach managed as sensitive habitat opposed to regulated habitat, and provided there are no downstream impacts to Redside Dace the area of impact can exceed 100 m^2 below the bankfull width without a permit provided we register the activity?

Thank you,

Natasha

Natasha Welch, B.Sc., CAN-CISEC
AQUATIC BIOLOGIST

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MEETING NOTES

THE CORPORATION OF THE TOWN OF CALEDON

GROWTH RELATED ROADS DETAILED DESIGN 2022 & 2023 (PHASE 2)
Town File No. 2020-97 & 2020-127

NEC Project Initiation Meeting

DATE: December 8, 2020 at 1:30pm

PLACE: Microsoft Teams Meeting

PROJECT NO.: R205388 & R205421

PRESENT:	Brandon Henderson	Niagara Escarpment Commission (NEC)
	Tisha Doucette	R.V. Anderson Associates Limited
	Andrew McGregor	R.V. Anderson Associates Limited
	Naomi Vaset	R.V. Anderson Associates Limited
	Winnie Wong	R.V. Anderson Associates Limited
DISTRIBUTED:	All present, and:	
	Shun Cheung	Town of Caledon (Town)
	John Does	R.V. Anderson Associates Limited
	Oliver Olberg	R.V. Anderson Associates Limited

DISCUSSION: **ACTION BY:**

1.0 Introduction Info

- RVA is undertaking two Caledon projects providing detailed design for six roads. Of the six roads, only Mountainview Rd and a section of Mill St (from Mississauga Rd to west of John St) are under NEC's jurisdiction
- Scope of work for both projects include pavement rehabilitation, shoulder pavement widening, and overall drainage improvements (culvert replacement, ditch cleanout/ regrading)
- NEC noted those areas not under development control and some classes of development are exempt from obtaining a Development Permit from the NEC
- The area west of the trail on Mill St will most likely require a Development Permit

2.0 Communication Info

- All communication to NEC will be addressed to Brandon Henderson
- NEC noted the current review timeline for Development Permit is 6 to 8 months, and advises to submit the application for review as early as possible

3.0 Information required

DISCUSSION:		**ACTION BY:**
3.1	Permit application to be submitted at 90% and should include details on the scope of work, grading limits and impacts. NEC noted there is no formal application guideline and a site plan will be required on the application	Info
3.2	NEC noted their Development Permit is required before other conservation authorities will issue their permit. NEC to forward RVA their exemption criteria (O.Reg 828/90, Section 4.3 and 4.4)	NEC
3.3	NEC advised RVA to work closely with the conservation authorities on drainage and environmental impact reviews, and cc NEC on the correspondence.	Info
3.4	NEC noted the focus of their review will be on tree removals and scenic/ visual impacts, and the associated mitigation measures. NEC will retain a landscape architect to evaluate visual impacts if swaths of trees are removed in the project.	Info
3.5	NEC noted the Development Permit does not allow work to be done on private property. Town is to be responsible for securing PTE/ easements for work outside of the road ROW.	Info
4.0	**NEC expectation**	
4.1	NEC noted the application should demonstrate the project is in compliance with the Endangered Species Act and that it is necessary and inevitable. The application needs to include identification of the ELC communities and screen SAR, similar to TRCA/ CVC application requirements.	Info
4.2	NEC noted the timing windows, ESC, mitigation measures will follow CVC/ TRCA's review. There is an OPSS standard for ESC fence that should be used in this project.	Info
4.3	RVA to contact Brandon for environmental impact statement (EIS) if required.	Info
5.0	**Project schedule**	
5.1	Based on the project schedule and required review periods, the NEC application will have to be submitted by September 2021 to be in time for 2022 construction.	Info
6.0	**Other Discussion**	
6.1	Nothing to report at this time	Info
	Next review meeting TBD.	

Notes prepared by: Winnie Wong

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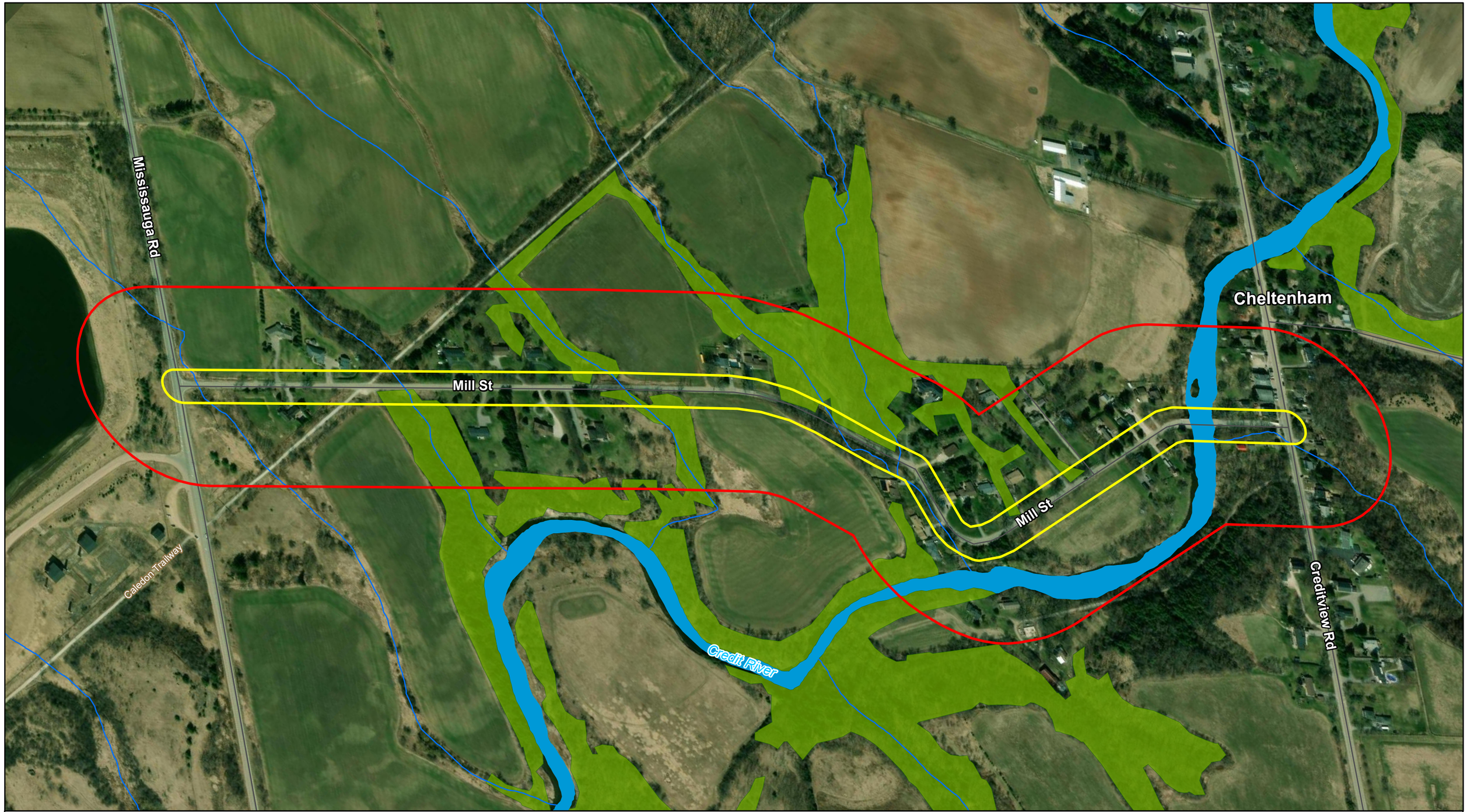
PLEASE ADVISE THE WRITER OF ANY ERRORS OR OMISSIONS WITHIN 1 WEEK OF RECEIPT OF THESE NOTES

Appendix C

Maps



Town of Caledon

Growth Related Roads Detailed Design 2022

Natural Environment Assessment Memo

Map 1: Study Area Overview

0 50 100 150 200 250 Meters

Scale: 1:5,000

Date: 2022-12-15	Page 1
RVA: 205388	Draft By: GE

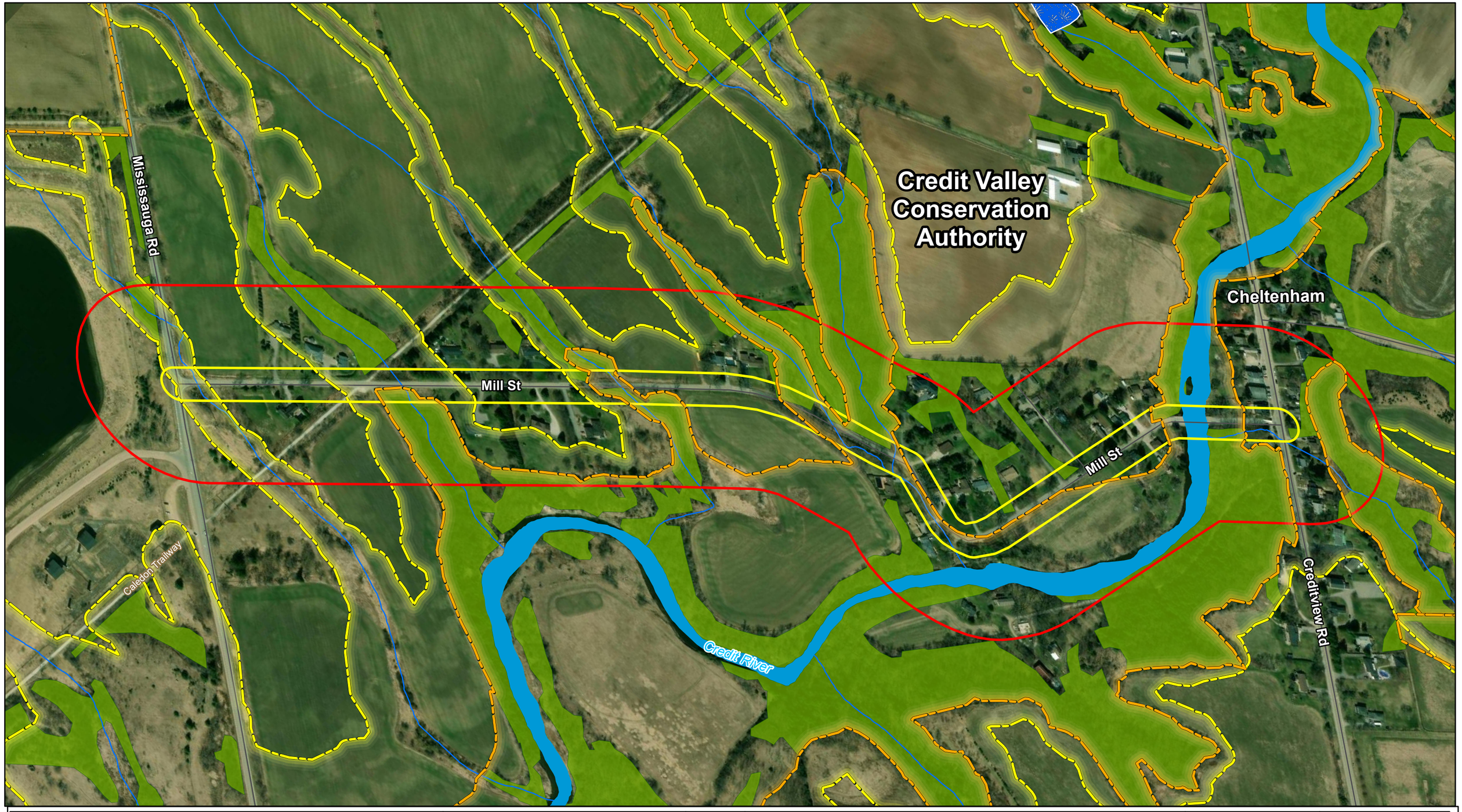
Legend

- Study Area (SA) ROW
- SA Adjacent Lands (120 m)
- Woodland
- Waterbody
- Watercourse
- Road

Data Sources: Town of Caledon, RVA, CVC, LIO, ESRI.

TOWN OF CALEDON

rva



Town of Caledon

Growth Related Roads Detailed Design 2022

Natural Environment Assessment Memo

Map 2: Overview of Natural Heritage Features and CVC Regulation Limits

0 50 100 150 200 250 Meters

Scale: 1:5,000

Date: 2022-12-16	Page 2
RVA: 205388	Draft By: GE

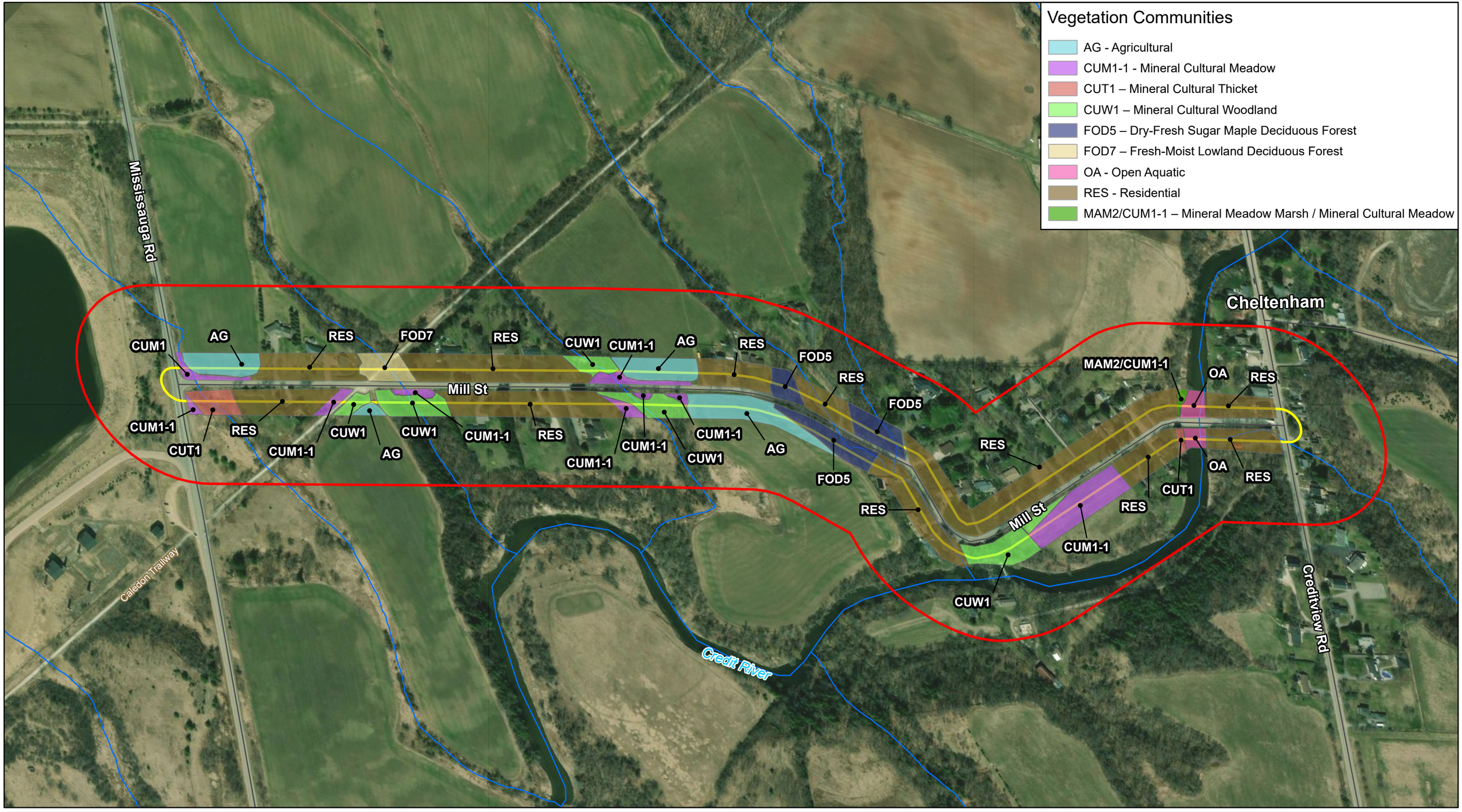
Legend

- Study Area (SA) ROW
- SA Adjacent Lands (120 m)
- Woodland
- Waterbody
- Wetland
- CVC Regulation Limit
- Natural Heritage System Area
- Watercourse
- Road

Data Sources: Town of Caledon, RVA, CVC, LIO, ESRI.

TOWN OF CALEDON

rva



Town of Caledon

Growth Related Roads Detailed Design 2022

Natural Environment Assessment Memo

Map 3: Vegetation Communities

0 50 100 150 200 250 Meters

Scale: 1:5,000

Date: 2022-12-21 | Page 3

RVA: 205388 | Draft By: GE

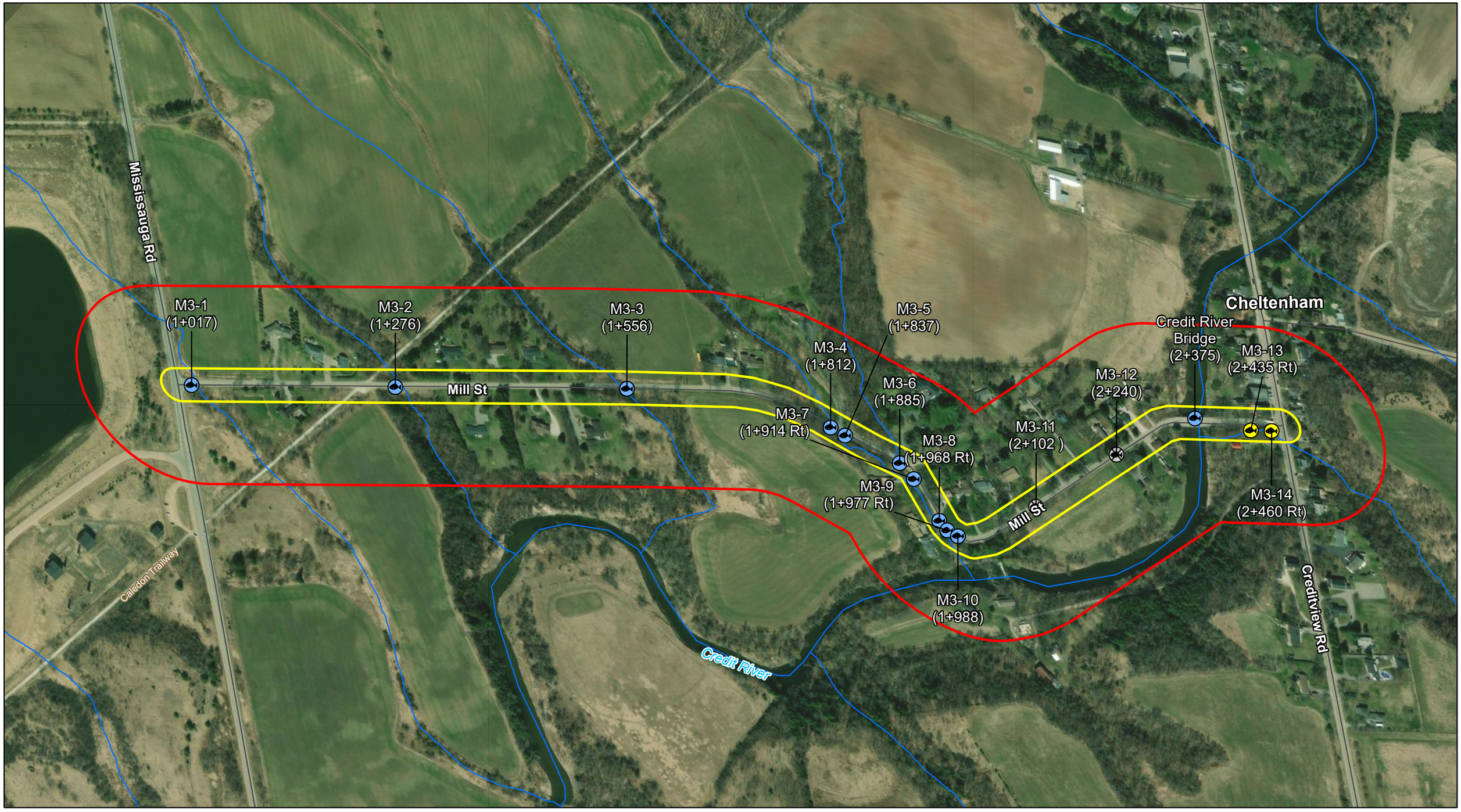
Legend

- Study Area (SA) ROW
- SA Adjacent Lands (120 m)
- Waterbody
- Watercourse
- Road

Data Sources: Town of Caledon, RVA, CVC, LIO, ESRI.

TOWN OF CALEDON

rva



Town of Caledon

Growth Related Roads Detailed Design 2022

Natural Environment Assessment Memo

Map 4: Aquatic Habitat and Culvert Locations

0 50 100 150 200 250 Meters

Scale: 1:5,000

Date: 2022-12-19	Page 4
RVA: 205388	Draft By: GE

Legend

- Study Area (SA) ROW
- SA Adjacent Lands (120 m)
- Waterbody
- Watercourse
- Road
- Direct Fish Habitat
- Indirect Fish Habitat
- Not Fish Habitat

Data Sources: Town of Caledon, RVA, CVC, LIO, ESRI.

TOWN OF CALEDON

rva

Appendix D

Photographic Record

1 – 20210826 – From Mississauga Road, by the M3-1 crossing, looking E along Mill St. with Ag to the left and CUT1 to the right.

2 – 20210826 – From the Mississauga Road E shoulder, looking SE along ditch through CUM1 towards M3-1 inlet, fire hydrant within view.

3 – 20210826 – S of Mill St. at the M3-1 crossing, looking N at culvert outlets.

4 – 20210826 – From the M3-1 outlets looking S at dry D/S channel.

5 – 20210826 – By the entrance to the Caledon Trailway Path, looking SW towards Mississauga Road. Residential properties within view.

6 – 20210826 – By entrance to the Caledon Trailway Path, looking NE along Mill St. across the M3-2 crossing with FOD7 to the left and CUW1 to the right.

7 – 20210826 – From Mill St. looking S towards CUW1 beside rail trail at the M3-2 crossing.

8 – 20210826 – N of Mill St. from the M3-2 inlet looking NW towards outlet of the U/S culvert.

9 – 20210826 – S of Mill St. looking SW at the perched M3-2 outlet overhanging the dry channel.

10 – 20210826 – From the M3-2 outlet looking SE at D/S channel towards accumulation of in-channel woody debris.

11 – 20210826 – Looking NE along Mill St. across the M3-3 crossing with RES proceeded by CUM1-1 to the left and CUW1 to the right.

12 – 20210826 – From Mill St. at the M3-3 inlet looking W at U/S reach.

13 – 20210826 – From Mill St. at the M3-3 outlet looking E at D/S reach.

14 – 20210826 – E of Mill St. looking W a M3-3 outlet from D/S reach.

15 – 20210826 – From M3-3 outlet, E of Mill St., looking E at D/S channel.

16 – 20210826 – Looking SW along Mill St. towards the M3-3 crossing with CUM1-1 and AG within view.

17 – 20210826 – From Mill St. just W of the M3-4 crossing looking S at FOD5 slope with Butternut.

18 – 20210826 – From Mill St. looking NW at watercourse extending to M3-4 culvert through private land that has been modified by landowner.

19 – 20210902 – From M3-4 inlet looking NW at U/S reach.

20 – 20210902 – N of Mill St. looking SE at M3-3 inlet with geotextile of failed silt fence extending into culvert. Water ahead of inlet trickling through culvert.

21 – 20210902 – S of Mill St. looking NW at M3-4 outlet.

22 – 20210902 – S of Mill St. by M3-4 outlet looking E at D/S regulated ditch through FOD5.

23 – 20210902 – N of Mill St. looking N at M3-5 inlet.

24 – 20210902 – S Mill St. within regulated ditch looking W (U/S) at M3-5 outlet within M3-4 D/S reach.

25 – 20210826 – By the M3-6 crossing, looking W at Mill St. along curve where FOD 5 borders roadway.

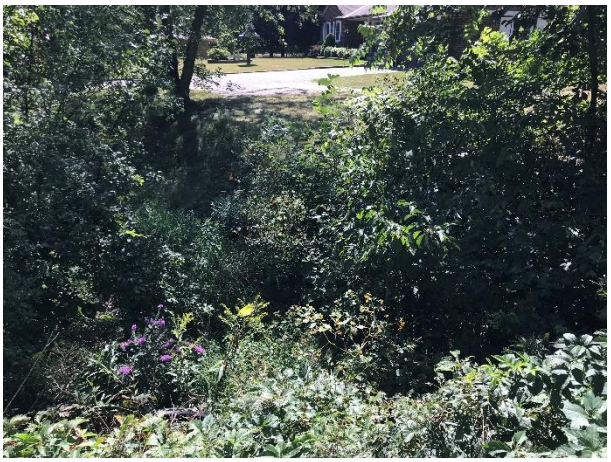
26 – 20210826 – By the M3-6 crossing, looking SE at Mill St. through the residential section of curve.

27 – 20210902 – N of Mill St. looking at the M3-6 inlets when crossing is dry.

28 – 20220412 – N of Mill St. looking at M3-6 inlets when crossing is wet. Note vegetation along road embankment has been cut.

29 – 20210902 – N of Mill St. looking N at M3-6 U/S reach when dry.

30 – 20220412 – N of Mill St. looking N at M3-6 U/S reach when wet. Note vegetation along road embankment has been cut.



31 – 20210902 – From M3-6 outlets looking SE when channel is dry. Note extensive vegetation around outlets.

32 – 20220412 – From M3-6 outlets looking SE when channel is flowing. Note vegetation along road embankment has been cut.

33 – 20210902 – E of M3-6, looking W at outlets when dry. Note extensive vegetation around outlets.

34 – 20220412 – E of M3-6, looking W at outlets when flowing. Note vegetation along road embankment has been cut.

35 – 20210902 – D/S of M3-7 crossing, looking U/S at outlets when dry.

36 – 20220412 – D/S of M3-7 crossing, looking U/S at outlets when flowing.

37 – 20210902 – From regulated ditch looking SE at M3-8 inlet when channel is dry.

38 – 20220412 – From regulated ditch looking SE at M3-8 inlet when channel is flowing.

39 – 20210902 – From the M3-9 outlet, looking SE at regulated ditch when dry.

40 – 20220412 – From the M3-9 outlet, looking SE at regulated ditch when flowing

41 – 20210902 – View of M3-10 catch basin on Mill St.

42 – 20210902 – View of M3-10 outlet along regulated ditch E bank, D/S of M3-9.

43 – 20210902 – E of Mill St. at the regulated ditch and Credit River confluence looking U/S at the wet channel, D/S of the M3-9 crossing.

44 – 20220412 – E of Mill St. at the regulated ditch and Credit River confluence looking SW at the wet channel and Credit River, D/S of the M3-9 crossing.

45 – 20220412 – E of Mill St. Looking at in-stream dam within the Credit River, U/S of ditch confluence.

46 – 20210826 – CUM1 and Residential looking south ahead the curve in Mill St.

47 – 20210826 – Mill Street, facing E, CUM1 on right.

48 – 20210826 – Mill St. facing W towards residential Butternut across from CUM1.

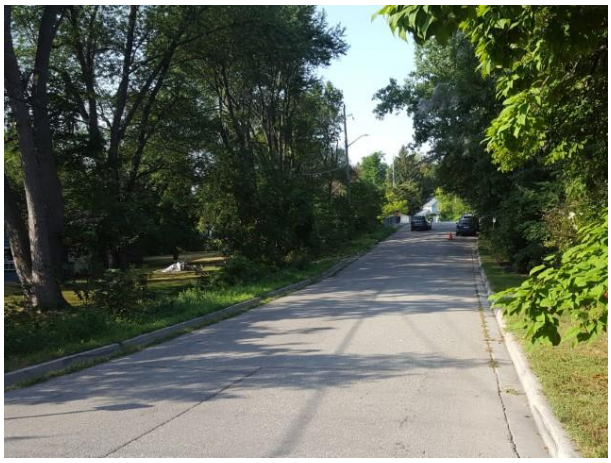
49 – 20210826 – From Mill St. between Mill St. Bridge Crossing and the regulated ditch, looking E at CUM1.

50 – 20210826 – Mill St. facing NE across Bridge crossing over Credit River.

51 – 20210826 – D/S of the Mill St. Bridge crossing over the Credit River, looking U/S.

52 – 20220412 – U/S of M3-13 culvert looking SW from ditch channel towards M3-13 inlet.

53 – 20220412 – U/S of M3-13 culvert looking NE at the M3-14 outlet.



54 – 20210826 – Mill St. facing SW from the Creditview Rd. and Mill St. intersection.

Appendix E

Species Lists

Table 1 – Floral Inventory

Common Name	Scientific Name	Provincial Status (S Rank)*	Endangered Species Act Status
Common Three-seeded Mercury	*Acalypha rhomboidea*	S5	-
Manitoba Maple	*Acer negundo*	S5	-
Norway Maple	*Acer platanoides*	SE5	-
Silver Maple	*Acer saccharinum*	S5	-
Sugar Maple	*Acer saccharum*	S5	-
Common Yarrow	*Achillea millefolium*	SE5?	-
Goutweed	*Aegopodium podagraria*	SE5	-
Horse Chestnut	*Aesculus hippocastanum*	SE2	-
White Snakeroot	*Ageratina altissima*	S5	-
Hooked Agrimony	*Agrimonia gryposepala*	S5	-
Creeping Bentgrass	*Agrostis stolonifera*	SE5	-
Northern Water-plantain	*Alisma triviale*	S5	-
Garlic Mustard	*Alliaria petiolata*	SE5	-
Cultivated Garlic	*Allium sativum*	SE2	-
Common Ragweed	*Ambrosia artemisiifolia*	S5	-
Downy Serviceberry	*Amelanchier arborea*	S5	-
Common Burdock	*Arctium minus*	SE5	-
Common Milkweed	*Asclepias syriaca*	S5	-
Spear Saltbush	*Atriplex patula*	SE5	-
Weeping Birch	*Betula pendula*	SE4	-
Devil's Beggarticks	*Bidens frondosa*	S5	-
Smooth Brome	*Bromus inermis*	SE5	-
Creeping Bellflower	*Campanula rapunculoides*	SE5	-
Trumpet Creeper	*Campsis radicans*	S2?[1]	-
Woodland Sedge	*Carex blanda*	S5	-
Slender Loose-flowered Sedge	*Carex gracilescens*	S4	-
Spiked Sedge	*Carex spicata*	SE5	-
Northern Catalpa	*Catalpa speciosa*	SE1	-
Common Mouse-ear Chickweed	*Cerastium fontanum*	SE5	-
Greater Celandine	*Chelidonium majus*	SE5	-
Maple-leaved Goosefoot	*Chenopodiastrum simplex*	S5	-
Common Lamb's-quarters	*Chenopodium album*	SE5	-

Common Name	Scientific Name	Provincial Status (S Rank)*	Endangered Species Act Status
Wild Chicory	*Cichorium intybus*	SE5	-
Broad-leaved Enchanter's Nightshade	*Circaea canadensis*	S5	-
Canada Thistle	*Cirsium arvense*	SE5	-
Bull Thistle	*Cirsium vulgare*	SE5	-
Virginia Clematis	*Clematis virginiana*	S5	-
European Lily-of-the-valley	*Convallaria majalis*	SE5	-
Field Bindweed	*Convolvulus arvensis*	SE5	-
Alternate-leaved Dogwood	*Cornus alternifolia*	S5	-
Red-osier Dogwood	*Cornus sericea*	S5	-
Dotted Hawthorn	*Crataegus punctata*	S5	-
Shining Flatsedge	*Cyperus bipartitus*	S5	-
Perennial Yellow Flatsedge	*Cyperus esculentus*	S5	-
Orchard Grass	*Dactylis glomerata*	SE5	-
Wild Carrot	*Daucus carota*	SE5	-
Northern Panicgrass	*Dichanthelium boreale*	S4	-
Wild Cucumber	*Echinocystis lobata*	S5	-
Autumn Olive	*Elaeagnus umbellata*	SE3	-
Quackgrass	*Elymus repens*	SE5	-
Virginia Wildrye	*Elymus virginicus*	S5	-
Northern Willowherb	*Epilobium ciliatum*	S5	-
Purple-veined Willowherb	*Epilobium coloratum*	S5	-
Field Horsetail	*Equisetum arvense*	S5	-
Annual Fleabane	*Erigeron annuus*	S5	-
Canada Horseweed	*Erigeron canadensis*	S5	-
Winged Euonymus	*Euonymus alatus*	SE2	-
Spotted Spurge	*Euphorbia maculata*	SE5	-
Grass-leaved Goldenrod	*Euthamia graminifolia*	S5	-
Purple Joe Pye Weed	*Eutrochium purpureum*	S4	-
American Beech	*Fagus grandifolia*	S4	-
Red Fescue	*Festuca rubra*	S5	-
Hard Fescue	*Festuca trachyphylla*	SE4	-
Weeping Forsythia	*Forsythia suspensa*	SE1	-
Wild Strawberry	*Fragaria virginiana*	S5	-

Common Name	Scientific Name	Provincial Status (S Rank)*	Endangered Species Act Status
White Ash	*Fraxinus americana*	S4	-
Red Ash	*Fraxinus pennsylvanica*	S4	-
Common Hemp-nettle	*Galeopsis tetrahit*	SE5	-
Smooth Bedstraw	*Galium mollugo*	SE5	-
Herb-Robert	*Geranium robertianum*	S5	-
Bloody Geranium	*Geranium sanguineum*	SE1	-
Large-leaved Avens	*Geum macrophyllum*	S5	-
Ground-ivy	*Glechoma hederacea*	SE5	-
Virginia Stickseed	*Hackelia virginiana*	S5	-
Common Sunflower	*Helianthus annuus*	SE4	-
Orange Daylily	*Hemerocallis fulva*	SE5	-
Dame's Rocket	*Hesperis matronalis*	SE5	-
Common St. John's-wort	*Hypericum perforatum*	SE5	-
Spotted Jewelweed	*Impatiens capensis*	S5	-
Sweet Iris	*Iris pallida*	SE1	-
Butternut	*Juglans cinerea*	S2?	Endangered
Black Walnut	*Juglans nigra*	S4?	
Path Rush	*Juncus tenuis*	S5	-
Prickly Lettuce	*Lactuca serriola*	SE5	-
Common Nipplewort	*Lapsana communis*	SE5	-
Everlasting Pea	*Lathyrus latifolius*	SE4	-
Rice Cutgrass	*Leersia oryzoides*	S5	-
Common Motherwort	*Leonurus cardiaca*	SE5	-
Giant Daisy	*Leucanthemella serotina*	SE1	-
Butter-and-eggs	*Linaria vulgaris*	SE5	-
European Gromwell	*Lithospermum officinale*	SE5	-
Perennial Ryegrass	*Lolium perenne*	SE4	-
Garden Bird's-foot Trefoil	*Lotus corniculatus*	SE5	-
Marsh Seedbox	*Ludwigia palustris*	S5	-
Northern Water-horehound	*Lycopus uniflorus*	S5	-
Fringed Yellow Loosestrife	*Lysimachia ciliata*	S5	-
Purple Loosestrife	*Lythrum salicaria*	SE5	-
Common Apple	*Malus pumila*	SE4	-
Common Mallow	*Malva neglecta*	SE5	-

Common Name	Scientific Name	Provincial Status (S Rank)*	Endangered Species Act Status
Pineappleweed	*Matricaria discoidea*	SE5	-
Ostrich Fern	*Matteuccia struthiopteris*	S5	-
Black Medick	*Medicago lupulina*	SE5	-
Canada Mint	*Mentha canadensis*	S5	-
Mexican Muhly	*Muhlenbergia mexicana*	S5	-
True Forget-me-not	*Myosotis scorpioides*	SE5	-
Watercress	*Nasturtium officinale*	SE	-
Catnip	*Nepeta cataria*	SE5	-
Common Evening-primrose	*Oenothera biennis*	S5	-
Upright Yellow Wood-sorrel	*Oxalis stricta*	S5	-
Virginia Creeper	*Parthenocissus quinquefolia*	S4?	-
Thicket Creeper	*Parthenocissus vitacea*	S5	-
Spotted Lady's-thumb	*Persicaria maculosa*	SE5	-
Japanese Sweet Coltsfoot	*Petasites japonicus*	SE1	-
Reed Canarygrass	*Phalaris arundinacea*	S5	-
Eastern Ninebark	*Physocarpus opulifolius*	S5	-
Norway Spruce	*Picea abies*	SE3	-
White Spruce	*Picea glauca*	S5	-
Blue Spruce	*Picea pungens*	SE1	-
Meadow Hawkweed	*Pilosella caespitosa*	SE5	-
Red Pine	*Pinus resinosa*	S5	-
Eastern White Pine	*Pinus strobus*	S5	-
English Plantain	*Plantago lanceolata*	SE5	-
Common Plantain	*Plantago major*	SE5	-
Canada Bluegrass	*Poa compressa*	SE5	-
Kentucky Bluegrass	*Poa pratensis*	S5	-
Prostrate Knotweed	*Polygonum aviculare*	S4?	-
Oval-leaved Knotweed	*Polygonum aviculare ssp. depressum*	SE5	-
Eastern Cottonwood	*Populus deltoides*	S5	-
Trembling Aspen	*Populus tremuloides*	S5	-
Common Self-heal	*Prunella vulgaris*	S5	-
Cherry Plum	*Prunus cerasifera*	SE1	-
Damson Plum	*Prunus domestica*	SE2	-

Common Name	Scientific Name	Provincial Status (S Rank)*	Endangered Species Act Status
Pin Cherry	*Prunus pensylvanica*	S5	-
Sand Cherry	*Prunus pumila*	S4	-
Black Cherry	*Prunus serotina*	S5	-
Common Lungwort	*Pulmonaria officinalis*	SE1	-
Common Pear	*Pyrus communis*	SE4	-
Northern Red Oak	*Quercus rubra*	S5	-
Common Buttercup	*Ranunculus acris*	SE5	-
Japanese Knotweed	*Reynoutria japonica*	SE5	-
European Buckthorn	*Rhamnus cathartica*	SE5	-
Staghorn Sumac	*Rhus typhina*	S5	-
Alpine Currant	*Ribes alpinum*	SE1	-
Eastern Prickly Gooseberry	*Ribes cynosbati*	S5	-
European Red Currant	*Ribes rubrum*	SE5	-
French Rose	*Rosa gallica*	SE1	-
Multiflora Rose	*Rosa multiflora*	SE5	-
Black Raspberry	*Rubus occidentalis*	S5	-
Black-eyed Susan	*Rudbeckia hirta*	S5	-
Brown-eyed Susan	*Rudbeckia triloba*	SE4	-
Curled Dock	*Rumex crispus*	SE5	-
Broad-leaved Arrowhead	*Sagittaria latifolia*	S5	-
(Salix babylonica X Salix euxina)	*Salix x pendulina*	SNA	-
Bouncing-bet	*Saponaria officinalis*	SE5	-
Purple Crown-vetch	*Securigera varia*	SE5	-
Yellow Foxtail	*Setaria pumila*	SE5	-
Bittersweet Nightshade	*Solanum dulcamara*	SE5	-
Tall Goldenrod	*Solidago altissima*	S5	-
Canada Goldenrod	*Solidago canadensis*	S5	-
Zigzag Goldenrod	*Solidago flexicaulis*	S5	-
Grey-stemmed Goldenrod	*Solidago nemoralis*	S5	-
Rough-stemmed Goldenrod	*Solidago rugosa*	S5	-
Field Sow-thistle	*Sonchus arvensis*	SE5	-
(Spiraea cantoniensis X Spiraea trilobata)	*Spiraea x vanhouttei*	SNA	-
Sheathed Dropseed	*Sporobolus vaginiflorus*	S5	-

Common Name	Scientific Name	Provincial Status (S Rank)*	Endangered Species Act Status
Heart-leaved Aster	*Symphyotrichum cordifolium*	S5	-
White Heath Aster	*Symphyotrichum ericoides var. ericoides*	S5	-
Panicled Aster	*Symphyotrichum lanceolatum*	S5	-
Calico Aster	*Symphyotrichum lateriflorum var. lateriflorum*	S5	-
New England Aster	*Symphyotrichum novae-angliae*	S5	-
Old Field Aster	*Symphyotrichum pilosum*	S5	-
Arrow-leaved Aster	*Symphyotrichum urophyllum*	S4	-
Common Comfrey	*Symphytum officinale*	SE5	-
Japanese Tree Lilac	*Syringa reticulata*	SE1	-
Common Lilac	*Syringa vulgaris*	SE5	-
Common Dandelion	*Taraxacum officinale*	SE5	-
Canada Yew	*Taxus canadensis*	S4	-
Eastern White Cedar	*Thuja occidentalis*	S5	-
Basswood	*Tilia americana*	S5	-
Little-leaved Linden	*Tilia cordata*	SE1	-
Virginia Spiderwort	*Tradescantia virginiana*	SE1	-
Red Clover	*Trifolium pratense*	SE5	-
White Clover	*Trifolium repens*	SE5	-
Scentless Chamomile	*Tripleurospermum inodorum*	SE	-
Coltsfoot	*Tussilago farfara*	SE5	-
Broad-leaved Cattail	*Typha latifolia*	S5	-
White Elm	*Ulmus americana*	S5	-
Stinging Nettle	*Urtica dioica*	S5	-
Common Mullein	*Verbascum thapsus*	SE5	-
White Vervain	*Verbena urticifolia*	S5	-
Water Speedwell	*Veronica anagallis-aquatica*	SE	-
Nannyberry	*Viburnum lentago*	S5	-
Highbush Cranberry	*Viburnum opulus ssp. trilobum var. americanum*	S5	-
Lesser Periwinkle	*Vinca minor*	SE5	-
Summer Grape	*Vitis aestivalis*	S4	-
Riverbank Grape	*Vitis riparia*	S5	-

Common Name	Scientific Name	Provincial Status (S Rank)*	Endangered Species Act Status
Rough Cockleburr	*Xanthium strumarium*	S5	-

** S Rank: S5 – Secure, S4 – Apparently secure, S3 – Vulnerable, S2 – Imperiled, S1 – Critically imperiled*
*** County Rank: I – Introduced, C – Common, U – Uncommon, R – Rare, H – Historic, X – Present, ? – Unconfirmed report, hyb – Hybrid*
[1] – planted specimen

Table 2 – Incidental Terrestrial Wildlife

Common Name	Scientific Name	Provincial Status (S Rank)*	Endangered Species Act Status
Birds			
American Crow	*Corvus brachyrhynchos*	S5	-
American Goldfinch	*Spinus tristis*	S5	-
Baltimore Oriole	*Icterus galbula*	S4	-
Black-capped Chickadee	*Poecile atricapillus*	S5	-
Belted Kingfisher	*Megaceryle alcyon*	S4	-
Blue Jay	*Cyanocitta cristata*	S5	-
Downy Woodpecker	*Dryobates pubescens*	S5	-
Eastern Wood-pewee	*Contopus virens*	S4	Special Concern
European Starling	*Sturnus vulgaris*	N/A	-
Grey Catbird	*Dumetella carolinensis*	S5	-
House Wren	*Troglodytes aedon*	S5	-
Killdeer	*Charadrius vociferus*	S4	-
Mourning Dove	*Zenaida macroura*	S5	-
Northern Cardinal	*Cardinalis cardinalis*	S5	-
Northern Flicker	*Colaptes auratus*	S5	-
Red-bellied Woodpecker	*Melanerpes carolinus*	S5	-
Ruby-throated Hummingbird	*Archilochus colubris*	S5	-
Song Sparrow	*Melospiza melodia*	S5	-
Turkey Vulture	*Cathartes aura*	S3	-
White-breasted Nuthatch	*Sitta carolinensis*	S5	-
Herpetiles			
Gray Treefrog	*Hyla versicolor*	S5	-
Invertebrates			
Cabbage White	*Pieris rapae*	Exotic	-
Mammals			
Eastern Chipmunk	*Tamias striatus*	S5	-
Eastern Gray Squirrel	*Sciurus carolinensis*	S5	-
Raccoon	*Procyon lotor*	S5	-
Red Squirrel	*Sciurus vulgaris*	S5	-

** S Rank: S5 – Secure, S4 – Apparently secure, S3 – Vulnerable, S2 – Imperiled, S1 – Critically imperiled, SNA – Non-native*

Appendix F

Summary of Fish and Fish Habitat

Table 1. Summary of Existing Fish and Fish Habitat Along Mill Street

Culvert ID (Station)	Flow Regime	Thermal Regime	Fish Habitat	Substrate Type	Channel Morphology	Vegetation	Constraints & Opportunities	Significant Fish Habitat	Fish Species Present
M3-1 (1+017) Credit River Tributary / Roadside Ditch	Intermittent – *dry at time of investigation*	Cold[1] Warm[2]	*Direct* – Seasonal, under bankful conditions	<u>Upstream</u> Vegetation <u>Downstream</u> *Pool*: Cobble, Gravel, Sand, Silt, Clay, Detritus *Other:* Cobble, Gravel, Boulders, Silt, Clay, Detritus	<u>Upstream</u> Vegetated Swale <u>Downstream</u> Pool at outlet narrows into a defined channel with prominent banks as it extends downstream	<u>In-Stream</u> N/A - Dry <u>Riparian</u> Reed Canary Grass, Goldenrod, Thicket Creeper, Wild Carrot, Riverbank Grape, Coltsfoot, Staghorn Sumac	Managed to support small warmwater fish community, and drains to the Credit River, which is managed as a mixed cool/cold water community, therefore, all work below the highwater mark is restricted to the June 15 to September 15 timing window, per CVC guidelines, to protect fall and spring spawners. The watercourse is mapped as a CVC regulated ditch, and a permit from CVC will be required to undertake work at this location. Opportunity to embed culverts, improving fish passage, if structures are replaced.	None, but contributes inputs to Credit River downstream	Small warmwater fish community[2] *Fish records for the Credit River Confirmed by MNRF:*[3] American Brook Lamprey (*Lethenteron appendix*), Atlantic Salmon (*Salmo salar*), Blacknose Dace (*Rhinichthys obtusus*), Bluntnose Minnow (*Pimephales notatus*), Brassy Minnow (*Hybognathus hankinsoni*), Brook Trout (*Salvelinus fontinalis fontinalis*), Brown Bullhead (*Ameiurus nebulosus*), Brown Trout (*Salmo trutta*), Carps and Minnows, Common Shiner (*Luxilus cornutus*), Creek Chub (*Semotilus atromaculatus*), Fantail Darter (*Etheostoma flabellare*), Fathead Minnow (*Pimephales promelas*), Golden Shiner (*Notemigonus crysoleucas*), Hornyhead Chub (*Nocomis biguttatus*), Iowa Darter (*Etheostoma exile*), Johnny Darter (*Etheostoma nigrum*), Largemouth Bass (*Micropterus salmoides*), Longnose Dace (*Rhinichthys cataractae*), Mottled Sculpin (*Cottus bairdii*), North American Catfishes, Northern Hog Sucker (*Hypentelium nigricans*), Northern Redbelly Dace (*Chrosomus eos*), Perches, Pumpkinseed (*Lepomis gibbosus*), Rainbow Darter (*Etheostoma caeruleum*), Rainbow Trout (*Oncorhynchus mykiss*), River Chub (*Nocomis micropogon*), Rock Bass (*Ambloplites rupestris*), Sculpins, Smallmouth Bass (*Micropterus dolomieu*), Stonecat (*Noturus flavus*), Suckers, White Sucker (*Catostomus commersonii*)
M3-2 (1+276) Credit River Tributary	Intermittent – *dry at time of investigation*	Cold[1] Warm[2]	<u>Upstream/ Culvert</u> *Indirect* – No upstream fish passage due to perched culvert <u>Downstream</u> *Direct* – Seasonal,	<u>Upstream</u> Cobble, Gravel, Silt, Sand, Clay <u>Downstream</u> Cobble, Boulders, Silt, Sand, Clay, Detritus	<u>Upstream</u> Pooling water between culverts <u>Downstream</u> Deep pool at outlet that narrows into a defined channel experiencing low flow conditions	<u>In-Stream</u> N/A - Dry <u>Riparian</u> Common jewelweed, Riverbank Grape, Staghorn Sumac, Norway Maple	Managed to support small warmwater fish community, and drains to the Credit River, which is managed as a mixed cool/cold water community, therefore, all work below the highwater mark is restricted to the June 15 to September 15 construction timing window, per CVC guidelines, to protect fall and spring spawners.	While no significant fish habitat was identified, CVC has mapped watercourse as having a high priority for fish	Small warmwater fish community – CVC[2] *Refer to M3-1 for fish records within the Credit River

Culvert ID (Station)	Flow Regime	Thermal Regime	Fish Habitat	Substrate Type	Channel Morphology	Vegetation	Constraints & Opportunities	Significant Fish Habitat	Fish Species Present
			under bankful conditions				The watercourse is mapped as regulated, and a permit from CVC will be required to undertake work at this location. Opportunity to remove garbage within the upstream reach and improve quality of habitat within downstream channel by addressing erosion issues.		
M3-3 (1+556) Credit River Tributary	<u>Upstream</u> Intermittent – *no flow at time of investigation* <u>Downstream</u> Permanent	Cold[1] Warm[2]	*Direct* – Seasonal, under bankful conditions	<u>Upstream</u> Gravel, Sand, Silt <u>Downstream</u> *Pool*: Sand, Silt, Clay, Detritus *Other*: Gravel, Sand Detritus, Cobble, Silt, Boulders	<u>Upstream</u> Pooling water at culvert inlet; however, no flow throughout upstream reach due to low flow conditions <u>Downstream</u> Outlet pool collects flow from culvert. Channel narrows beyond ROW	<u>In-Stream</u> Common jewelweed, Purple Loosestrife <u>Riparian</u> Common jewelweed, Goldenrod, Thicket Creeper, River Grape Vine, Asters, Grasses, Reed Canary Grass, Virginia Wild Rye, Smooth Brome, Silky Dogwood, Manitoba Maple, Black Walnut, Wood Sorrel, Honey Suckle, Agrimony, Bur Marigold, Fleabane	Managed to support small warmwater fish community, and drains to the Credit River, which is managed as a mixed cool/cold water community, therefore, all work below the highwater mark is restricted to the June 15 to September 15 construction timing window, per CVC guidelines, to protect fall and spring spawners. The watercourse is mapped as regulated, and a permit from CVC will be required to undertake work at this location. Area of groundwater input (seep) in upstream channel ahead of the inlet. Opportunity to embed culvert to improve fish passage if structure is replaced.	N/A	Small warmwater fish community – CVC[2] *Refer to M3-1 for fish records within the Credit River
M3-4 (1+812) Credit River Tributary / Roadside Ditch	Intermittent	Cold[1] Warm[2]	*Direct* – Seasonal, under bankful conditions	<u>Upstream</u> Silt, Gravel, Cobble, Boulders, Sand <u>Downstream</u> Cobble, Boulders, Silt, Gravel, Sand, Clay	<u>Upstream</u> Dry vegetated ditch leading to culvert with water pooling at inlet <u>Downstream</u> Dry ditch with areas of pooling water throughout	<u>In-Stream</u> N/A – Dry <u>Riparian</u> Common Jewelweed, Goldenrod, Virginia Creeper, River Grape Vine, Reed Canary Grass, Forget-Me-Not, Colts Foot, Spotted Lady's Thumb, Multi Flora Rose, Red Osier Dogwood, Manitoba	Managed to support small warmwater fish community, and drains to the Credit River, which is managed as a mixed cool/cold water community, therefore, all work below the highwater mark is restricted to the June 15 to September 15 construction timing window, per CVC guidelines, to protect fall and spring spawners. The watercourse is regulated, and a permit from CVC will be required to undertake work at this location.	Contributes to significant fish habitat downstream	*Fish species recorded in 1999 within downstream reach / regulated ditch:* Blacknose Dace, Bluntnose Minnow, Brown Trout, Common Shiner, Creek Chub, Fantail Darter, Johnny Darter, Longnose Dace, Mottled Sculpin, Northern Hog Sucker, Northern Redbelly Dace, Rainbow Darter, Stonecat, White Sucker

Culvert ID (Station)	Flow Regime	Thermal Regime	Fish Habitat	Substrate Type	Channel Morphology	Vegetation	Constraints & Opportunities	Significant Fish Habitat	Fish Species Present
						Maple, Black Walnut, Sugar Maple	Due to landowner having recently undertaken work within upstream reach, prior to site visit, channel has been recently altered, which may have suppressed the productivity of the aquatic habitat increasing its sensitivity. Opportunity to remove geotextile and failed silt fence from upstream channel and to stabilize exposed road embankments around culvert inlet and outlet. If culvert is replaced, embed new structure.		
M3-5 (1+837) Roadside Drainage	None – *Recent drainage modeling indicates the culvert does not convey flow; culvert dry at time of investigation*	N/A	*Indirect* – In event the culvert conveys ephemeral flow, the culvert should be treated as indirect fish habitat *Direct* – Culvert outlet is situated within bank of regulated ditch (downstream reach of M3-4 channel), below the highwater mark, and therefore is located within direct fish habitat	N/A	N/A	N/A	Because culvert outlets to the downstream reach of the M3-4 channel, the timing window identified for the M3-4 culvert applies, which restricts work to the June 15 to September 15 construction timing window, per CVC guidelines, to protect fall and spring spawners. The downstream watercourse is regulated, and a permit from CVC will be required to undertake work at this location. Opportunity to remove structure if culvert is not conveying flow.	Outlet within regulated ditch that contributes to significant fish habitat downstream	N/A
M3-6 (1+885) Credit River Tributary / Roadside Ditch	Intermittent	Cold[1] Warm[2]	*Direct* – Seasonal, under bankful conditions	<u>Upstream</u> Boulders, Cobble, Gravel, Sand, Silt, Detritus <u>Downstream</u> Clay overlaid by gravel before	<u>Upstream</u> Dry channel due to low flow conditions extending through wooded area	<u>In-Stream</u> While dry, watercress was present in channel at the outlet <u>Riparian</u> Common Jewelweed, Purple Loosestrife, Goldenrod, Thicket	Managed to support small warmwater fish community, and drains to the Credit River, which is managed as a mixed cool/cold water community, therefore, all work below the highwater mark is restricted to the June 15 to September 15 construction timing window, per CVC guidelines, to protect fall and spring spawners.	Contributes to significant fish habitat downstream	*Fish species recorded in 1999 within regulated ditch:* Blacknose Dace, Bluntnose Minnow, Brown Trout, Common Shiner, Creek Chub, Fantail Darter, Johnny Darter, Longnose Dace, Mottled Sculpin, Northern Hog Sucker, Northern Redbelly Dace, Rainbow Darter, Stonecat, White Sucker

Culvert ID (Station)	Flow Regime	Thermal Regime	Fish Habitat	Substrate Type	Channel Morphology	Vegetation	Constraints & Opportunities	Significant Fish Habitat	Fish Species Present
				transitioning into vegetated ditch	<u>Downstream</u> Channel transitions into vegetated road ditch	Creeper, River Grape Vine, Reed Canary Grass, Forget-Me-Not, Colts Foot, Mint, Multi Flora Rose, Alternate-leaved Dogwood, Buckthorn, Manitoba Maple, Black Walnut, Sugar Maple, Elm	The watercourse is regulated, and a permit from CVC will be required to undertake work at this location. Opportunity to remove accumulation of woody debris at inlets to improve flow through culverts. If culverts are replaced, embed new structures.		
M3-7 to M3-9 (1+914 Rt to 1+977 Rt) Credit River Tributary / Roadside Ditch	Intermittent	Cold[1] Warm[2]	*Direct* – Seasonal, under bankful conditions	Boulders, Cobble, Silt, Clay, Gravel, Sand	Dry vegetated ditch with some erosion present along banks. Channel conveyed under three driveways as it extends towards the Credit River downstream. Downstream of the M3-9 culverts the ditch transitions into a wet channel ahead of the Credit River confluence.	<u>In-Stream</u> N/A – Dry <u>Riparian</u> Common Jewelweed, Purple Loosestrife, Goldenrod, Water Forget-Me-Not, Colts Foot, Asters, Virginia Creeper, Spotted Joe Pye Weed, Queen Ann's Lace, Stinging Nettle, Ragweed, Goutweed, Jerusalem Artichoke, Manitoba Maple, Black Walnut, Weeping Willow, Sugar Maple	Managed to support small warmwater fish community, and drains to the Credit River, which is managed as a mixed cool/cold water community, therefore, all work below the highwater mark is restricted to the June 15 to September 15 construction timing window, per CVC guidelines, to protect fall and spring spawners. The watercourse is regulated, and a permit from CVC will be required to undertake work at this location. Opportunity to improve inputs to Credit River by stabilizing areas of erosion and planting riparian trees to provide more shade to the channel. The wooden foot bridge north of the M3-8 culvert could also be removed from the channel. If culverts are replaced, embed new structures that do not function as overflow culverts.	Contributes to significant fish habitat downstream	*Fish species recorded by CVC between 1999 and 2011 within the Credit River in the vicinity of ditch confluence:* American Brook Lamprey, Atlantic Salmon, Bluntnose Minnow, Brassy Minnow, Brown Bullhead, Brown Trout, Common Shiner, Creek Chub, Fantail Darter, Fathead Minnow, Golden Shiner, Hornyhead Chub, Iowa Darter, Johnny Darter, Largemouth Bass, Longnose Dace, Minnow Family, Mottled Sculpin, Northern Hog Sucker, Northern Redbelly Dace, Pumpkinseed, Rainbow Darter, Rainbow Trout, River Chub, Rock Bass, Smallmouth Bass, Stonecat, Western Blacknose Dace, White Sucker
M3-10 (1+988)	Ephemeral – *Dry at time of investigation*	Warm	*Direct* – Culvert outlet is situated within bank of regulated ditch (downstream reach of M3-9 channel), below the highwater mark, and therefore is located within	N/A	Culvert receives flow from road catch basin and discharges into the downstream reach of the M3-9 channel	N/A	Because culvert discharges into the downstream reach of the M3-9 channel, the timing window identified for the M3-9 culvert applies, which restricts work to the June 15 to September 15 construction timing window, per CVC guidelines, to protect fall and spring spawners. The downstream watercourse is regulated, and a permit from CVC	Contributes to significant fish habitat downstream	N/A

Culvert ID (Station)	Flow Regime	Thermal Regime	Fish Habitat	Substrate Type	Channel Morphology	Vegetation	Constraints & Opportunities	Significant Fish Habitat	Fish Species Present
			direct fish habitat.				will be required to undertake work at this location.		
Mill Street Bridge (2+375) Credit River	Permanent	Cold	Direct	Boulders, cobble, gravel, and sand throughout, with sand, gravel, and clay in pool areas. Gravel dominated flat areas and thick silt had accumulated along right upstream bank. Clay and detritus were also noted below bridge	Large watercourse dominated by runs with riffle and pool areas present throughout reach at bridge crossing. Downstream, an old dam is present immediately upstream of the regulated ditch (M3-4 to M3-10) confluence	<u>In-Stream</u> Watercress, Curly Leaved Pond Weed, Pond water starwort, Water Purslane, Blue Water Speedwell, Arrowhead, Water Forget-Me-Not <u>Riparian</u> Cattail, Spotted Joe Pye Weed, Yellow Cone Flower, Smartweed, Jewelweed, Spotted Lady's Thumb, Common Boneset, Queen Ann's Lace, Stinging Nettle, Reed Canary Grass, Goldenrod, Alternate Leaved Dogwood, Black Walnut, Manitoba Maple, Weeping Willow	The Credit River is managed as a mixed cool/cold water system, therefore, all work below the highwater mark is restricted to the June 15 to September 15 construction timing window, per CVC guidelines, to protect fall and spring spawners. The Credit River is a regulated watercourse, and a permit from CVC is required to undertake work within the vicinity of this watercourse.	The Credit River provides spawning, nursery, rearing, feeding, and migratory fish habitat for a wide variety of cool and coldwater species	Mixed cool/cold water fish community *Refer to M3-1 for fish records within the Credit River
M3-13 (2+435 Rt) Roadside Ditch	Ephemeral	Warm	Indirect	Cobble lines the upstream reach, while cobble, boulders, woody debris, and detritus were present within the downstream channel	The channel is a roadside ditch that conveys flow down a steep gradient to the Credit River	<u>Riparian</u> Maintained lawn, grasses, coniferous and deciduous trees on private property.	Drains to the Credit River, which is managed as a mixed cool/cold water community, therefore, all work below the highwater mark is restricted to the June 15 to September 15 construction timing window, per CVC guidelines, to protect fall and spring spawners.	Contributes to significant fish habitat downstream	N/A
M3-14 (2+460 Rt) Roadside Ditch	Ephemeral	Warm	Indirect	Cobble lined ditch channel, with boulders noted throughout	Channel is a cobble lined roadside ditch that daylights within Study Area	<u>Riparian</u> Maintained lawn, grasses, coniferous and deciduous trees on private property.	Drains to the Credit River, which is managed as a mixed cool/cold water community, therefore, all work below the highwater mark is restricted to the June 15 to September 15 construction timing window, per CVC guidelines, to protect fall and spring spawners.	Contributes to significant fish habitat downstream	N/A

[1] Thermal regime provided by MNRF

[2] Thermal regime identified by the CVC Hydrologic Network (2022) Layer

[3] Species indicated in the MNRF correspondence but not identified by the ARA layer (initial data request contained information for all three 2022 Growth Related Roads as indicated in Table 1.1 of the main document): Brook Stickleback (*Culaea inconstans*), Central Mudminnow (*Umbra limi*), Goldfish (*Carassius auratus*), Johnny Darter x Tesselated Darter, Lampreys, Northern Brook Lamprey (*Ichthyomyzon fossor*), Redside Dace (*Clinostomus elongatus*), Sea Lamprey (*Petromyzon marinus*), Slimy Sculpin (*Cottus cognatus*), Spottail Shiner (*Notropis hudsonius*).

Table 2. Water Quality for Fish Bearing Watercourses Along Mill Road Taken on August 26 and September 2, 2021, where water was present

	M3-3 (1+556)		M3-10 (1+988)		Mill Street Bridge (2+375)	
Parameter	**Upstream**	**Downstream**	**Upstream**	**Downstream (Confluence)**	**Upstream**	**Downstream**
Temperature (°C)	-	16.7	-	18.7	21.9	22
pH	-	8.09	-	8.42	8.38	8.34
Conductivity (µS/cm)	-	777	-	642	695	694
Dissolved Oxygen (mg/L)	-	8.5	-	9.16	8.80	9.54
Air Temperature (°C)		31		22	29	29