

**APPENDIX B**

**SPECIES AT RISK ASSESSMENT**



August 9, 2020

2364A

Kelly Vader  
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**RE: Paisley Bridge Replacement – Teeswater River Species at Risk Habitat Assessment**

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Natural Resource Solutions Inc. (NRSI) was retained by BM Ross and Associates Ltd. to undertake a Species at Risk (SAR) habitat assessment associated with the proposed replacement of the existing Teeswater River BR3 Bridge and temporary bridge structure in Paisley, Ontario, Bruce Count. See Map 1 for the bridge and study area location.

Background information review and a field survey was completed to characterize the existing natural features and assess the presence of SAR habitat within the study area.

This section of the Teeswater River, where the bridge crossing is located, has been identified by Fisheries and Oceans Canada (DFO) as containing (or potentially containing) Rainbow (*Villosa iris*) (DFO Aquatic SAR Mapping 2019). Although Rainbow is listed as Special Concern both provincially and federally, an aquatic habitat assessment was completed that included a general assessment of suitable mussel habitat with a focus specifically on mussel SAR. A Scientific Collector's Permit was obtained from the Midhurst District Ministry of Natural Resources and Forestry (MNRF) (License #1095885). This permit was required in order to pick up live mussel specimens for identification.

Potential for terrestrial SAR habitat presence was also assessed as part of this study, including an investigation of potential Barn Swallow (*Hirundo rustica*) nesting under the existing bridge.

This memo report summarizes the methods and results of the SAR assessment undertaken for the study area. These results are discussed below in the context of Ontario's *Endangered Species Act* (ESA) and the federal *Species at Risk Act* (SARA), with anticipated next steps and requirements to meet Ontario Ministry of Environment, Conservation and Parks (MECP) and DFO policies for the protection of observed SAR and their habitats. This report can also be used to help inform the assessment and/or Request for Review under the *Fisheries Act*. This memorandum identifies construction-related mitigation measures which are intended to minimize potential impacts to the identified features, including the Teeswater River.

## Study Area

For the purposes of this report, the study area encompasses the bridge location, proposed temporary replacement bridge, and those lands immediately upstream and downstream of these structures (Map 1). The right-of-way areas approaching the existing and proposed bridges are also considered part of the study area.

This SAR habitat assessment separates species and their habitats which occur within the right-of-way (ROW) and have the greatest potential to be impacted from those which are adjacent to the ROW within the surrounding natural features.

The study area is located in Paisley, Ontario from downstream of the confluence of the Teeswater River and the Saugeen River, to upstream of the existing bridge on BR3. Both the existing bridge and the site of the temporary bridge are located on the Teeswater River.

### **Background Review and Species at Risk Screening**

SAR include species identified by the Committee on the Status of Species at Risk in Ontario (COSSARO) as provincially Endangered or Threatened (MNRF 2019a). Species listed as Endangered or Threatened are protected under the ESA, which includes protection to their habitat. Herein, for the purposes of this report, Endangered and Threatened species are referred to as “regulated SAR”.

Species considered Special Concern are included in the definition of Species of Conservation Concern (SCC), which includes the following:

- species designated provincially as Special Concern,
- species that have been assigned a conservation status (S-Rank) of S1 to S3 or SH by the Natural Heritage Information Centre (NHIC), and
- species that are designated federally as Threatened or Endangered by the Committee for the Status of Endangered Wildlife in Canada (COSEWIC) but not provincially by the COSSARO.

SAR also include those listed on the SARA (Government of Canada 2019). The species identified as Endangered and Threatened on Schedule 1 receive protection, including their habitat on federally owned land, and for all lands for aquatic species.

Habitat for SCC is considered Significant Wildlife Habitat (SWH) (OMNR 2010), which is afforded protection under the Provincial Policy Statement (OMMAH 2014) and municipal natural heritage protection policies. Although SWH may not represent constraints to road and bridge infrastructure improvements that are subject to Class Environmental Assessments, this information is presented to inform the bridge replacement plan so as to avoid, or otherwise mitigate impacts to known SWH to the extent feasible.

Background information sources were reviewed to identify records of provincially and federally significant species known from the study area vicinity. These information sources included the following:

- MNRF NHIC database (MNRF 2020);
- Ontario Breeding Bird Atlas (BSC et al. 2008);
- Ontario Reptile and Amphibian Atlas (Toronto Entomologists' Association 2020);
- Atlas of the Mammals of Ontario (Dobbyn 1994);
- Ontario Odonata Atlas (Ontario Odonata Atlas Database 2020);
- Ontario Butterfly Atlas (Macnaughton et al. 2019); and,
- Fisheries and Oceans Canada Aquatic SAR Mapping (DFO 2019)

The background data collection followed the Natural Heritage Information Request Guide (MNRF 2018) and the Client's Guide to Preliminary Screening for Species at Risk (Ministry of Environment, Conservation and Parks 2019).

Based on background information review, a comprehensive list of regulated SAR and SCC known from the study area was compiled (Appendix I). Based on this list, 14 bird species, 3 herpetofauna species, 1 mammal species, 1 fish species and 1 mussel species were identified as having occurrence records in the study area. Of these species on the list, 8 are considered to be regulated SAR that are afforded protection under the relevant acts. Appendix I also lists SCC known from or observed within the study area vicinity, the habitats of which are considered SWH (OMNR 2010).

A preliminary screening exercise was conducted for these species to identify which species have suitable habitat within the study area. This involved cross-referencing the preferred habitat for reported regulated SAR (OMNR 2000) against habitats known to occur in the study area. This was completed to ensure that the potential presence of all regulated SAR within the study area was adequately assessed.

Of the regulated SAR (provincial and federal) with known occurrence records in the study area vicinity, the following species were determined to have suitable habitat *within the ROW development footprint zone* based on preliminary screening:

- Barn Swallow
- Little Brown Myotis (*Myotis lucifugus*)

### **Field Methodology**

A single site visit was completed on June 30, 2020 to characterize the existing natural features and habitats and to verify the presence or absence of SAR and their habitats within the study area. The following survey methodologies were undertaken during the site visit:

- Nest searches of the bridge structure for the presence of Barn Swallow or other nesting species.
- Area search for snakes and turtles in appropriate habitat and potential hibernaculum features;
- Cavity tree assessment to determine presence of potential bat SAR habitat based on MNRF survey guidelines (MNRF 2017);
- Incidental observations of birds, mammals, amphibians, butterflies and odonates (dragonflies/damselflies) and vascular plants observed on-site with particular focus on significant species.
- Aquatic habitat assessment of the Teeswater River extending approximately 25 m upstream and 100 m downstream of Bruce Road 3 bridge, using visual observations, wetted cross-section measurements and mapping of habitat features such as riffles, pools and in-stream cover features. The aquatic habitat assessment included a general assessment of suitable mussel habitat with a focus on Rainbow. Any mussel shells found along the shoreline were identified.

## Results of Field Studies

### ***Terrestrial Investigation***

#### Vegetation Communities

The study area includes several upland vegetation communities; wetland is not present and submerged aquatic vegetation appears to be limited. The banks of the Teeswater River and Saugeen River are comprised of exposed clay banks with a fringe of Reed Canary Grass (*Phalaris arundinacea*), Smooth Brome (*Bromus inermis*), Goldenrod (*Solidago* sp.), Dame's Rocket (*Hesperis matronalis*) and Riverbank Grape (*Vitis riparia*). The north bank of the Teeswater River, west of Queen Street South, is mowed lawn down to the river edge.

At the location of the proposed temporary bridge, the north bank has been hardened with concrete and stone and appears to have been planted with native trees and shrubs including Ninebark (*Physocarpus opulifolius*), Dogwoods (*Cornus* spp.) and Poplars (*Populus* spp.) among the rock. On the south bank, behind the fire station, a treed area is comprised of mid-age Black Walnut (*Juglans nigra*), Manitoba Maple (*Acer negundo*) and several Crack Willow (*Salix euxina*). The groundcover in the treed area includes Ostrich Fern (*Matteuccia struthiopteris*), Jerusalem Artichoke (*Helianthus tuberosus*), Poison Ivy (*Toxicodendron radicans* var. *rydbergii*), Woodbine (*Parthenocissus vitacea*) and Riverbank Grape.

No regulated SAR or SCC plants were observed during the assessment. In general, the vegetation is typical of riparian habitats in the area with lower portions of the bank adapted to seasonal inundation and ice scour.

#### Wildlife and Habitat

The underside of the bridge was inspected for Barn Swallow nests, including nests that were active in 2020 as well as evidence of use in previous years. No Barn Swallows, or their nests were observed; however, numerous Cliff Swallow (*Petrochelidon pyrrhonota*) nests were noted with an active nest on the nearby Goldie Street bridge. Cliff Swallow is not a regulated SAR (or SCC); however, active nests are protected by the Migratory Birds Convention Act, 1994 (MBCA) (Government of Canada 2018). The presence of a single active Cliff Swallow nest does not constitute SWH for colonially nesting birds.

Suitable Snapping Turtle (*Chelydra serpentina serpentina*) nesting habitat is present to the west of the firehall on Goldie Street. An alluvial deposit of loose sand, approximately 50m<sup>2</sup> in size, is present at the west end of the mowed lawn, near the Goldie Street bridge abutment. Evidence of turtle nesting was not observed, but recommendations are made to protect this area which may be in close proximity to the temporary bridge or an associated laydown area, as Snapping Turtle are considered to be Significant Wildlife Habitat and Special Concern species.

Trees in the vicinity of the proposed temporary bridge were assessed for cavities which could provide habitat for SAR bats including Little Brown Myotis (*Myotis lucifugus*). No suitable trees were observed and this habitat type is not present.

Habitat for Eastern Milksnake (*Lampropeltis t. triangulum*) is present within the study area. No snakes were observed and general recommendations relating to isolation of the work area will effectively limit the potential for this species to be affected by the bridge work.

No suitable habitat for any other species that were screened as having potential to occur was observed during the site investigation.

No confirmed or potential SWH features were observed within the terrestrial portion of the study area.

### ***Aquatic Investigation***

Three NRSI biologists (two aquatic biologists and a co-op student) conducted a detailed aquatic habitat assessment utilizing habitat transects on Teeswater/Saugeen River from 100 m downstream to 25 m upstream of the Bruce Road 3 bridge (composing a total of 125 m of river length). A less detailed habitat assessment (general habitat assessment without transects) was conducted for a further 50m downstream and 30m upstream (from detailed assessment site). The general habitat assessment was completed to determine if the substrates were consistent with or similar to substrates observed around the existing bridge crossing/proposed location of new bridge and to search for mussel shells or other habitat features that would indicate SAR presence. The habitat assessment followed the DFO Guidance Document for Assessing SAR Mussel Habitat (NRSI 2015) and included all possible locations of potential direct impacts to assist DFO in determining the likelihood of SAR mussels being present. Refer to the attached Map 1 to show the area investigated and Appendix II for site photographs. On June 30, 2020 there had been no precipitation within the general area for the previous three days prior to the survey, and as such the Teeswater River contained lower to base level water conditions; however, the water was slightly turbid.

A Hydrometric Station (02FC015) is located approximately 6 km downstream of Paisley on the Teeswater River at Greenock Elderslie Road. On June 30, 2020 at 1200 hrs the primary water level was 11.451 m and decreasing throughout the day and the discharge was 2.54 m<sup>3</sup>/s also slightly decreasing throughout the day.

In order to assess the habitat suitability for mussels around the project location, nine habitat transects were completed on the Teeswater/Saugeen River extending from 100 m downstream to 25 m upstream of the existing bridge and extending across the wetted width of the river where depth permitted. This assessment area also captures habitat suitability information for the temporary bridge location as well. Each transect included taking a wetted width (m), water depth (m), hydraulic head (mm), substrates present (Frequency of size class at each point), and substrate depth (cm). Measurements were recorded along evenly-spaced points along each transect (10 points per transect were taken). Table 1 shows the information collected within each transect. Photographs associated with the site and substrates are found in Appendix II. Substrate depths were taken to determine if there was a suitable amount of the substrate to allow the potential mussels to burrow. The substrate depths were taken using a meter stick and inserting it into the substrate as far as it could go. Probing the substrates allows confirmation that the substrates at the surface of the channel bed are representative of deeper substrates. Table 2 shows the substrate codes and the associated substrate type and particle size range (mm) based on the Modified Wentworth Classification (clay is hardpan). The first substrate code shows the dominant substrate at that point with the additional sub-dominant substrates surrounding the point.

Substrates throughout the entire reach were not consistent and varied from, pebbles, gravel, cobble, boulders, and hard clay depending on flow and water depth. Larger substrates, namely cobble, were more dominant downstream of the Bruce Rd. 3 bridge. Upstream of the bridge the substrate was predominantly gravel. Substrate depth throughout the site was very limited (0 to

6 cm), except within the backwatered area at the mouth of the old mill outflow, where fine substrates of silt and muck were present.

Mussels would have limited capability to burrow into the majority of the project location. Mussels need enough substrate, depending on the species, to prevent them from being dislodged during high flows and scouring events. The substrates also need to have enough interstitial spaces to allow for filter feeding. The water depth and flow were suitable for SAR mussels at the time of the assessment.

Outside of the detailed habitat assessment the substrates were similar with some smaller substrates along the north shore approximately 100m downstream of the existing crossing. Limited aquatic vegetation (*Potamogeton* sp.) was present within the backwatered area of the channel.

**Table 1. Teeswater River Habitat Transects (south to north bank direction)**

Transect ID	Wetted Width (m)	Parameter	Point Number										Photographs
			1	2	3	4	5	6	7	8	9	10	
1 Potential bridge crossing	41.8	Water Depth (m):	0.3	0.59	0.79	0.9	0.81	0.91	0.86	0.52	0.39	0.48	21-42
		Hydraulic head (mm):	30	50	60	70	60	60	60	60	50	40	
		Substrate Code:	2	2/4	2	4	4	4	3/2	3	4	4	
		Substrate Depth (cm):	2	2	5	5	2	2	4	3	3	3	
2 10 m u/s of potential bridge crossing	15.2 (length of transect to depth (not the entire width))	Water Depth (m):	1.05	0.83	0.74	0.69	0.58	0.43	0.49	0.49	0.33	0.29	
		Hydraulic head (mm):	20	40	40	40	40	30	30	20	10	10	
		Substrate Code:	4	5	2	2	4	4	5/2	2	2	0	
		Substrate Depth (cm):	1	2	4	3	2	2	2	6	2	0	
3 20 m u/s of potential bridge crossing	13.4 (length of transect to depth (not the entire width))	Water Depth (m):	1.16	0.97	0.71	0.7	0.67	0.5	0.51	0.37	0.27	0.2	
		Hydraulic head (mm):	10	20	20	20	30	10	10	10	10	10	
		Substrate Code:	4	2	5	4	0	2/1	4	2	4	2	
		Substrate Depth (cm):	2	4	2	2	1	2	2	4	1	2	
4 30 m u/s of potential bridge crossing	8.5 (length of transect to depth (not the entire width))	Water Depth (m):	1	0.78	0.52	0.44	0.37	0.33	0.34	0.29	0.27	0.2	
		Hydraulic head (mm):	5	5	5	5	5	5	5	0	0	0	
		Substrate Code:	2	2	4	2	2	0	2	2	0	4	
		Substrate Depth (cm):	6	3	1	2	4	0.5	0.5	2	0	0.5	
5 40 m u/s of potential bridge crossing	13 (length of transect to depth (not the entire width))	Water Depth (m):	1.14	0.9	0.67	0.5	0.52	0.49	0.41	0.38	0.29	0.22	
		Hydraulic head (mm):	5	0	0	0	5	10	10	10	10	5	
		Substrate Code:	4	2	2	0	2	2	2	4/0	4	2	
		Substrate Depth (cm):	2	5	2	0.5	2	2	3	2	1	3	



Transect ID	Wetted Width (m)	Parameter	Point Number										Photographs
			1	2	3	4	5	6	7	8	9	10	
6 15 m d/s of existing bridge	16.7 to island 17.9 to land spit from mill, and 11.4 to shore	Water Depth (m):	0.32	0.36	0.33	0.23	0.23	0.2	0.16	0.26	0.25	0.23	
		Hydraulic head (mm):	0	0	30	20	30	30	5	10	50	40	
		Substrate Code:	0	1	2	2	2	2	3	2	3	3	
		Substrate Depth (cm):	20	4	4	5	2	2	2	4	2	2	
7 2 m d/s of bridge piers	30	Water Depth (m):	0.2	0.08	0.1	0.27	0.17	0.3	0.43	0.39	0.32	0.32	
		Hydraulic head (mm):	20	10	10	20	20	20	5	5	10	40	
		Substrate Code:	2	2	2	3	4	2	2	2	1	2	
		Substrate Depth (cm):	2	2	1	1	1	2	3	2	4	2	
8 10 m u/s of bridge piers	26.9	Water Depth (m):	0.21	0.26	0.14	0.1	0.11	0.12	0.16	0.15	0.21	0.26	
		Hydraulic head (mm):	40	30	20	0	20	30	40	30	30	40	
		Substrate Code:	4	2	2	2	1	2	2	2	3	2	
		Substrate Depth (cm):	0.5	1	3	2	3	1	2	1	3	1	
9 20m u/s of bridge piers	28.3	Water Depth (m):	0.32	0.4	0.37	0.2	0.07	0.05	0.18	0.2	0.2	0.27	
		Hydraulic head (mm):	20	40	20	30	10	10	5	20	40	40	
		Substrate Code:	4	2	2	2	2	2	2	2	2	4	
		Substrate Depth (cm):	3	3	2	4	8	4	2	3	5	4	

**Table 2. Modified Wentworth Classification of Substrate Type by Size**

Substrate Type	Particle Size Range (mm)	Code
Silt and Clay	<0.059	0
Sand	0.06 - 1	1
Gravel	2 - 15	2
Pebble	16 - 63	3
Cobble	64 - 256	4
Boulder	>256	5

During the assessment, three NRSI biologists (two aquatic biologists and a co-op student) walked the site (including the banks) and viewed the substrates to see if any shells were present. There was an abundance of shells present within the area assessed, as well as multiple live specimens were observed during the investigation.

Table 3 lists the species that were found and photograph associated with the species. Nine species were observed, including shells and live specimens of each species. The photographs can be found in Appendix I. Active searching for live mussels did not occur during the habitat assessment.

**Table 3. Mussel Observations**

Scientific Name	Common Name	Description/Location	Photographs
<i>Actinonaias ligamentina</i>	Mucket	Live specimens and shells observed	3-4
<i>Alasmodonta marginata</i>	Elktoe	Live specimens and shells observed	1-2
<i>Alasmodonta viridis</i>	Slippershell	Live specimens and shells observed	8-9
<i>Eurynia dilatata</i>	Spike	Live specimens and shells observed	6-7
<i>Lampsilis cardium</i>	Plain Pocketbook	Live specimens and shells observed	18-19
<i>Lampsilis siliquoidea</i>	Fatmucket	Live specimens and shells observed	20
<i>Lasmigona costata</i>	Flutedshell	Live specimens and shells observed	14-15
<i>Strophitus undulatus</i>	Creeper	Live specimens and shells observed	10-11
<i>Villosa iris</i>	Rainbow	Live specimens and shells observed	12-13

### Mussel Regulated SAR Habitat

The DFO has identified the Teeswater River throughout the study area vicinity as habitat for Rainbow (DFO Aquatic SAR Mapping 2019). Rainbow is listed as Special Concern both federally and provincially. The NHIC also identifies Rainbow as the only provincially significant mussel species known from this reach of the river. It should be noted that the information on NHIC database is currently outdated, as it still lists Rainbow as Endangered federally with critical habitat present within this section of the river. Rainbow was down-listed federally under the Species at Risk Act (SARA) to Special Concern as of August 21, 2019. This down-listing also means that the species no longer has protected critical habitat under the SARA.

Provincially, the Rainbow is also listed as Special Concern. Consequently, this species and its habitat are not protected under the ESA; rather, it is considered to be a SCC and its habitat is considered a form of SWH. No other regulated SAR mussels were identified within the background review and/or field survey.

Rainbow has a habitat preference of mainly small streams to small rivers in coarse sand or gravel substrates in or near riffles and along edges of emergent vegetation in moderate to strong current (MECP 2019). Their fish hosts are also known to include Striped Shiner, Smallmouth Bass, Largemouth Bass, Green Sunfish, Greenside Darter, Rainbow Darter, and Yellow Perch (MECP 2019).

The majority of the aquatic habitat assessed within the Teeswater River throughout the site has the potential to provide at least one of the different life stages for the SCC Rainbow and a variety of other mussel species. This is based on the potential for their fish hosts to occur, substrates that are present and the rate of flow within the river.

### **Summary of Potential and Confirmed Species at Risk Habitat**

The following is a summary of confirmed and potential regulated SAR habitats within the study area based on the results of background information review and site investigations. In order to help inform the potential for regulated SAR habitat impacts associated with the proposed bridge replacement activities including the temporary bridge, this summary specifies habitat occurrence within the anticipated ROW construction zones, and habitats that are adjacent but entirely outside of the potential road ROWs.

#### *Habitat Within Study Area ROW*

Based on the results of background information review and field studies, there was no confirmed or potential habitat for any regulated SAR found within the study area ROWs at the existing bridge location and the potential temporary bridge location.

#### *Additional Species Habitats Outside the ROW*

Habitat of other regulated SAR, was not identified adjacent to the ROWs.

### **Summary of Significant Wildlife Habitat**

Based on the site assessment, one SWH type was identified as being present within the study area: Habitat for Special Concern and Rare Wildlife Species (for Rainbow). SWH for turtle nesting remains as candidate due to the presence of suitable sandy substrates adjacent to the river and limited search effort (single site visit) whereby no turtles or nests were observed.

The Teeswater River throughout the ROW and overall study area provide SWH for Rainbow, as they were found to be present. As such, this portion of the Teeswater River is considered Confirmed SWH (Map 2). The SWH comprises the wetted portion of the river itself and does not extend to the adjacent riverbank areas.

Due to the habitat sensitivity of the river for Rainbow, effort should be made to avoid, or otherwise minimize or mitigate impacts to this SWH to the extent feasible during completion of the undertaking. Through the implementation and maintenance of standard construction mitigation measures during bridge construction (e.g., proper erosion and sediment controls, avoiding work during night-time hours, emergency response plan, containment system to capture any debris that may fall in the water, mussel salvage, in-water works timing window) impacts to SCC mussels within this area of the Teeswater River can be avoided.

In order to protect the candidate SWH for turtle nesting, it is recommended that no portion of the equipment laydown area overlap with the sandy area to the west of the firehall. The installation of keyed-in sediment fence to delineate the work area for the temporary bridge will help to keep turtles outside of the construction area and prevent equipment and materials from impacting the suitable nesting habitat.

### **Conclusions and Recommendations**

NRSI biologists completed a desktop and field-based assessment of regulated SAR habitats for areas within and adjacent to the anticipated construction footprint associated with the planned replacement of the Teeswater River BR3 Bridge. This assessment confirmed that the

Teeswater River at the bridge crossing location does not provide suitable habitat for any regulated SAR. It does, however, provide SWH for one SCC mussel species (Rainbow).

As the work being proposed will involve a full bridge replacement and temporary bridge, appropriate agency approvals or reviews from the Saugeen Valley Conservation Authority, Ontario Ministry of Natural Resources and Forestry and DFO may be required. Once detailed design drawings are provided, an assessment of potential impacts to fish and fish habitat associated with the bridge reconstruction undertaking, following DFO guidelines, will also need to be completed to determine if a formal request for review is required. Based on the potential construction footprint and habitat to be impacted, it is possible that a *Fisheries Act* Authorization will be required. No in-water work is permitted from March 15 to July 15 of any given year due to the potential presence of spring-spawning fish within the Teeswater River. To ensure that fish and fish habitat are protected, the following measures are recommended:

- Use a clear span bridge if possible, even with temporary bridge;
- Work within the timing window;
- Prevent the death of fish and mussels (through salvages);
- Maintain riparian vegetation to the extent possible;
- Place fill or other temporary or permanent structures outside of the high-water mark;
- Maintain fish passage;
- Ensure proper sediment control (i.e. isolate the work area, use turbidity curtains, prepare an ESC plan);
- Prevent the entry of deleterious substances in water (i.e. develop a response plan, keep an emergency spill kit on site, plan activities so that deleterious substances do not enter the watercourse).

Although Barn Swallows and their nests were not observed, the bridge does provide suitable habitat for the species, and Cliff Swallow nests are present. It is therefore recommended that bridge demolition or repair work occur outside of the general bird breeding period of April 1- August 31 (in addition to the aquatic timing window) to avoid impacts to Barn Swallow (which could nest on the structure in subsequent years), and other migratory birds that may utilize the bridge for nesting and that are protected under the federal *Migratory Birds Convention Act* (Government of Canada 2018). During construction, any identified active nests would require protection until all young have fledged, or as otherwise determined by the Canadian Wildlife Service.

Impacts to upland areas will be restricted to the vicinity of the existing bridge infrastructure as well as the location of the temporary replacement bridge. Erosion control features should be installed at the toe of the embankment slopes where possible for any grading that may occur on the slopes.

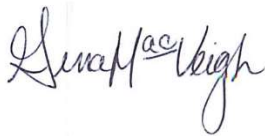
The floodplain and aquatic habitats outside of the ROWs are not expected to be directly impacted by the proposed bridge replacement works including the temporary bridge. However, construction-stage measures should be taken to avoid impact to the riparian vegetation. Impacts to SCC mussels outside of the ROW should be avoidable through implementation of erosion and sediment control measures, such as using a turbidity curtain around in-water work areas and working in low-flow conditions. The installation of sediment and erosion control measures (fence, wattles, check dams and erosion blankets, as necessary) will effectively

protect the natural features beyond the construction envelope. All fuels and lubricants should be maintained a safe distance from the watercourse to prevent spills from entering the river.

This information has been provided to inform BM Ross of confirmed and potential regulated SAR habitat constraints that may be imposed on the proposed activities to replace the BR3 bridge and install the temporary bridge. Please contact the undersigned for any questions or for further information.

Sincerely,

Natural Resource Solutions Inc.

A handwritten signature in black ink, reading "Gina MacVeigh". The signature is written in a cursive, flowing style. The first name "Gina" is written in a larger, more prominent script, followed by "MacVeigh" in a slightly smaller, more compact script. The signature is positioned above the printed name and title.

Gina MacVeigh, F.W.T  
Aquatic Biologist

## References

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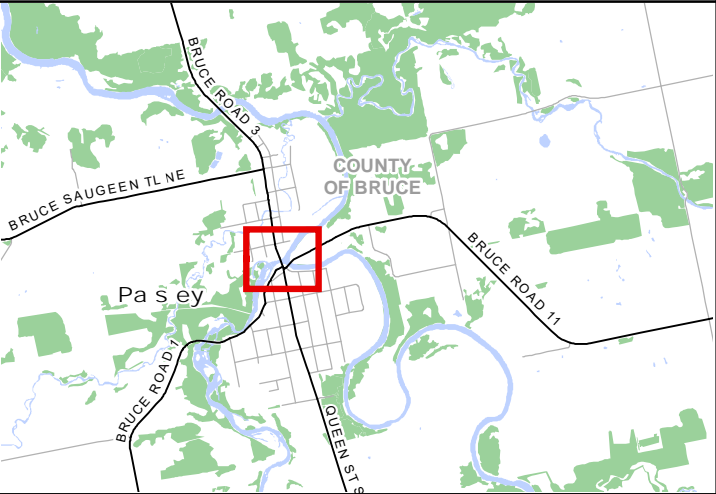
**MAPS**





Path: X:\2364\_Teeswater\_R\_BR3\_Bridge\NRSI\_2364\_Map1\_StudyArea\_2K\_2020\_08\_04\_GCS.mxd

# Teeswater River BR#3 SAR Assessment Study Area

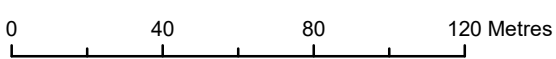


**Legend**  
Study Area

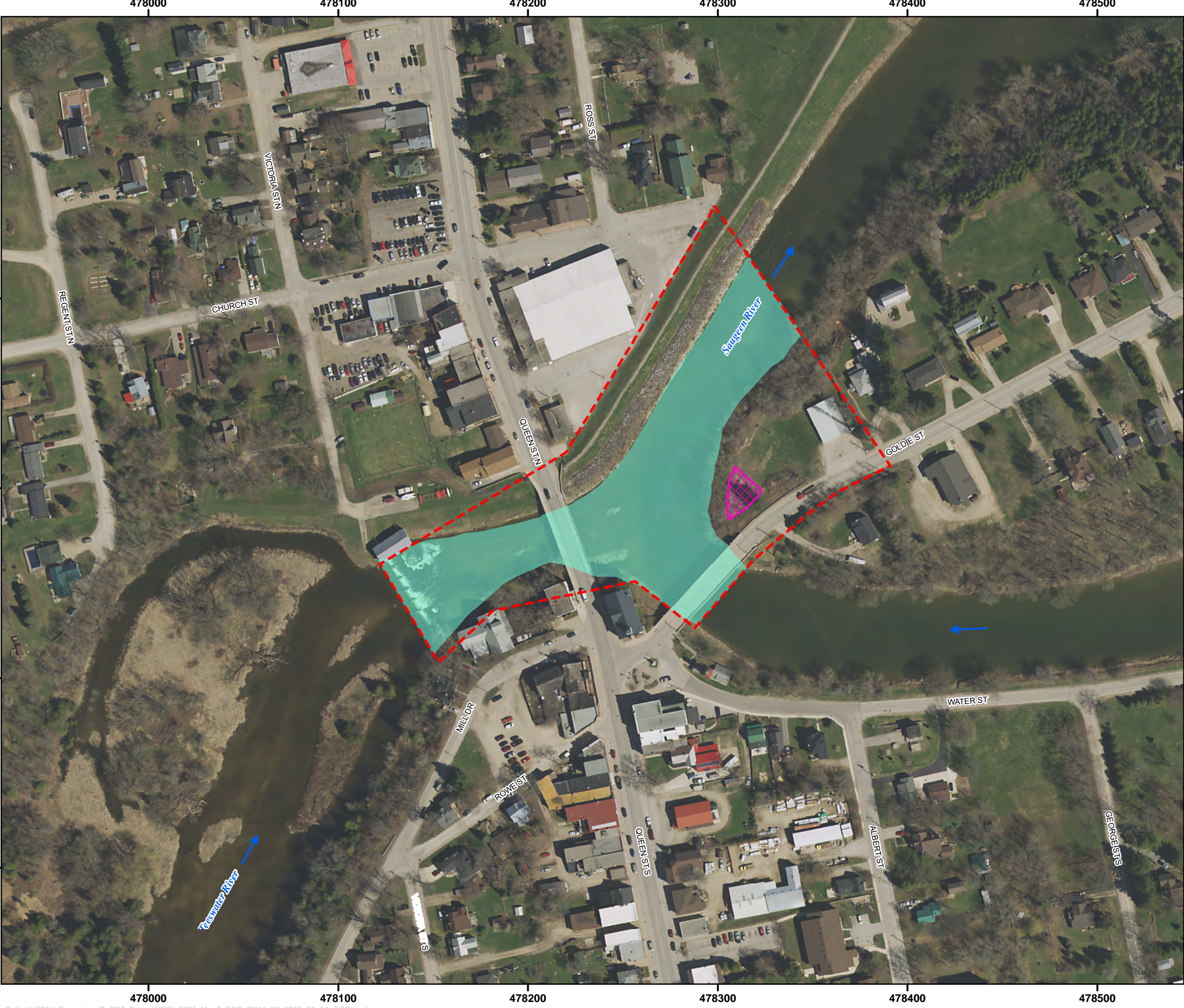


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Project: 2364 Date: August 4, 2020	NAD83 - UTM Zone 17 Size: 11x17" 1:2,000
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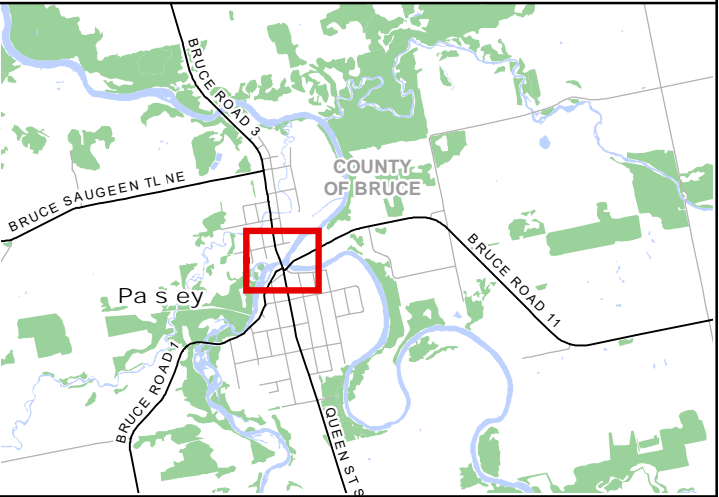






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# Teeswater River BR#3 SAR Assessment Species of Conservation Concern and Significant Wildlife Habitat

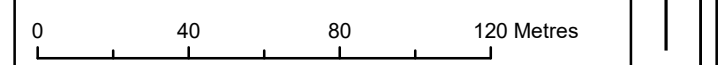


- Legend**
- Study Area
  - Candidate SWH - Turtle Nesting
  - SCC - Rainbow Habitat



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Project: 2364 Date: August 4, 2020	NAD83 - UTM Zone 17 Size: 11x17" 1:2,000
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## **APPENDIX I**

### Species at Risk and Species of Conservation Concern Habitat Screening

Scientific Name	Common Name	S-RANK <sup>1</sup>	SARO <sup>1</sup>	COSEWIC <sup>1,2</sup>	SARA Schedule <sup>2</sup>	Background Source	Observed by NRSI	Habitat Preference <sup>3,4,5</sup>	Suitable Habitats within Study Area?	Rationale
<b>Birds</b>										
<i>Ammodramus savannarum</i>	Grasshopper Sparrow	S4B	SC	SC		BSC et al. 2006		Well-drained grassland or prairie with low cover of grasses, taller weeds on sandy soil; hayfields or weedy fallow fields; uplands with ground vegetation of various densities; perches for singing; requires tracts of grassland > 10 ha.	No	No expansive grasslands are present within the immediate project area.
<i>Chaetura pelagica</i>	Chimney Swift	S4B, S4N	THR	T	Schedule 1	BSC et al. 2006		Commonly found in urban areas near buildings; nests in hollow trees, crevices of rock cliffs, chimneys; highly gregarious; feeds over open water.	Yes	Buildings, chimneys, bridges, and open water areas are present within the study area. No individuals were observed during the assessment.
<i>Chordeiles minor</i>	Common Nighthawk	S4B	SC	T	Schedule 1	BSC et al. 2006		Open ground; clearings in dense forests; ploughed fields; gravel beaches or barren areas with rocky soils; open woodlands; flat gravel roofs.	No	Dense forest clearings, or other suitable open rocky areas are not present within the study area.
<i>Caprimulgus vociferus</i>	Eastern Whip-poor-will	S4B	THR	T	Schedule 1	BSC et al. 2006		Dry, open, deciduous woodlands of small to medium trees; oak or beech with lots of clearings and shaded leaf litter; wooded edges, forest clearings with little herbaceous growth; pine plantations; associated with >100 ha forests; may require 500 to 1000 ha to maintain population.	No	Expansive forest is not present within the study area.
<i>Ixobrychus exilis</i>	Least Bittern	S4B	THR	T	Schedule 1	BSC et al. 2006		Deep marshes, swamps, bogs; marshy borders of lakes, ponds, streams, ditches; dense emergent vegetation of cattail, bulrush, sedge; nests in cattails; intolerant of loss of habitat and human disturbance.	No	Suitable secluded wetland communities are not present within the immediate project area.
<i>Melanerpes erythrocephalus</i>	Red-headed Woodpecker	S4B	SC	T	Schedule 1	BSC et al. 2006		Open, deciduous forest with little understory; fields or pasture lands with scattered large trees; wooded swamps; orchards, small woodlots or forest edges; groves of dead or dying trees; feeds on insects and stores nuts or acorns for winter; loss of habitat is limiting factor; requires cavity trees with at least 40 cm dbh; require about 4 ha for a territory.	No	Suitable habitat for the species is not present within the project area.
<i>Contopus cooperi</i>	Olive-sided Flycatcher	S4B	SC	T	Schedule 1	BSC et al. 2006		Semi-open, conifer forest, prefers spruce; near pond, lake or river; treed wetlands for nesting; burns with dead trees for perching.	No	Conifer forest is not present within the study area.
<i>Riparia riparia</i>	Bank Swallow	S4B	THR	T		BSC et al. 2006		Sand, clay or gravel river banks or steep riverbank cliffs; lakeshore bluffs of easily crumbled sand or gravel; gravel pits, road-cuts, grassland or cultivated fields that are close to water; nesting sites are limiting factor for species presence.	No	The banks of the Teeswater and Saugeen Rivers are not steep, and are vegetated. Suitable habitat is not present within the study area.
<i>Contopus virens</i>	Eastern Wood-pewee	S4B	SC	SC		BSC et al. 2006		Open, deciduous, mixed or coniferous forest; predominated by oak with little understory; forest clearings, edges; farm woodlots, parks.	No	Suitable forest habitat for the species is not present within the immediate project area.
<i>Hirundo rustica</i>	Barn Swallow	S4B	THR	T		BSC et al. 2006		Farmlands or rural areas; cliffs, caves, rock niches; buildings or other man-made structures for nesting; open country near body of water.	Yes	Suitable anthropogenic nesting habitat is present within the study area, and open water for feeding is present. No nests were observed during the assessment.
<i>Hylocichla mustelina</i>	Wood Thrush	S4B	SC	T		BSC et al. 2006		Carolinian and Great Lakes-St. Lawrence forest zones; undisturbed moist mature deciduous or mixed forest with deciduous sapling growth; near pond or swamp; hardwood forest edges; must have some trees higher than 12 m.	No	No suitable forest communities are located within the immediate project area.
<i>Dolichonyx oryzivorus</i>	Bobolink	S4B	THR	T	No Schedule	BSC et al. 2006		Large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; marshes; requires tracts of grassland >50 ha.	No	Expansive grasslands are not present within the study area.

Scientific Name	Common Name	S-RANK <sup>1</sup>	SARO <sup>1</sup>	COSEWIC <sup>1,2</sup>	SARA Schedule <sup>2</sup>	Background Source	Observed by NRSI	Habitat Preference <sup>3,4,5</sup>	Suitable Habitats within Study Area?	Rationale
<i>Sturnella magna</i>	Eastern Meadowlark	S4B	THR	T	No Schedule	BSC et al. 2006		Open, grassy meadows, farmland, pastures, hayfields or grasslands with elevated singing perches; cultivated land and weedy areas with trees; old orchards with adjacent, open grassy areas >10 ha in size.	No	Expansive grasslands, pastures, or fields are not present within the study area.
<i>Cardellina canadensis</i>	Canada Warbler	S4B	SC	T	Schedule 1	BSC et al. 2006		An interior forest species; dense, mixed coniferous, deciduous forests with closed canopy, wet bottomlands of cedar or alder; shrubby undergrowth in cool moist mature woodlands; riparian habitat; usually requires at least 30 ha.	No	Interior forest is not present within the study area.
<b>Herpetofauna</b>										
<i>Chelydra serpentina serpentina</i>	Common Snapping Turtle	S3	SC	SC	Schedule 1	Ontario Nature 2019, MNRF 2019		Permanent or semi-permanent fresh water; marshes, swamps or bogs; rivers and streams with soft muddy banks or bottoms. The species often uses soft soil or clean dry sand on south-facing slopes for nest sites and may nest at some distance from water.	Yes	The Teeswater and Saugeen Rivers provide suitable freshwater habitat. Suitable soft substrates do not appear to be present (no wetlands in study area and banks are clay). Nesting habitat is present west of the fire station, near the proposed temporary bridge.
<i>Chrysemys picta marginata</i>	Midland Painted Turtle	S5		SC		Ontario Nature 2019		Quiet, warm, shallow water with abundant aquatic vegetation such as ponds, large pools, streams, ditches, swamps, marshy meadows; eggs are laid in sandy places, usually in a bank or hillside, or in fields; basks in groups; not territorial.	No	Calm water with abundant vegetation is not present within the study area.
<i>Lampropeltis t. triangulum</i>	Eastern Milksnake	S4		SC	Schedule 1	Ontario Nature 2019		Farmlands, meadows, hardwood or aspen stands; pine forest with brushy or woody cover; river bottoms or bog woods; hides under logs, stones, or boards or in outbuildings; often uses communal nest sites.	Candidate	The Teeswater and Saugeen Rivers may provide suitable habitat for this species. Habitat was confirmed as suitable throughout the study area including the bridge locations.
<b>Mammals</b>										
<i>Myotis lucifungus</i>	Little Brown Myotis	S5	END	E	Schedule 1	Dobbyn 1994		Uses caves, quarries, tunnels, hollow trees or buildings for roosting; winters in humid caves; maternity sites in dark warm areas such as attics and barns; feeds primarily in wetlands, forest edges	No	Buildings are present in the study area which may provide suitable roosting or maternity habitat. Suitable foraging habitat may be present within or surrounding the study area. Roosting habitat was not observed within trees at the bridge locations and therefore impacts are not anticipated within the footprint.
<b>Fish</b>										
<i>Ichthyomyzon fossor</i>	Northern Brook Lamprey (GL-USL Pop.)	S3	SC	SC (April 2007)	Special Concern Schedule 1	DFO 2019		The Northern brook lamprey inhabits clear, coolwater streams. The larval stage requires soft substrates such as silt and sand for burrowing which are often found in the slow-moving portions of a stream. Adults are found in areas associated with spawning, including fast flowing riffles comprised of rock or gravel. Spawning occurs in May and June. The males construct small, often inconspicuous, nests by picking up pebbles with their mouths and moving them to form the rims of shallow depressions. The sticky eggs are deposited in the nest and adhere to the substrate.	Candidate	Impact analysis of the Teeswater and Saugeen Rivers should consider the potential presence of SAR and SCC fish.
<b>Freshwater Mussels</b>										
<i>Villosa iris</i>	Rainbow	S2S3	SC	SC	Special Concern Schedule 1	MNRF 2019, DFO 2019		The Rainbow mussel prefers small to medium-sized rivers with a moderate to strong current and sand, rocky, or gravel bottoms. It is found in or near riffle areas and along the edges of vegetation in water less than one metre deep. The Rainbow mussel uses a variety of fish hosts in Ontario, including Striped shiner, Smallmouth bass, Largemouth bass, Green sunfish, Greenside darter, Rainbow darter, and Yellow perch.	Yes	Impact analysis of the Teeswater and Saugeen Rivers should consider the potential presence of SAR and SCC mussels. This species was observed during the site assessment.

<sup>1</sup>MNRF 2019; <sup>2</sup>Government of Canada 2019; <sup>3</sup>MECP 2019; <sup>4</sup>Oldham and Brinker 2009; <sup>5</sup>OMNR 2000





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## **APPENDIX II**

Aquatic Habitat Assessment Photo Log



Photo 1: Elktoe shell



Photo 3: Mucket shell



Photo 6: Live Spike



Photo 2: Elktoe shell



Photo 4: Mucket shell

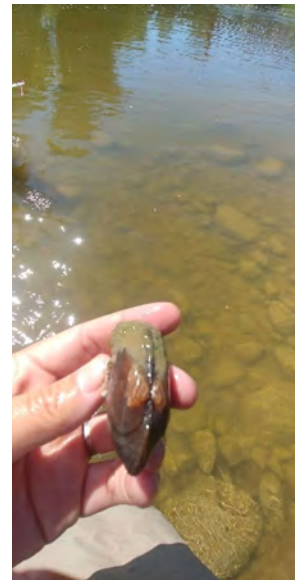


Photo 7: Live Spike





Photo 8: Live Slippershell  
downstream of Bruce Rd. 3  
bridge



Photo 10: Live Creeper  
downstream of Bruce Rd. 3  
bridge

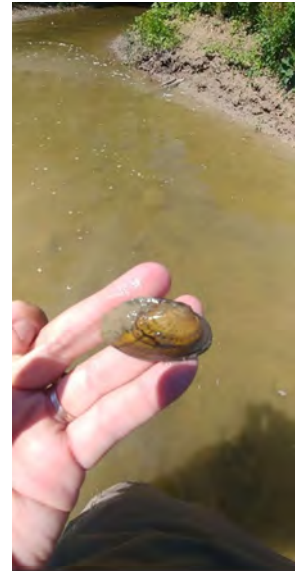


Photo 12: Live Rainbow  
immediately downstream of  
Bruce Rd. 3 bridge

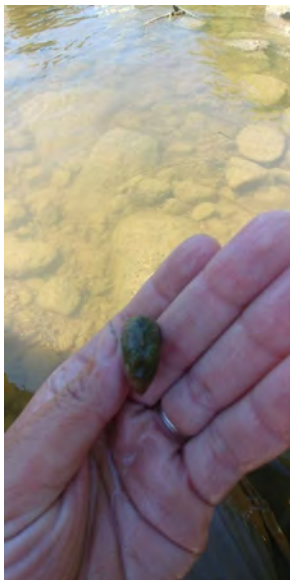


Photo 9: Live Slippershell  
downstream of Bruce Rd. 3  
bridge



Photo 11: Live Creeper  
downstream of Bruce Rd. 3  
bridge



Photo 13: Live Rainbow  
immediately downstream of  
Bruce Rd. 3 bridge



Photo 14: Live Flutedshell  
upstream of Bruce Rd. 3  
bridge



Photo 16: Live Elktoe  
upstream of Bruce Rd. 3  
bridge



Photo 18: Live Pocketbook  
upstream of Bruce Rd. 3  
bridge



Photo 15: Live Flutedshell  
upstream of Bruce Rd. 3  
bridge



Photo 17: Live Elktoe  
upstream of Bruce Rd. 3  
bridge



Photo 19: Pocketbook shell  
downstream of Bruce Rd. 3  
bridge





Photo 20: Live Fatmucket immediately upstream of Bruce Rd. 3 Bridge



Photo 21: Downstream view of Teeswater River with Saugeen river on right



Photo 22: Upstream view of Teeswater River near proposed temporary bridge

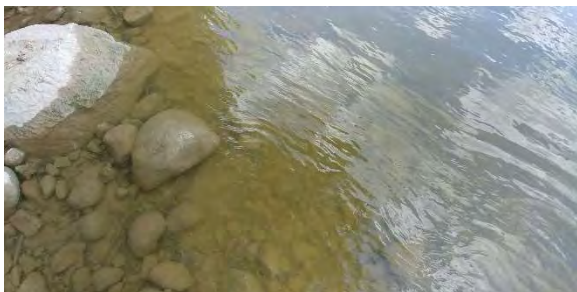


Photo 23: Substrate on Teeswater River south shore near proposed temporary bridge



Photo 24: Downstream view of Teeswater river



Photo 25: Upstream view of Teeswater (right) and Saugeen River (left)



Photo 26: Substrate on Teeswater north shore near proposed temporary bridge



Photo 27: Substrate on Teeswater River near proposed temporary bridge



Photo 31: Across river view of Teeswater (right) and Saugeen River (left)



Photo 28: View across Teeswater River (south facing) downstream Bruce Rd. 3 Bridge



Photo 32: Downstream view of Teeswater River with Saugeen (right)



Photo 29: Substrate on Teeswater River north shore downstream Bruce Rd. 3 Bridge



Photo 33: Upstream view of Teeswater River and Bruce Rd. 3 bridge



Photo 30: Substrate on Teeswater River north shore downstream Bruce Rd. 3 Bridge



Photo 34: Upstream view of Teeswater River and Bruce Rd. 3 bridge with water flowing from under mill (left)





Photo 35: Across river view downstream Bruce Rd. 3 bridge (right)



Photo 38: Water flowing from under old mill

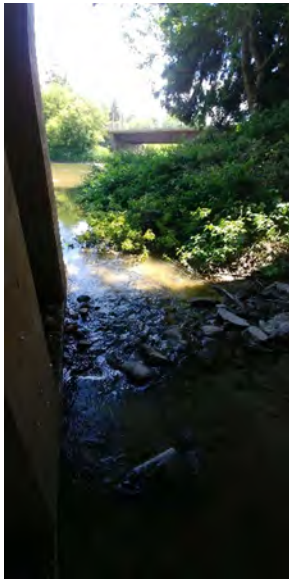


Photo 36: Water flowing from old mill, under Bruce Rd. 3 bridge and into Teeswater River



Photo 39: Storm drain exits from under north side of Bruce Rd. 3 bridge



Photo 37: Water flowing from old mill, under Bruce Rd. 3 bridge



Photo 40: Substrate immediately upstream of Bruce Rd. 3 bridge



Photo 41: Across river view upstream Bruce Rd. 3 bridge (right)



Photo 45: Across river view above Teeswater dam



Photo 42: Substrate upstream of Bruce Rd. 3 bridge



Photo 43: Water coming from dam before entering under old mill



Photo 44: Across river view below Teeswater dam