Durham Watershed Planning

2024 Activities Summary Report

April 2025

KAWARTHA CONSERVATION

Discover · Protect · Restore

About Kawartha Conservation

Who we are

We are a watershed-based organization that uses planning, stewardship, science, and conservation lands management to protect and sustain outstanding water quality and quantity supported by healthy landscapes.

Why is watershed management important?

Abundant, clean water is the lifeblood of the Kawarthas. It is essential for our quality of life, health, and continued prosperity. It supplies our drinking water, maintains property values, sustains an agricultural industry, and contributes to a tourism-based economy that relies on recreational boating, fishing, and swimming. Our programs and services promote an integrated watershed approach that balance human, environmental, and economic needs.

The community we support

We focus our programs and services within the natural boundaries of the Kawartha watershed, which extend from Lake Scugog in the southwest and Pigeon Lake in the east, to Balsam Lake in the northwest and Crystal Lake in the northeast – a total of 2,563 square kilometers.

Our history and governance

In 1979, we were established by our municipal partners under the Ontario Conservation Authorities Act.

The natural boundaries of our watershed overlap the six municipalities that govern Kawartha Conservation through representation on our Board of Directors. Our municipal partners include the City of Kawartha Lakes, Region of Durham, Township of Scugog, Township of Brock, Municipality of Clarington, Municipality of Trent Lakes, and Township of Cavan Monaghan.

Executive Summary

The Durham Watershed Planning project is a collaboration between Kawartha Conservation and the Region of Durham, to provide the newest mapping information to help the municipality conform to provincial planning guidance related to watershed resources management.

In 2024, activities focused on field verification of key natural heritage and regulated features, within the overlapping jurisdictions of both organizations: watercourses and wetlands within Blackstock Creek Subwatershed, fish habitat in coldwater watercourses, and sensitive areas along the Lake Scugog shoreline.

The following are key findings and recommendations from the activities.

Watercourses and Wetlands within Blackstock Creek Subwatershed

Key findings:

- A total of 48 road-side 'vantage points' were visited over a 2-day period (June 12 - 13). The verification process resulted in regulations mapping changes at 15 locations.

- Changes were made to 10 sections in which a total of 9,375 m of watercourses were removed from regulations mapping (i.e., they no longer exist as per their definition).

- Changes were made to 5 wetlands: 2 wetlands were added to mapping (i.e., they exist as per their definition but were not previously mapped) totaling 2.38 hectares, and 3 wetlands were removed totaling 3.48 hectares. These changes resulted in a net removal of 1.18 hectares of wetland.

- The wetlands and watercourse that were removed occurred on cropland and were likely tiled/buried in the recent past to facilitate better drainage for growing wheat, soybeans, and corn, which are prevalent crops in the subwatershed.

- The wetlands that were added were small areas adjacent to an existing watercourse, on rural residential lands that were likely too small of a wetland area to be delineated by aerial photography (including satellite).

Recommendations:

- Given the apparent change (decline) in watercourses and wetlands from agricultural drainage improvements on Blackstock Creek subwatershed, neighbouring

subwatersheds with comparable land use are likely experiencing similar trends. Therefore, field verification of these features should be undertaken across Durham Region to improve regulated features datasets.

Fish Habitat in Coldwater Watercourses

Key Findings:

- 2024 sample sites had high quality aquatic habitat characteristics for supporting Brook Trout, including average wetted width (2.9 m), average mid channel water depth (20.5 cm), and average water temperatures of 17.3^{o}C. They flowed through forested or meadow valleys, dominated by sand or gravel substrates, with abundant in-stream woody structure.

- There were no apparent changes in Brook Trout populations at these 10 sites. They were caught at every site, their average total abundance per site (14.6) was up by 28%, but was down 13% (0.90 fish per 100 shocker seconds) when standardized for effort. However, both values were within the natural variability estimates, which was +/- 20 to 50% for total abundance, and +/- 29 to 49% for standardized abundance. Further, there is evidence of natural reproduction as juveniles (i.e., less than 75 mm in length) were found at all sites except where Brook Trout were relatively rare.

- A total of 418 individual fish were captured during 2024 sampling, which included 9 unique species of fish. There was one other coldwater fish caught (Mottled Sculpin, at 40% of sites), no species of conservation concern, and no invasive species.

Recommendations:

- Brook Trout populations should continue to be tracked over time, given they are considered a good indicator of climate change (i.e., stream warming) and land use disturbance.

Sensitive Areas Along the Lake Scugog Shoreline

Key Findings:

- Between May 10 and May 16, 2024, 351 unique locations having sensitive features were field mapped as points or segments along approximately 83 km of the Lake Scugog shoreline within Durham Region.

- Fish habitat - overhanging vegetation was documented at 52 locations, which occupied approximately 3.8 km of shoreline length. They were typically located in numerous but isolated 'groups', with just a few contiguous segments.

- Fish habitat – wetlands were documented at 12 locations, which occupied approximately 16.5 km of shoreline length. They were typically large contiguous segments with some small isolated segments.

- Fish habitat – fish spawning areas exist along 31 segments, which includes approximately 18 km (15 segments) for Largemouth Bass, 29 km (11 segments) for Muskellunge, and 13.5 km (5 segments) for Smallmouth Bass. There are no public spawning habitat data available for Walleye, which is another recreationally important fish species.

- Regulated features – watercourse outlets that have not been previously mapped, were found at 2 locations. Wetlands that have not been previously mapped, were found at 54 locations, which includes approximately 2.5 km of marsh wetland (e.g., cattails) and 0.9 km of floating leaved wetland (e.g., lily-pads).

- Shoreline areas prone to erosion - steep slopes, several occur along the water's edge or within adjacent lands. Ice damage areas were documented at 133 locations, which includes approximately 2.5 km of shoreline length. Interestingly, ice damage areas generally existed along the western, protected shorelines (except for a few located on the east shore across from Port Perry).

Recommendations:

- Develop a process to include the 'newly-found' watercourse outlets and wetlands around the Lake Scugog shoreline into updated regulations features mapping.

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1.0 Introduction

In January 2023, the implementation of Bill 23 – *More Homes Built Faster Act*, was put into place. This meant that Conservation Authorities could no longer provide comments on natural heritage or water components not related to natural hazards for *Planning Act* applications, however, expertise remains within Kawartha Conservation to be able to provide reliable background information for municipal planning purposes.

Municipalities require the most up to date information to make timely decisions on *Planning Act* applications. The Durham Watershed Planning project is a collaboration between Kawartha Conservation and the Region of Durham, to provide the newest mapping information to help the municipality conform to provincial planning guidance related to watershed resources management (e.g., Provincial Planning Statement, Growth Plan, Greenbelt Plan, Oak Ridges Moraine Conservation Plan, etc.), and to contribute to more efficient processing of *Planning Act* applications.

This project is scoped to fill data gaps related to the location and sensitivity of natural heritage features (e.g., watercourses, wetlands, and fish habitat) and other features of interest that are important for siting development (e.g., erosion prone areas). These are crucial pieces of information for the municipality and the conservation authority to consider when processing applications to ensure that provincial policies are met. The project study area (the jurisdictional overlap between Durham Region and Kawartha Conservation) is shown in Figure 1.1.

This technical report provides a summary of key findings of work undertaken in 2024 towards addressing data gaps in the following watershed-based land use planning information.

- Location of watercourses and wetlands within the Blackstock Creek subwatershed: the existing information is based on aerial image interpretation and has not been field verified to confirm conditions on the ground.

- Investigating changes in fish habitat within coldwater watercourses: the existing information on the status of these sensitive features, which are important indicators of climate change, are almost 20 years old.

- Location of sensitive features (wetlands, fish habitat, erosion prone areas) along Lake Scugog: as shoreline development intensifies, sensitive features along Lake Scugog require recognition to effectively manage for changing shoreline conditions.

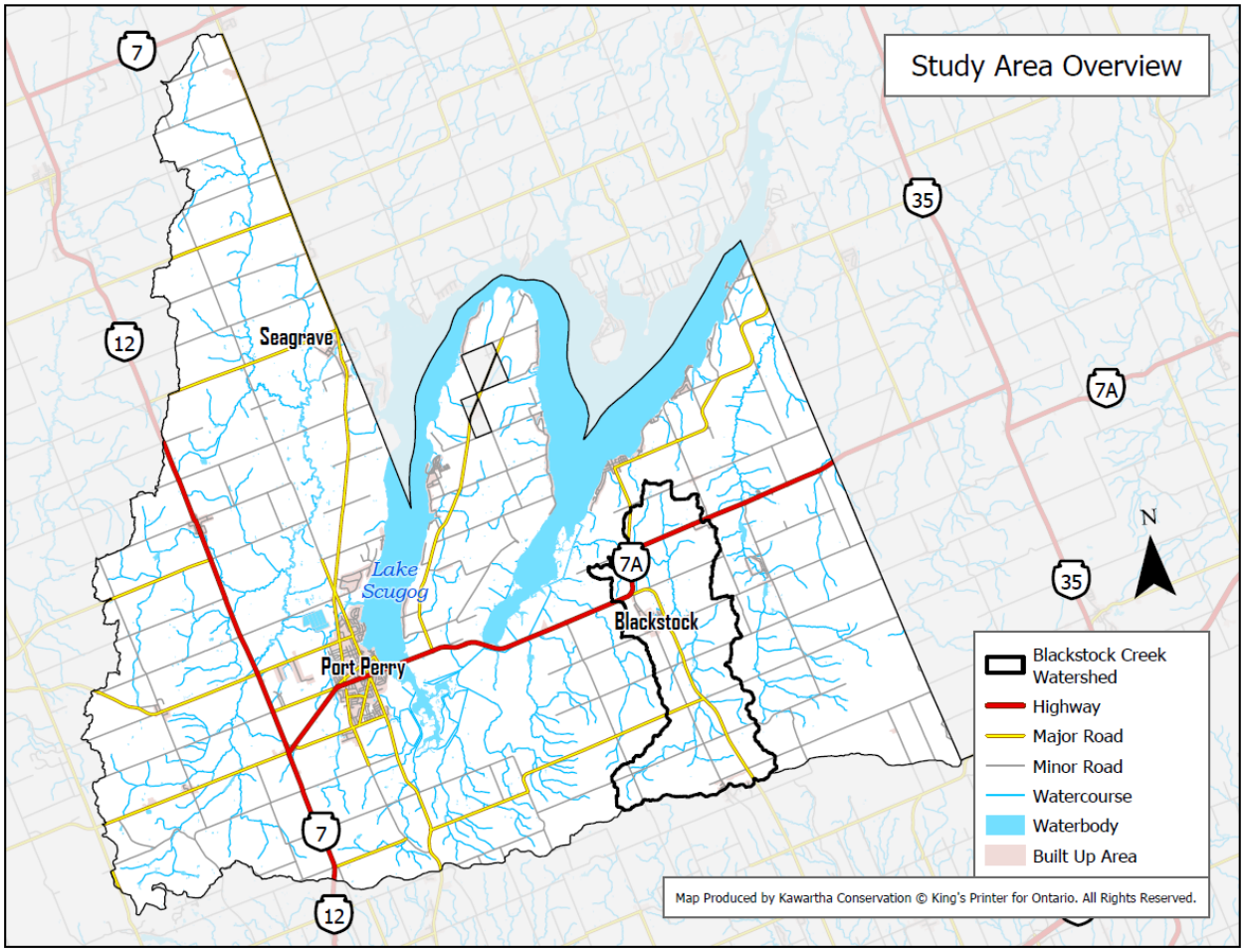

Figure 1.1. Project study area (jurisdictional overlap of Durham Region and Kawartha Conservation).

2.0 Location of watercourses and wetlands within the Blackstock Creek subwatershed.

Background

The purpose of this component was to field-verify (ground-truth) the locations of watercourses and wetlands within the Blackstock Creek subwatershed. This subwatershed was chosen because it is a priority subwatershed of concern as per the Lake Scugog Environmental Management Plan (Kawartha Conservation, 2010).

The subwatershed drains an area of 38 km^2 into Blackstock Creek, which generally flows north then west into the south-east shore of Lake Scugog. The subwatershed contains the Hamlet of Blackstock, and is characterized by a mix of natural features including forests, wetlands, and areas of ecological significance (e.g., Oak Ridges Moraine, provincially significant wetlands and coldwater streams), and extensive agriculture.

Methods

In Spring 2024, staff visited the location of mapped wetlands and watercourses through vehicle road surveys, which included stopping at road-stream crossings and other vantage points where watercourses and wetlands could be seen.

As per their definitions in Ontario Regulation **41/24** of the *Conservation Authorities Act*:

> ‘Watercourse’ means:
>
> > *a defined channel, having a bed and banks or sides, in which a flow of water regularly or continuously occurs*.
>
> ‘Wetland’ means land that:
>
> > *(a) is seasonally or permanently covered by shallow water or has a water table close to or at its surface,*
> >
> > *(b) directly contributes to the hydrological function of a watershed through connection with a surface watercourse,*
> >
> > *(c) has hydric soils, the formation of which have been caused by the presence of abundant water, and*

(d) has vegetation dominated by hydrophytic plants or water tolerant plants, the dominance of which have been favoured by the presence of abundant water.

The definition of wetland does not include periodically soaked or wet land used for agricultural purposes which no longer exhibits a wetland characteristic referred to in clause (c) or (d).

Key Findings

- A total of 48 road-side 'vantage points' were visited over a 2-day period (June 12 - 13th). The verification process resulted in regulations mapping changes at 15 locations (Figure 2.1).

- Changes were made to 10 sections in which a total of 9,375 m of watercourses were removed from regulations mapping (i.e., they no longer exist as per their definition).

- Changes were made to 5 wetlands: 2 wetlands were added to mapping (i.e., they exist as per their definition but were not previously mapped) totaling 2.38 hectares, and 3 wetlands were removed totaling 3.48 hectares. These changes resulted in a net removal of 1.18 hectares of wetland.

- The wetlands and watercourse that were removed occurred on cropland and were likely tiled/buried in the recent past to facilitate better drainage for growing wheat, soybeans, and corn, which are prevalent crops in the subwatershed. See Figure 2.2 for an example of a removed watercourse.

- The wetlands that were added were small areas adjacent to an existing watercourse, on rural residential lands that were likely too small of a wetland area to be delineated by aerial photography (including satellite). See Figure 2.3 for an example of an added wetland.

Recommendations

- Given the apparent change (decline) in watercourses and wetlands from agricultural drainage improvements on Blackstock Creek subwatershed, neighbouring subwatersheds with comparable land use are likely experiencing similar trends. Therefore, field verification of these features should be undertaken across Durham Region to improve regulated features datasets.

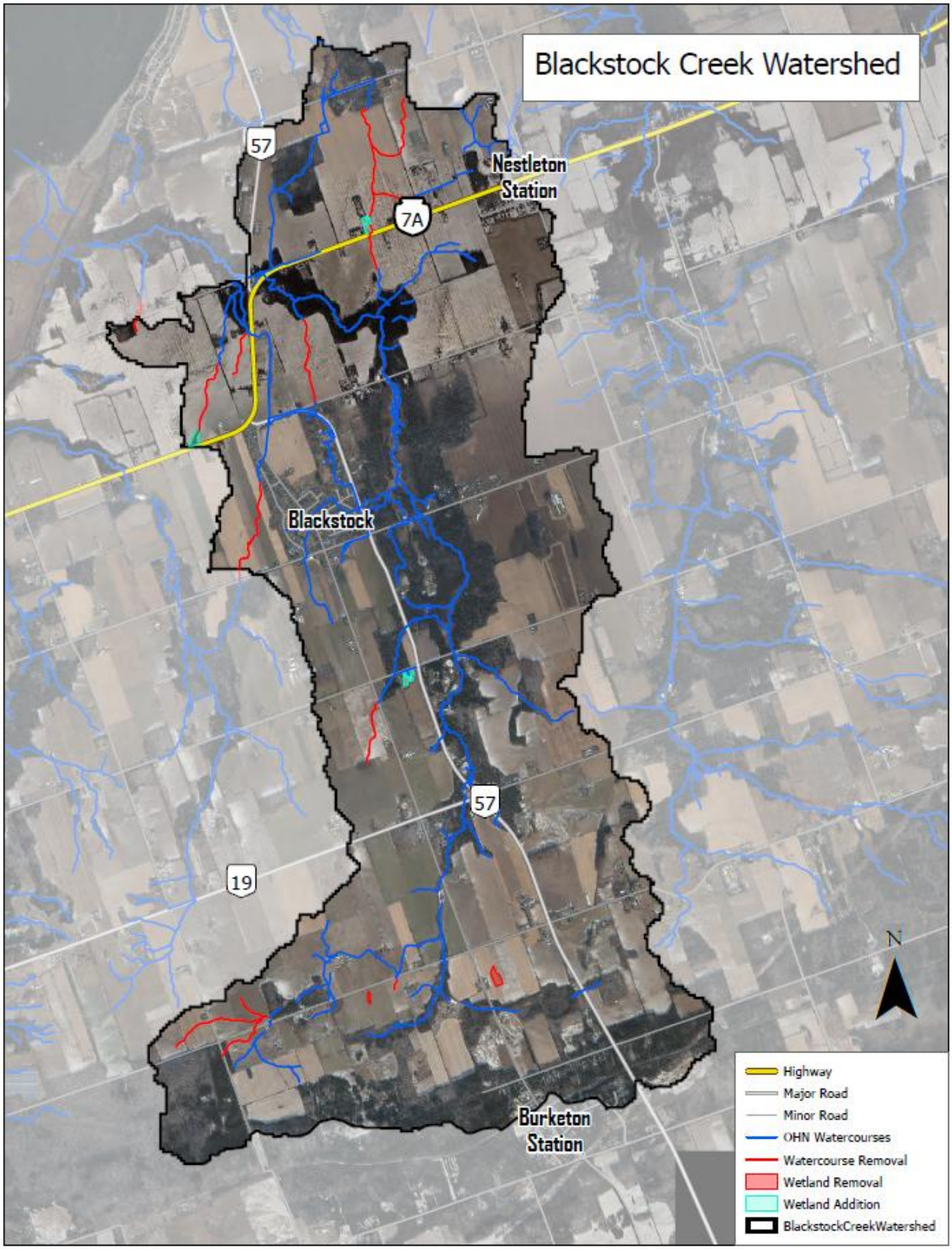

Figure 2.1. Summary of changes to Blackstock Creek subwatershed based on field verification.

Figure 2.2. Example of one of the watercourse removal sites, showing evidence of subsurface drainage works via vertical inlet pipe (also known as a Hickenbottom pipe)

Figure 2.3. Example of one of the wetland addition sites, showing a marsh/swamp mixture as existing vegetation is dominated by water tolerant plants (e.g., cattails and willows).

3.0 Investigating changes in fish habitat in sensitive coldwater watercourses.

Background

The purpose of this component was to assess whether any significant changes have occurred to fish habitat conditions over an approximately 20-year period in coldwater watercourses.

Coldwater watercourses are considered 'fish habitat' as per the federal *Fisheries Act*, 'surface water features' as per the Provincial Planning Statement, and 'sensitive areas' as per the Greenbelt Plan, and typically include permanently flowing streams that are capable of supporting sensitive fishes such as Brook Trout (*Salvelinus fontinalis*).

Brook Trout are sensitive to land use disturbance and climate change, as they require a year-round supply of cold and clear water, plenty of cover from overhanging branches and logs and rocks, and quiet pools between runs of fast water and rapids (Province of Ontario, 2023). Therefore, trends in Brook Trout population status are an important indicator of subwatershed health.

Methods

Ten locations with available Brook Trout data, previously obtained in summer 2003 to 2007, were resampled in summer of 2024 for comparison purposes (Figure 3.1).

The same methodology to collect fishes was used for all samples: the Ontario Stream Assessment Protocol, single-pass backpack electrofishing module (Stanfield, 2017). A Halltech© HT2000 unit was used, set at 150 volts, and 60 hertz pulsed direct current, in a one-or-two netter configuration. Shocking seconds, a measure of effort, were recorded for 9 of the 10 sites. Captured fish were identified to species, measured for total length, and released back into the site.

A modified version of the Rapid Assessment Methodology for Channel Structure module (Stanfield, 2017) was used to collect basic aquatic habitat data at each site sampled in 2024. Data collected included: site length (minimum of 40 m), wetted width and channel midpoint depth (at 10 locations of approximate equal spacing), water temperature, and notes related to adjacent land use.

To make comparisons between sampling events, 2 metrics were used for data analyses: Brook Trout total abundance (i.e., the number of Brook Trout caught), and Brook Trout standardized

abundance (i.e., the number caught, based on effort expended to catch them: Brook Trout per 100 shocking seconds).

As estimate of natural variability in Brook Trout abundance was obtained by comparing historical Brook Trout data at two sites (NQN1003 and ECC001) that were resampled within 2 to 3 years (NQN1003 sampled in 2003 and 2006, and ECC001 in 2006 and 2007).

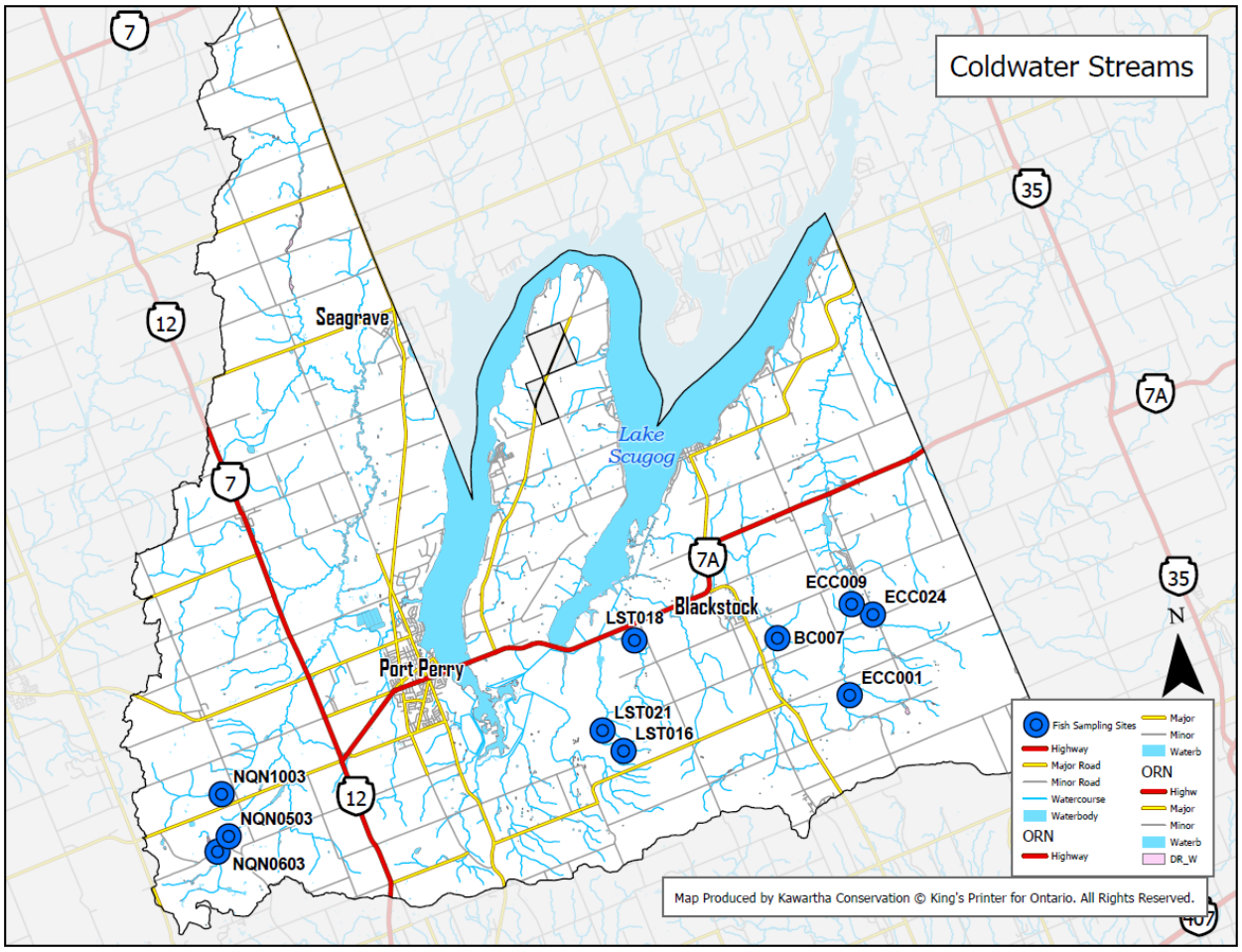

Figure 3.1. Map of coldwater streams sampling sites.

Key Findings

- 2024 sample sites had high quality aquatic habitat characteristics for supporting Brook Trout, including average wetted width (2.9 m), average mid channel water depth (20.5 cm), and average water temperatures of 17.3°C (Table 3.1). They flowed through

forested or meadow valleys, dominated by sand or gravel substrates, with abundant in-stream woody structure. See Figure 3.2 for an example of representative habitat conditions and Brook Trout.

- There were no apparent changes in Brook Trout populations at these 10 sites. Brook Trout were caught at every site (Table 3.2), their average total abundance per site (14.6) was up by 28%, but was down 13% (0.90 fish per 100 shocker seconds) when standardized for effort (Table 3.3). However, both values were within the natural variability estimates, which was +/- 20 to 50% for total abundance, and +/- 29 to 49% for standardized abundance. Further, there is evidence of natural reproduction as juveniles (i.e., less than 75 mm in length) were found at all sites except where Brook Trout were relatively rare.

- A total of 418 individual fish were captured during 2024 sampling, which included 9 unique species of fish (Table 3.2). There was one other coldwater fish caught (Mottled Sculpin, at 40% of sites), no species of conservation concern, and no invasive species.

Recommendations

- Brook Trout populations should continue to be tracked over time, given they are considered a good indicator of climate change (i.e., stream warming) and land use disturbance.

Table 3.1. Site Information.

Site ID	Subwatershed	Date	Easting	Northing	Site Length (m)	Effort (s)	Wetted Width (m)	Water Depth (cm)	Temperature (C)
BC007	Blackstock Creek	26-Jul-24	675863	4885688	40.0	1559	2.8	26.2	19.0
ECC001	East Cross Creek	12-Jul-24	678101	4883714	45.0	1197	1.7	17.7	13.5
ECC009	East Cross Creek	2-Aug-24	678326	4886657	40.0	2451	5.3	43.3	17.0
ECC024	East Cross Creek	15-Jul-24	678997	4886280	42.5	1399	3.0	13.5	13.5
LST016	Lake Scugog	17-Jul-24	670675	4882311	59.1	1208	1.5	7.3	14.0
LST018	Lake Scugog	19-Jul-24	671226	4885871	52.6	1988	3.0	21.0	16.0
LST021	Lake Scugog	17-Jul-24	670030	4883013	52.9	N/A	2.0	26.5	18.5
NQN0503	Nonquon River	31-Jul-24	657730	4880252	54.0	1874	3.8	13.3	22.0
NQN0603	Nonquon River	24-Jul-24	657341	4879775	40.0	1140	2.1	24.7	21.0
NQN1003	Nonquon River	13-Aug-24	657575	4881627	53.1	1807	3.5	11.8	18.5

Figure 3.2. Example of representative habitat conditions (top) and Brook Trout (bottom).

Table 3.2 Fish capture summary by site, including abundance and length range.

Site ID	Fish Species	Abundance (#)	Minimum to Maximum Length (mm)
BC007	**Brook Trout**	**4**	**125-190**
	Mottled Sculpin	5	30-81
	Western Blacknose Dace	18	50-87
ECC001	**Brook Trout**	**1**	**75**
	Mottled Sculpin	8	37-70
ECC009	**Brook Trout**	**35**	**57-224**
	Fathead Minnow	1	56
	Mottled Sculpin	9	40-86
	Western Blacknose Dace	2	51-61
ECC024	**Brook Trout**	**28**	**40-165**
	Western Blacknose Dace	10	50-90
LST016	Brook Stickleback	1	50
	Brook Trout	**37**	**40-170**
LST018	**Brook Trout**	**1**	**151**
	Creek Chub	14	36-116
	Mottled Sculpin	2	58-94
	Western Blacknose Dace	42	42-74
LST021	**Brook Trout**	**18**	**55-170**
	Central Mudminnow	1	85
	Western Blacknose Dace	9	70-105
NQN0503	**Brook Trout**	**18**	**62-194**
	Creek Chub	6	103-145
	Western Blacknose Dace	17	69-84
	White Sucker	7	91-144
	Yellow Perch	2	56-58
NQN0603	Brook Stickleback	2	40-45
	Brook Trout	**2**	**150-190**
	Creek Chub	12	30-150
	Western Blacknose Dace	50	20-90
NQN1003	**Brook Trout**	**2**	**92-95**
	Creek Chub	16	29-105
	Western Blacknose Dace	38	52-83

Table 3.3. Brook Trout total abundance and standardized abundance, per site.

Site ID	Brook Trout Abundance (#)		Brook Trout Abundance (#/100s)	
BC007	**4**	2	**0.26**	0.10
ECC001	1	**5**	0.07	**0.85**
ECC009	**35**	33	1.43	**1.78**
ECC024	**28**	23	**2.00**	1.96
LST016	**37**	18	3.06	**3.77**
LST018	1	**3**	0.05	**0.32**
LST021	**18**	5	-	0.83
NQN0503	**18**	1	**0.96**	0.04
NQN0603	**2**	1	**0.18**	0.04
NQN1003	2	**23**	0.11	**0.61**
AVERAGE	**14.6**	11.4	0.90	**1.03**
Change	+28%		-13%	

4.0 Location of sensitive features (fish habitat, regulated features, and erosion prone areas) along Lake Scugog.

Background

The purpose of this component was to identify the location of sensitive features along adjacent lands (i.e., the shoreline) of Lake Scugog. The definition of sensitive features for the purposes of this component includes: fish habitat (overhanging vegetation, wetlands, and fish spawning areas), regulated features as per the *Conservation Authorities Act* (watercourses and wetlands), and areas prone to erosion (ice damage areas and steep slopes).

Fish habitat is a Key Natural Heritage Feature as per the Provincial Planning Statement, and as such municipalities are required to consider them during the review of *Planning Act* applications. Adjacent lands are also considered, as they are defined as per the Provincial Planning Statement as [in reference to policies related to Natural Heritage Features] '*those lands contiguous to a specific natural heritage feature or area where it is likely that development or site alteration would have a negative impact on the feature or area*.'

The *Fisheries Act* defines fish habitat as "*water frequented by fish and any other areas on which fish depend directly or indirectly to carry out their life processes, including spawning grounds and nursery, rearing, food supply and migration areas*." Overhanging vegetation (i.e., tree trunks, roots, branches, or leaves that droop over the water), wetlands, and fish spawning areas are key fish habitat features within 'adjacent lands'. They provide important fish habitat within the riparian zone, a transitional area between land and water that is recognized by the province as providing features, functions and conditions that support fish life processes and protect fish habitat as defined by the *Fisheries Act* (Ontario Ministry of Natural Resources, 2010).

Regulated features as per the *Conservation Authorities Act*, including watercourses and wetlands, were previously defined in Section 2.0. Development activities within these areas require approval from the conservation authority and they are also considered 'surface water features' as per the Provincial Planning Statement. The emphasis of this project is to field identify regulated features that have not been captured through existing datasets.

Shoreline areas prone to erosion and ice damage are important areas of concern for development approval agencies, given their potential to negatively impact the stability of infrastructure (e.g., dwellings, accessory structures, docks, etc.) and soil integrity. Steep slopes are high risk areas for erosion to occur, and lake ice can push onto the land and result in large ridges or mounds that displace artificial and natural features along the shoreline.

Methods

Sensitive shoreline features were documented through two approaches: field survey, and by using existing datasets. Field surveys included a rapid shoreline survey by boat, over a four-day period in spring of 2024. Features were marked using GPS either as a point (i.e., individual location), or a segment (i.e., a long section of shoreline). Existing information was obtained from Kawartha Conservation and provincial datasets.

Fish habitat - overhanging vegetation were documented in the field, if there were a cluster of mature trees that were clearly overhanging the water for a minimum of 10 m along the water's edge (i.e., shoreline frontage).

Fish habitat - wetlands were documented using existing data. The existing regulated features dataset from Kawartha Conservation (Kawartha Conservation, 2024) was used, which includes a combination of wetlands that were interpreted through orthophotography using the Ecological Land Classification protocol (Lee et al., 1998) and existing provincial wetland dataset (province of Ontario, 2024a), which includes wetlands identified through the provincial wetland evaluation system, or through satellite imagery interpretation.

Fish habitat – spawning areas were documented using existing provincial datasets (Province of Ontario, 2024b). These areas are known spawning areas for three recreationally important fish species including Largemouth Bass, Smallmouth Bass, and Muskellunge.

Regulated features – watercourses (their outlets into the lake, only) and wetlands were documented using existing datasets and in the field. Watercourse outlets were field identified if present but not captured in existing datasets. Wetlands were field identified if they were present but not captured in the existing datasets, and if they existed uninterrupted for a minimum of 10m in length along the water's edge.

Areas prone to erosion were documented using existing datasets and in the field. Ice damaged areas were documented in the field when shoreline showed obvious evidence of land-heaving (i.e., mounding, or ice jacking), and were at least 10m in length along the water's edge. Steep slopes were drawn from our existing dataset, and were determined through a light detection and ranging (LiDAR) derived digital terrain model at 0.5 m resolution and identifying slopes greater than 20% (1:5 vertical to horizontal ratio) for areas that have a primary soil type as sand and 33% (1:3 ratio) for all other soil types.

Key Findings

- Between May 10 and May 16, 2024, 351 unique locations having sensitive features were field mapped as points or segments along approximately 83 km of the Lake Scugog shoreline within Durham Region.

- Fish habitat - overhanging vegetation was documented at 52 locations, which occupied approximately 3.8 km of shoreline length (Figure 4.1). They were typically located in numerous but isolated 'groups', with just a few contiguous segments. See Figure 4.2 for an example of overhanging vegetation.

- Fish habitat – wetlands were documented at 12 locations, which occupied approximately 16.5 km of shoreline length (Figure 4.2). They were typically large contiguous segments with some small isolated segments. See Figure 4.3 for an example of a wetland.

- Fish habitat – fish spawning areas exist along 31 segments, which includes approximately 18 km (15 segments) for Largemouth Bass, 29 km (11 segments) for Muskellunge, and 13.5 km (5 segments) for Smallmouth Bass. There are no public spawning habitat data available for Walleye, which is another recreationally important fish species.

- Regulated features – watercourse outlets that have not been previously mapped, were found at 2 locations (Figure 4.4). See Figure 4.5 for an example of a 'newly found' watercourse outlet.

- Regulated features – wetlands that have not been previously mapped, were found at 54 locations, which includes approximately 2.5 km of marsh wetland (e.g., cattails) and 0.9 km of floating leaved wetland (e.g., lily-pads) (Figure 4.4). See Figure 4.6 for an example of a 'newly found' wetland.

- Shoreline area prone to erosion - steep slopes are shown in Figure 4.7, and several of which occur along the water's edge or within adjacent lands. No length calculations are available.

- Shoreline areas prone to erosion – ice damage areas were documented at 133 locations, which includes approximately 2.5 km of shoreline length (Figure 4.7). Interestingly, ice damage areas generally existed along the western, protected shorelines (except for a few located on the east shore across from Port Perry). See Figure 4.8 for an example of an ice damaged shoreline.

Recommendations

- Develop a process to include the 'newly-found' watercourse outlets and wetlands around the Lake Scugog shoreline into updated regulations features mapping.

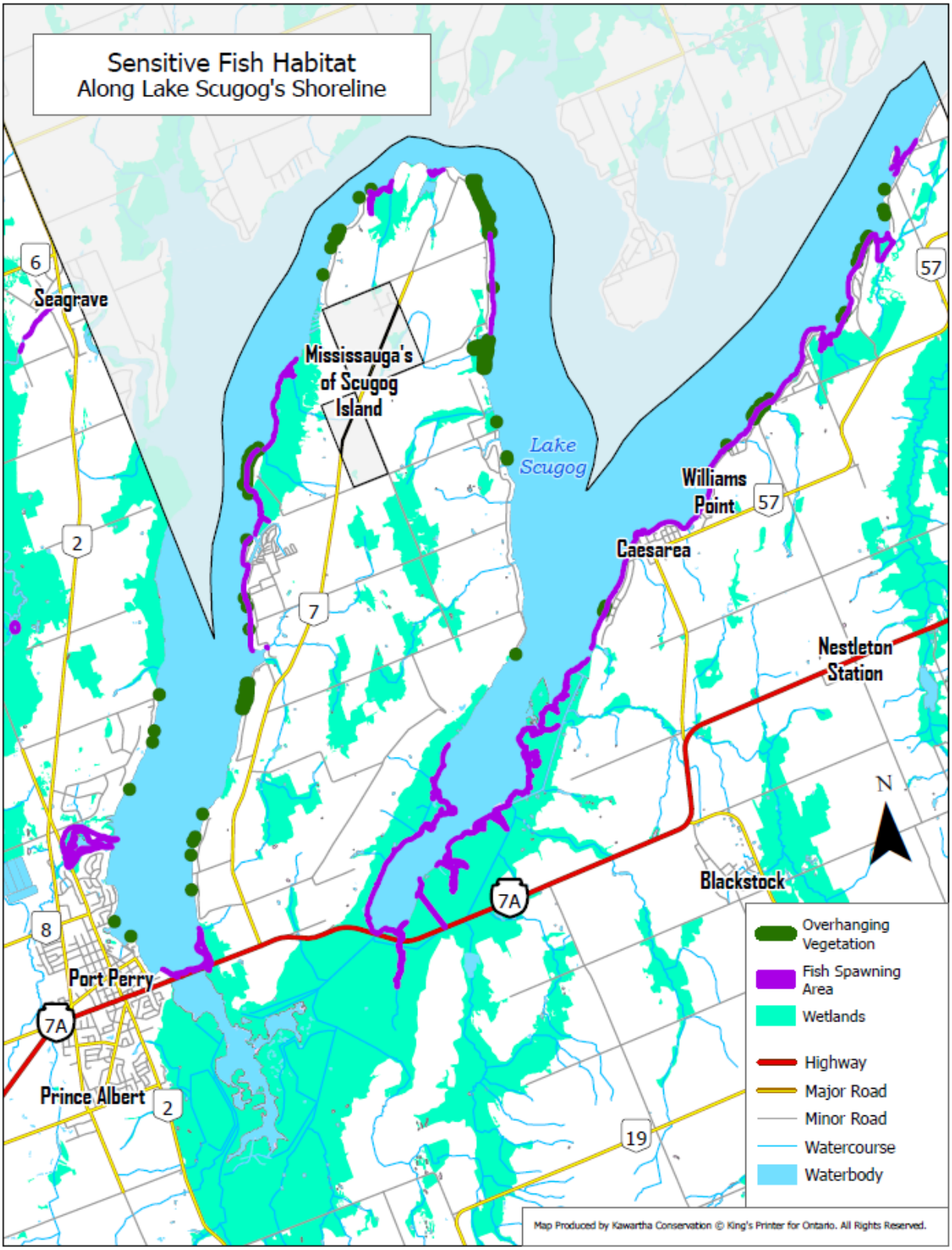

Figure 4.1. Location of sensitive features on Lake Scugog shoreline (overhanging vegetation, wetlands, and fish spawning areas).

Figure 4.2 Example of overhanging vegetation.

Figure 4.3 Example of wetlands (marsh).

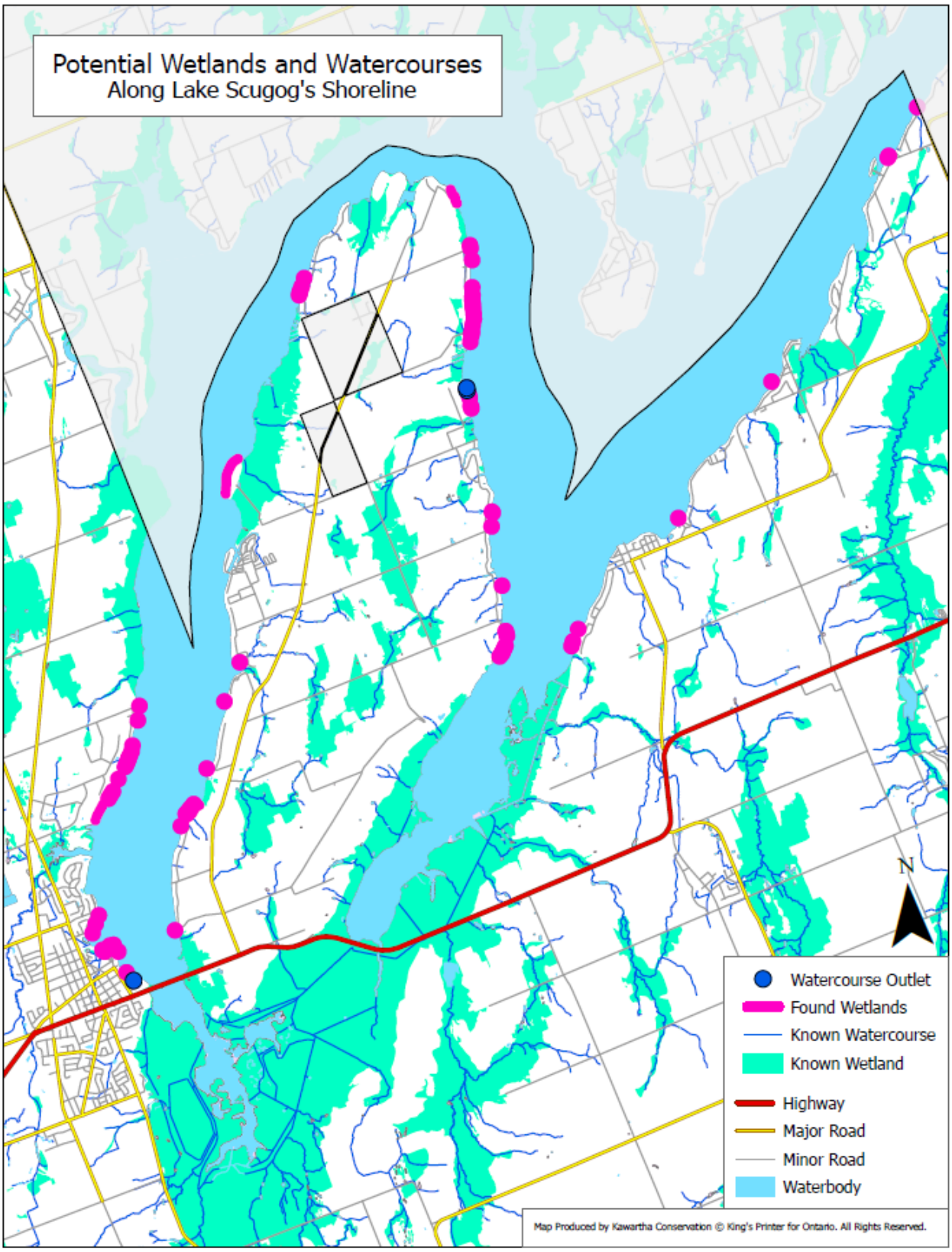

Figure 4.4. Location of newly 'found' and existing mapped watercourses and wetlands.

Figure 4.5. Example of a 'newly found' watercourse outlet, in red circle.

Figure 4.6. Example of a 'newly found' wetland, in red circle.

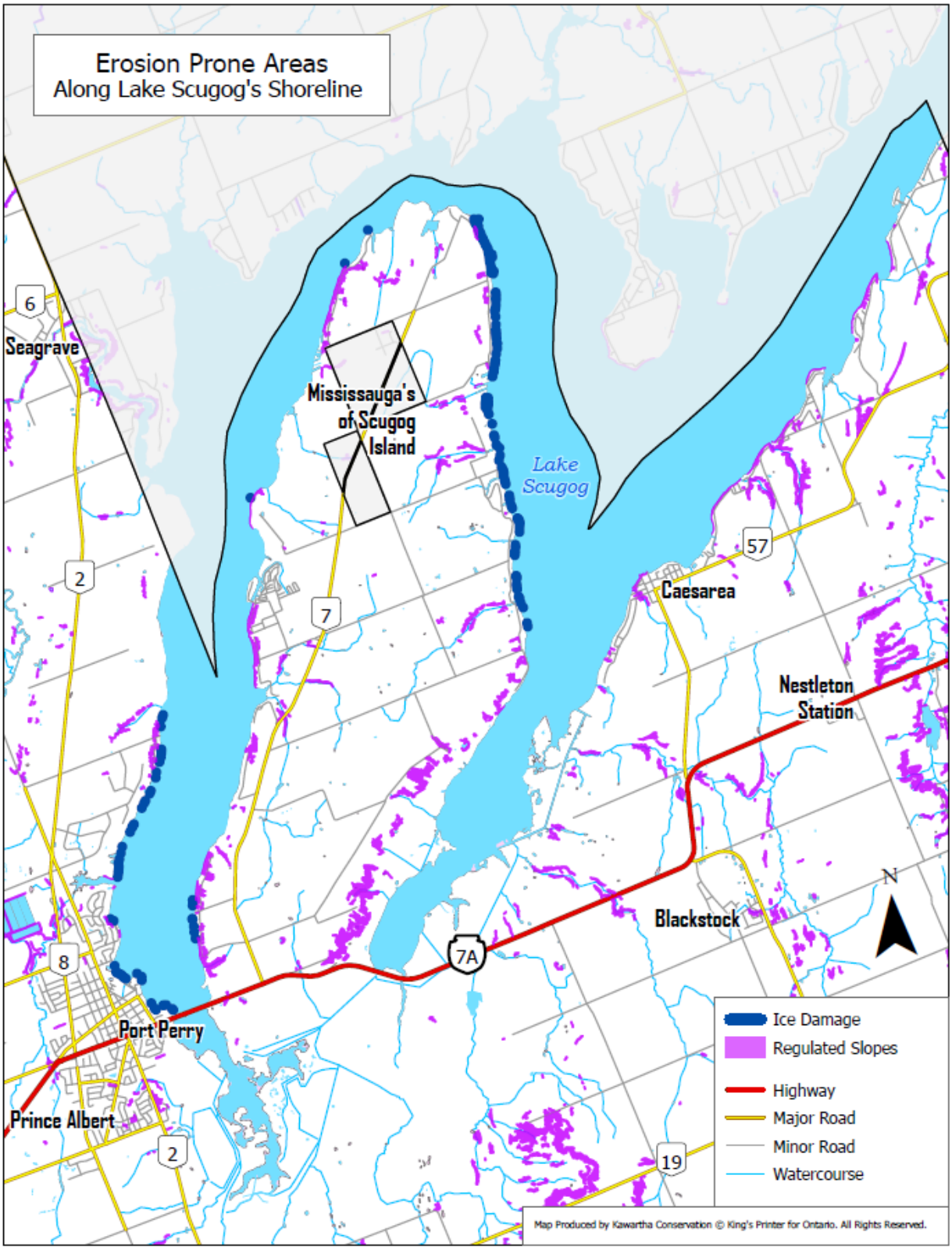

Figure 4.7. Location of erosion prone areas on Lake Scugog shoreline (ice damage and steep slopes).

Figure 4.8. Example of an ice damaged shoreline.

5.0 Summary and Recommendations

In 2024, Kawartha Conservation undertook field verification activities to confirm the presence and location of certain regulated features and sensitive features within the overlapping jurisdictions of Kawartha Conservation and Durham Region.

This information is used to update existing mapping, and as background information, to help approval authorities conform to provincial policy when reviewing development applications.

After completion of the activities, the following recommendations will help to further improve the useability and applicability of this information:

- Location of watercourses and wetlands within the Blackstock Creek subwatershed:
    - Given the apparent change (decline) in watercourses and wetlands from agricultural drainage improvements in Blackstock Creek subwatershed, neighbouring subwatersheds with comparable land use are likely experiencing similar trends. Therefore, field verification of these features should be undertaken across Durham Region to improve regulated features datasets.
- Investigating changes in fish habitat within coldwater watercourses.
    - Brook Trout populations should continue to be tracked over time, given they are considered a good indicator of climate change (i.e., stream warming) and land use disturbance.
- Location of sensitive features along Lake Scugog's shoreline.
    - Develop a process to include the 'newly-found' watercourse outlets and wetlands around the Lake Scugog shoreline into updated regulations features mapping.

6.0 References

Kawartha Conservation. 2010. Lake Scugog Environmental Management Plan. Available at: https://www.kawarthaconservation.com/media/jn5d4hmo/lsemp_may2010_final.pdf.

Kawartha Conservation. 2024. Kawartha Conservation Public Property Mapping Tool. Available Online at: https://www.kawarthaconservation.com/permits-and-planning/property-mapping.

Lee, H.T., Bakowsky, W.D., Riley, J., Valleyes, J., Puddister, M., Uhlig, P., and McMurray, S. 1998. Ecological land classification system for southern Ontario: first approximation and its application. Ontario Ministry of Natural Resources, Southcentral Science Section, Science Development and Transfer Branch. SCSS Field Guide FG-02. Available at: https://www.ontario.ca/files/2024-10/mnr-psd-ecological-land-classification-for-southern-ontario-2024-10-07.pdf

Province of Ontario. 2023. Brook Trout: Information about the Brook Trout (Salvelinus fontinalis), a cold-water fish native to Ontario. Available at: https://www.ontario.ca/page/brook-trout.

Province of Ontario. 2024a. Wetlands dataset. Ontario Geohub. Available at: https://geohub.lio.gov.on.ca/datasets/mnrf::wetlands/about.

Province of Ontario. 2024b. Fish Activity Area dataset. Ontario Geohub. Available at: https://geohub.lio.gov.on.ca/datasets/fish-activity-area/explore.

Ontario Ministry of Natural Resources. 2010. Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second Edition. Toronto: Queen's Printer for Ontario. 248 pp. Available at: https://docs.ontario.ca/documents/3270/natural-heritage-reference-manual-for-natural.pdf.

Stanfield, L. W. (Ed.). 2017. Ontario Stream Assessment Protocol – Version 10. Ministry of Natural Resources. Available at: https://trca.ca/app/uploads/2019/06/osap-master-version-10-july1-accessibility-compliant_editfootnoteS1M4.pdf