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Date: July 14, 2025

Project #: 60713279

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Memorandum

Subject: **Preliminary Design for the Highway 11 2+1 Roadway Model Pilot Project: Fisheries Impact Assessment Memorandum for the Advanced Clearing Contract for GWP 5195-23-00**

1. Introduction

The Ontario Ministry of Transportation (MTO) has retained AECOM Canada ULC (AECOM) to undertake the design and Group B Class Environmental Assessment (Class EA) Study for a 2+1 Roadway Model Pilot Project on Highway 11 (the Project), between the City of North Bay and the Town of Temagami. A 2+1 highway is a three-lane highway that typically involves a passing lane that changes directions approximately every 2 to 5 kilometres (km). The Project is split into two assignments:

- GWP 5151-21-00: Highway 11 from Sand Dam Road northerly to Ellsmere Road (13.8 km); and,
- GWP 5033-22-00: Highway 11 from 4.6 km north of Highway 64 northerly 11.4 km to 340 metres (m) south of Jumping Caribou Road.

While this Project has been split into two assignments, this memorandum has been prepared to address the close-cut (i.e., trees and shrubs) clearing works alone and specifically for GWP 5151-21-00: Highway 11 from Sand Dam Road northerly to Ellsmere Rd (13.8 km). This impact assessment memorandum has been prepared following the reporting requirements of the MTO *Environmental Guide for Fisheries* (draft, 2025a) (Fisheries Guide) and in conjunction with the 2025 MTO Fisheries (Fisheries Protocol) in the Fisheries Guide. This includes a step-by-step process to identify the applicable regulatory review and/or notification requirements. Some of the steps include:

- Identification of the potential for the Project to cause harm to fish or result in the harmful alteration, disruption, or destruction (HADD) to fish habitat in contravention of the *Fisheries Act* (1985);
- Gathering of existing fish and fish habitat data, and supplementing through field investigations in accordance with the Fisheries Guide;
- Determination of the presence of aquatic Species at Risk (SAR);
- Provide mitigation measures in accordance with the *Environmental Reference for Highway Design* (ERHD; MTO, 2013); and,
- Application of MTO Best Management Practices (BMPs) from the Fisheries Guide – *Best Management Practices Manual* (MTO, 2025b).

1.1 Project Location and Site Map

The Study Area is located within the Townships of Merrick, Blyth, Notman, and Lyman between the City of North Bay and the Town of Temagami along Highway 11 from Sand Dam Road northerly to Ellsmere Road. The Study Area for this impact assessment includes those waterbodies identified as fish habitat in the Project limits. **Figure 1** of **Appendix A** provides an overview of the location of the Project and Study Area. Those waterbodies identified as direct fish habitat in the *Fish and Fish Habitat Existing Conditions Report – Highway 11 Improvements from Sand Dam Road Northerly to Ellsmere Road (13.8 km) (GWP 5151-21-00)* (AECOM, 2025) and the location where they interact with the proposed vegetation clearing (using MTO Station numbers) are listed below in **Table 1-1.** Each water feature is identified by the MTO Station number where the feature is crossed or otherwise overlapped with Highway 11.

Table 1-1: Location of Works in or near Fish Habitat (Template D1)

MTO Stations[1]	Waterbody Name and Identifier	Highway	Township	Latitude	Longitude
15+925 to 16+125	15+975/16+035 Little Sturgeon River	Highway 11	Merrick	46.4944	-79.5044
12+550 to +12+775	12+725 Unnamed Tributary to Little Sturgeon River	Highway 11	Blyth	46.5115	-79.5323
13+350 to 13+525	13+400 Unnamed Tributary to Little Sturgeon River	Highway 11	Blyth	46.5156	-79.5385
13+898 to 13+958	13+928 Unnamed Drainage Feature	Highway 11	Blyth	46.5188	-79.5439
14+329 to 14+389	14+359 Unnamed Drainage Feature	Highway 11	Blyth	46.5217	-79.5477
15+500 to 15+600	15+512 Unnamed Tributary to Tomiko River	Highway 11	Blyth	46.5283	-79.5596
16+638 to 16+698	16+668 Unnamed Drainage Feature	Highway 11	Blyth	46.5355	-79.5701
10+042 to 11+002	10+072 Unnamed Tributary to Little Tomiko River	Highway 11	Notman	46.538	79.5742
10+825 to 10+925	10+881 Unnamed Tributary to Little Tomiko River	Highway 11	Notman	46.5431	-79.5817
11+775 to 11+850	11+800 Unnamed Tributary to Little Tomiko River	Highway 11	Notman	46.5491	-79.5899
12+525 to 12+625	12+541 Unnamed Tributary to Little Tomiko River	Highway 11	Notman	46.5536	-79.5971
14+025 to 14+125	14+073 Unnamed Tributary to Tomiko River	Highway 11	Notman	46.563	-79.6116
14+375 to 14+600	14+408 Unnamed Tributary to Tomiko River	Highway 11	Notman	46.5632	-79.6114
14+675 to 15+200	14+926 Unnamed Tributary to Tomiko River	Highway 11	Notman	46.5675	-79.6205
15+950 to 16+150	16+060 Unnamed Tributary to Elbow Lake (Tomiko River)	Highway 11	Notman	46.5753	-79.6291
16+250 to 16+325	16+278 Unnamed Tributary to Elbow Lake (Tomiko River)	Highway 11	Notman	46.5772	-79.6314

1 – Areas of tree clearing within 30 m of a waterbody.
2 – Those sites in grey indicate indirect fish habitat.

2. Project Description

This memorandum discusses the potential impacts associated with only the pre-construction activities of the Project, including close-cut vegetation clearing, and the installation or use of temporary water crossings that may be required by vegetation clearing equipment for access. These Project components are being assessed separately to advance pre-construction vegetation clearing of the site while Detail Design, environmental assessment, and permitting for the Project move forward separately and the impact assessment to fish and fish habitat of these other Project activities will be discussed under a separate cover.

3. Summary of Existing Fish and Fish Habitat Conditions

Comprehensive fisheries assessments for the Project were completed by AECOM in 2024. The methods used, the results, and additional details are documented and available for review in the *Fish and Fish Habitat Existing Conditions Report – Highway 11 Improvements from Sand Dam Road Northerly to Ellsmere Road (13.8 km) (GWP 5151-21-00)* (AECOM, 2025). The comprehensive assessments gathered the information collected through background information sources, consultation with the Ontario Ministry of Natural Resources (MNR), and field investigations following the methods outlined in the MTO *Environmental Guide for Fisheries* (2020). The results of the comprehensive fisheries assessments, including background information, fish habitat assessment, and fish community sampling, are summarized below in **Table 3-1** and **Table 3-2**. There are no records or observations of aquatic SAR in the Study Area.

Additional information pertaining to the specific methods used, agency correspondence, photographs, etc., are available in the above-mentioned report. **Figure 1** and **Figure 2** of **Appendix A** provide location details of the fish habitat identified in the Study Area as well as where those locations interact with the close-cut vegetation clearing.

Table 3-1: Fish and Fish Habitat Existing Conditions Summary Table (Template D2A)

Waterbody	Date (dd/mm/yyyy)	Flow	Thermal Regime	Fish Habitat[1]	Substrate Type[2]	Channel Morphology	Vegetation	Constraints & Opportunities	Significant Fish Habitat
Fish Habitat									
15+975/16+035 **Merrick Township** **Little Sturgeon River** *Same water feature, combined assessment sites including natural channel filled in for highway causeway (16+035) and dug straightened channel made for crossing structure at 15+975	■ 03/05/2024 ■ 08/08/2024	■ Permanent	■ Cold (MNR 2024b)	■ Direct	■ **Upstream:** Sand, silt, cobble, gravel, boulder, detritus ■ **Downstream:** Sand, silt, boulder, gravel, muck	**Spring and Summer** ■ Upstream: Flats (100%) ■ Downstream: Flats (100%)	**Upstream** ■ **Riparian**: Speckled Alder (*Alnus incana*), Red Osier Dogwood (*Cornus sericea*), Red Pine (*Pinus resinosa*), Reed Canary Grass (*Phalaris arundinacea*), Queen Anne's Lace (*Daucus carota*), Fireweed (*Chamaenerion angustifolium*), White Meadowsweet (*Spirea alba*), Sweet Gale (*Myrica gale*) ■ **Instream:** Emergent vegetation (Water Smartweed [*Persicaria amphibia*) was present, but sparse. Emergent and submergent grasses and sedges (*Calix spp*.) more prevalent inside channel at 16+035. **Downstream** ■ **Riparian**: Speckled Alder	■ Material deposition and embankment erosion/sink hole of the access road in the upstream zone of detail assessment (ZDA). Habitat could benefit from embankment stabilization. ■ Twin culverts at access road were nearly submerged. Evaluate sizing of the twin culverts. ■ Erosion gullies and deposited embankment material observed in the right-of-way (ROW). Habitat could benefit from embankment stabilization. ■ Habitat could benefit from garbage cleanup, including spill socks that may have been abandoned (present during both spring and summer assessment), or additional measures to clean up spill (hydrocarbon sheen observed). ■ Beaver dam in downstream ZDA at confluence with 16+035 side channel impeding (but not completely restricting) fish passage into the side channel	■ Juvenile Brook Trout (*Salvelinus fontinalis*) captured during summer assessment, and clean gravel suitable for spawning was observed within the ROW. Suitable spawning and nursery habitat for Brook Trout were both observed. ■ Hummocks of narrow-emergent vegetation suitable for Northern Pike (*Esox lucius*) spawning habitat were present in the finger channels and flooded pockets between the main channel at 15+975, and side channel at 16+035, in both upstream and downstream ZDA. ■ Some bank erosion and instability were noted in the upstream and downstream ZDA.
12+725 **Blyth Township** Unnamed Tributary to Little Sturgeon River	■ 29/04/2024 ■ 06/08/2024	■ Permanent	■ Cold	■ Direct	■ **Upstream:** Boulder, cobble, silt, sand, detritus, gravel, sand, muck, Clay ■ **Downstream:** Detritus, muck, silt, sand, cobble, gravel	**Spring** ■ **Upstream:** Pool (25%), Run (75%) ■ **Downstream:** Pool (20%) Flats (80%) **Summer** ■ **Upstream:** Pool (40%), Flats (60%) ■ **Downstream:** Flats (60%), Pool (40%)	**Upstream** ■ **Riparian:** Speckled Alder, Broadleaf Cattail (*Typha latifolia*), goldenrod (*Solidago* sp.), aster (*Aster* sp.), Blue Vervain (*Verbena hastata*), Pearly Everlasting (*Anaphalis margaritacea*), Sensitive Fern (*Onoclea senesibilis*), Tamarack (*Larix laricina*), White Meadowsweet, Red Maple (*Acer rubrum*), Dark Green Bullrush (*Scirpus atrovirens*), Reed Canary Grass, Bracken Fern (*Pteridium auilinum*), Ox Eye Daisy (*Leucanthemum vulgare*) ■ **Instream:** Submergent grasses **Downstream** ■ Riparian: Speckled Alder, cattail (*Typha sp.*), goldenrod, aster, Blue Vervain, Pearly Everlasting, Sensitive Fern, Tamarack, White Meadowsweet, Red Maple, Dark Green Bulrush (S*cirpus atrovirens*). ■ Instream: absent	■ Boulders at pool crest in upstream ZDA possible fish passage impediment during low flows. Consider removing boulders to improve fish passage.	■ Boulders in upstream ZDA may be impediment to fish passage during low flows.

Waterbody	Date (dd/mm/yyyy)	Flow	Thermal Regime	Fish Habitat[1]	Substrate Type[2]	Channel Morphology	Vegetation	Constraints & Opportunities	Significant Fish Habitat
13+400 **Blyth Township** **Unnamed Tributary to Little Sturgeon River**	■ 07/08/2024 ■ 30/04/2024	■ Upstream: Intermittent ■ Downstream: Permanent	■ Cold	■ Direct	■ **Upstream:** Sand, gravel, silt, boulder ■ **Downstream:** Detritus, cobble, gravel, sand, silt, boulder, clay	**Spring** ■ **Upstream**: Run (100%) ■ **Downstream:** Flats (100%) **Summer** ■ Upstream: Dry ■ Downstream (in wetland): 100% flats	**Upstream** ■ **Riparian:** Broadleaf Cattail, Tamarack, Speckled Alder, White Pine (*Pinus strobus)*, Eastern White Cedar (*Thuja occidentalis*), Black Spruce *(Picea mariana*), goldenrod, Tall White Aster (*Symphyotrichum ericoides*), St. Johns Wort (*Hypericum perforatum*), Dark Green Bullrush, Reed Canary Grass, Leatherleaf (*Chamaedaphne calyculata***)**, Sweet Gale ■ **Instream:** absent **Downstream** ■ **Riparian:** Reed Canary Grass, Leatherleaf, Sweet Gale along flooded banks in wetland. ■ **Instream:** cattail, bulrush (*Scirpus* sp.)	■ Boulder and debris obstruction at culvert inlet is potentially restricting flow into the culvert and could be a fish passage impediment. Consider clearing boulders and debris. ■ Beaver dam downstream of culvert outlet may impede fish passage in low flow conditions. ■ Gradient, velocity, and low flow in culvert likely permanent impediment to fish passage. ■ Potential seasonal impediment to fish passage from low/intermittent flow.	■ Groundwater indicator observed on the wetland shoreline downstream of culvert.
15+512 **Blyth Township** **Unnamed Tributary to Tomiko River**	■ 30/04/2024 ■ 08/08/2024	■ Permanent	■ Warm	■ Direct	■ **Upstream:** Gravel, silt, muck, cobble, detritus, boulder ■ **Downstream:** Gravel, detritus, sand, silt, muck, boulder	**Spring** ■ Upstream: Flats (50%), Run (50%) ■ Downstream: Flats (100%) **Summer** ■ Upstream: Flats (100%) ■ Downstream: Flats (100%)	**Upstream** ■ **Riparian:** Eastern White Cedar, Blue Spruce (*Picea pungens*), Sweet Gale, Speckled Alder, Goldenrod, Tall White Aster, White Meadowsweet, Leatherleaf, grasses, Balsam Fir, White Birch (*Betula papyrifera*), Strawberry (*Fragaria ananassa*), Large Leaf Aster (*Eurybia macrophylla*) ■ **Instream**: Cattail, grasses, sedges **Downstream** ■ **Riparian:** Tamarack, Broadleaf Cattail, White Meadowsweet, Leatherleaf, Bracken Fern, Sweet Gale, sedges, Sheep Laurel (*Kalmia angustifolia*), St. Johns Wort, Bog Cranberry *(Vaccinium oxycoccos*). ■ **Instream**: Broadleaf Cattail, Softstem Bulrush (*Scholoenoplectus tabernaemontani*), Dark Green Bullrush, Yellow Pond Lily (*Nuphar lutea),* Common Bladderwort (*Utricularia vulgaris),* submergent grasses, algae	■ Erosional gullies along highway embankment and observations of deposited material into the feature. Habitat could benefit from embankment stabilization. ■ Rock and woody debris jam may impede fish passage. Consider clearing debris. ■ Discarded asphalt and remnants of a CSP were observed in the ROW. Consider removing discarded material. ■ Potential seasonal fish passage impediment caused by low flow.	■ Iron staining – indicator of potential groundwater upwelling. ■ Potential seasonal low flow impediment to fish passage.
10+881 **Notman Township** **Unnamed Tributary to Little Tomiko River**	■ 01/05/2024 ■ 09/08/2024	■ Permanent	■ Warmwater (MNR 2024b)	■ Direct	■ **Upstream:** Beaver pond – detritus, muck, sand. Channel – gravel, sand, boulder. ■ **Downstream:** Cobble, gravel, sand, boulder, silt, clay, detritus, muck	**Spring** ■ Upstream: Run (50%), Flats (50%) ■ Downstream: Run (100%) **Summer** ■ Upstream: Flats (100%) ■ Downstream: Flats (100%)	**Upstream** ■ **Riparian:** Speckled Alder, Sweet Gale, Goldenrod, Asters, Bulrush, Cattails, White Meadowsweet, Jewelweed (*Impatiens capensis)*, American Bullweed (*Lycopus americanus*), Reed Canary Grass, Fireweed ■ **Instream:** Broadleaf Cattail, Yellow Pond Lily, Water Smartweed **Downstream** ■ **Riparian**: Speckled Alder, Steeple Bush (*Spiraea tomentosa*), White Meadowsweet, Broadleaf Cattail, Goldenrod, sedges., St. Johns Wort, Leatherleaf, Sweet Gale, Black Spruce, Tamarack, Smooth Brome, Grasses ■ **Instream:** Water Smartweed, White Water Lily (*Nymphaea alba)*, Broadleaf Cattail, sedges	■ Beaver dam was a possible impediment, but not likely a complete barrier to fish passage.	■ Suitable spawning habitat for Northern Pike in narrow-emergent and riparian vegetation on the north bank in downstream ZDA. ■ Beaver dam upstream and downstream may be an impediment to fish passage.

Waterbody	Date (dd/mm/yyyy)	Flow	Thermal Regime	Fish Habitat[1]	Substrate Type[2]	Channel Morphology	Vegetation	Constraints & Opportunities	Significant Fish Habitat
11+800 **Notman Township** **Unnamed Tributary to Little Tomiko River**	■ 02/05/2024 ■ 12/08/2024	■ Permanent	■ Warmwater (MNR 2024b)	■ Direct	■ **Upstream:** Detritus, silt, boulder, sand, muck ■ **Downstream:** Sand, gravel, detritus, silt, cobble, boulder	**Spring** ■ Upstream: Pool (25%), Run (75%) ■ Downstream: Run (100%) **Summer** ■ Upstream: Flats (40%), Pool (20%), Run (40%) ■ Downstream: Flats (50%), Run (50%)	**Upstream** ■ **Riparian:** Broadleaf Cattail, St. John's Wort, Speckled Alder, Smooth Brome, Tall White Meadowsweet, Joe-pye-weed, Goldenrod, Flat Top White Aster ■ **Instream:** Broadleaf Cattail, Clubhead Bullrush (*Scirpoides holoschoenus*), sedges **Downstream** ■ **Riparian:** Speckled Alder, Tall White Meadowsweet, Flattop White Aster, Broadleaf Cattail, Sensitive Fern, Canada Goldenrod ■ **Instream:** Dark Green Bulrush, Broadleaf Cattail, Algae, Canada Waterweed (*Elodea canadensis)*	■ Steel grate at inlet possible fish passage impediment by collecting debris and narrowing the channel. Consider clearing/removing grate. ■ Seasonal low flows were a potential impediment to fish passage.	■ None observed in ZDA. ■ Suitable spawning substrate material for Brook Trout was observed in the downstream Zone of General Assessment (ZGA).
12+541 **Notman Township** **Unnamed Tributary to Little Tomiko River**	■ 02/05/2024	■ Intermittent	■ Warmwater	■ Direct	■ **Upstream:** Detritus, muck, silt ■ **Downstream:** Detritus, muck, silt	■ Upstream: Flats (100%) ■ Downstream Reach 1: Flats (80%), Run (20%) ■ Downstream Reach 2: Run (40%), Pool (60%)	■ **Riparian:** Sedges ■ **Instream:** Broadleaf Cattail	■ Steep gradient observed in the ZGA is likely a permanent impediment to upstream fish movement. ■ Potential seasonal fish passage impediment resulting from low flows.	■ None observed
14+073 **Notman Township** **Unnamed Tributary to Tomiko River**	■ 15/05/2024 ■ 12/08/2024	■ Permanent	■ Warmwater	■ Direct	■ **Upstream:** no feature present ■ **Downstream:** Muck, Detritus	■ Downstream: Pool (50%), Flats (50%)	**Downstream** ■ **Riparian:** Broadleaf Cattail, Tamarack, Speckled Alder, Flattop White Aster *(Doellingeria umbellata*), Red Raspberry, Reed Canary Grass, Fireweed (*Chamaenerion angustifolium)*, Sensitive Fern, Canada Goldenrod, Black Spruce ■ **Instream:** Broadleaf Cattail, Dark Green Bulrush, Algae	■ Riprap (possible check dam) at culvert inlet potential impediment to fish passage. Consider removing riprap. ■ Low flow through the culvert potential seasonal impediment to fish passage.	■ None observed
14+408 **Notman Township** **Unnamed Tributary to Tomiko River**	■ 03/05/2024 ■ 12/08/2024	■ Intermittent	■ Warmwater	■ Direct	■ **Upstream:** Silt, sand, detritus, muck, boulder, clay ■ **Downstream:** Silt, sand, cobble, detritus, muck, bedrock	**Spring** ■ Upstream: Flats (100%) ■ Downstream: Flats (100%) **Summer** ■ Upstream: Dry ■ Downstream: Flats (100%) and partially dry	**Upstream** ■ **Riparian:** Shrubs and Speckled Alder ■ **Instream:** Broadleaf Cattail, algae, bulrush sp. **Downstream** ■ **Riparian:** Bracken Fern, Red Maple, Tamarack, Goldenrod ■ **Instream:** Broadleaf Cattail, Sphagnum Moss (*Sphagnum* sp.*)*, Common Bladderwort, Algae	■ Erosional gullies along highway embankment and deposited material observed in the feature. Habitat could benefit from embankment stabilization. ■ Low flows a likely seasonal impediment to fish passage.	■ None observed
14+926 **Notman Township** **Unnamed Tributary to Tomiko River**	■ 02/05/2024 ■ 12/08/2024	■ Intermittent	■ Warmwater	■ Direct	■ **Upstream:** Gravel, boulder, sand ■ **Downstream:** Sand, gravel, silt, cobble, bedrock	**Spring** ■ Upstream: Pool (10%), Run (90%). ■ Downstream: Run (90%), Pool (10%). **Summer** ■ Upstream: Dry ■ Downstream: Dry	**Upstream** ■ **Riparian and Instream:** Sedges, Broadleaf Cattail **Downstream** ■ **Riparian and Instream:** Sedges, Broadleaf Cattail	■ Riprap (possible check dam) in ditch a likely impediment to fish passage. ■ Erosional gullies along highway embankment and deposited material observed in the feature. Habitat could benefit from embankment stabilization. ■ Entrance culvert perch likely a permanent impediment to fish passage. ■ Low flows and dry summer conditions are likely seasonal impediments to fish passage. ■ Gradient and low flow (lack of channel) barrier to fish passage at the point where the flow entered the cattail stand in the downstream ZDA.	■ Clean beds of gravel suitable spawning habitat for Brook Trout in downstream ZDA. ■

Waterbody	Date (dd/mm/yyyy)	Flow	Thermal Regime	Fish Habitat[1]	Substrate Type[2]	Channel Morphology	Vegetation	Constraints & Opportunities	Significant Fish Habitat
16+060 **Notman Township** **Unnamed Tributary to Elbow Lake (Tomiko River)**	■ 06/05/2024 ■ 13/08/2024	■ Permanent	■ Warmwater (MNR 2024b)	■ Direct	■ **Upstream**: Muck, detritus, silt, boulder ■ **Downstream**: Sand, silt, detritus, boulder, clay	**Spring and Summer** ■ Upstream: Pond (100%) ■ Downstream: Run (100%)	**Upstream** ■ **Riparian:** Eastern White Cedar, Balsam Fir, Speckled Alder, Sweet Gale ■ **Instream:** Water Smartweed, Arrowhead, Softstem Bulrush, Water Arrum (*Calla palustris*), Elodea spp. **Downstream** ■ **Riparian:** Broadleaf Cattail, Spotted Joe Pyeweed, Jewelweed, Goldenrod, Canada Mint *(Mentha canadaensis*), Sensitive Fern, Speckled Alder. ■ **Instream:** Broadleaf Cattail	■ Buried culvert (or lack of water crossing structure) and accumulated debris are likely an impediment to fish passage. ■ Erosional gullies along highway embankment and deposited material observed in the feature. Habitat could benefit from embankment stabilization.	■ None observed
16+278 **Notman Township** **Unnamed Tributary to Tomiko Lake (Tomiko River)**	■ 07/05/2024 ■ 13/08/2024	■ Permanent	■ Warmwater	■ Direct	■ Upstream: Detritus, muck, sand, silt ■ Downstream: Gravel, cobble, sand, silt, detritus	**Spring** ■ Upstream: Pool (100%) ■ Downstream: Run (70%), Riffle (30%) **Summer** ■ Upstream: Pool (100%) ■ Downstream: Flats (100%)	**Upstream** ■ **Riparian:** Speckled Alder, Sensitive Ferns, Black Spruce, Balsam Fir, Canada Mint, Field Strawberry ■ **Instream:** Sphagnum Moss, Algae **Downstream** ■ **Riparian:** Speckled Alder, Red Maple, Balsam Fir, Black Spruce, Skunk Current (*Ribes glandulosum*), Mountain Maple, Marsh Fern, White Birch, Sensitive Fern, Black Spruce, Canada Mint, Field Strawberry Instream: Sphagnum Moss	■ Embankment erosion and deposited embankment material observed in the feature. Consider stabilizing embankment. ■ Buried culvert impeding flow and fish passage. ■ Low flow and accumulated debris at the culvert inlet were likely seasonal impediments to fish passage.	■ None observed
Indirect Fish Habitat									
13+928 **Blyth Township**	■ 02/05/2024 ■ 07/08/2024	■ Intermittent	■ NA	■ Indirect					
14+359 **Blyth Township**	■ 30/04/2024 ■ 07/08/2024	■ Intermittent	■ NA	■ Indirect					
16+668 **Blyth Township**	■ 15/05/2024	■ Ephemeral	■ NA	■ Indirect					
10+072 **Notman Township**	■ 01/05/2024 ■ 08/08/2024	■ Intermittent	■ NA	■ Indirect					

Notes: 1. Fish habitat is defined in subsection 2(1) of the Fisheries Act (1985) to include all waters frequented by fish and any other areas upon which fish depend directly or indirectly to carry out their life processes. The types of areas that can directly or indirectly support life processes include but are not limited to spawning grounds and nursery, rearing, food supply, and migration areas.

2. In general order of dominance

Table 3-2: Existing Fish Community Summary Table (Template D2B)

Waterbody ID	Date	Fish Species Present	Year Class(es)	Species at Risk Present	In-water Work Timing Restriction*
15+975/16+035 **Merrick Township** **Little Sturgeon River**	06/08/2024	**MNR:** Brook Trout (*Salvelinus fontinalis*) (Ontario Ministry of Natural Resources, 2024) **AECOM 2024 Survey**: Brook Trout, Northern Pearl Dace (*Margariscus nachtriebi)*, Golden Shiner (*Notemigonus crysoleucas)*, Northern Redbelly Dace (*Chrosomus eos)*, White Sucker (*Catostomus commersonii)*	Juvenile, Adult	No	September 1- June 15
12+725 **Blyth Township** **Unnamed Tributary to Little Sturgeon River**	06/08/2024	**MNR: No fish community data available** **AECOM 2024 Survey:** Central Mudminnow (*Umbra limi)*, Brook Stickleback (*Culaea inconstans)*	Adult	No	April 1- June 15
13+400 **Blyth Township** **Unnamed Tributary to Little Sturgeon River**	06/08/2024	**MNR: No fish community data available** **AECOM 2024 Survey:** Central Mudminnow, White Sucker, Brook Stickleback	Juvenile, Adult	No	April 1- June 15
15+512 **Blyth Township** **Unnamed Tributary to Tomiko River**	08/08/2024	**MNR: No fish community data available** **AECOM 2024 Survey:** Central Mudminnow, Brook Stickleback	Adult	No	April 1- June 15
10+881 **Notman Township** **Unnamed Tributary to Little Tomiko River**	09/08/2024	**MNR: No fish community data available** **AECOM 2024 Survey:** Brown Bullhead (*Ameiurus nebulosus)*, Central Mudminnow, White Sucker, *Leuciscidae* spp., Brook Stickleback, Golden Shiner, Northern Redbelly Dace, *Chrosomus* spp., Creek Chub (*Semotilus atromaculatus)*	Juvenile, Adult, YOY	No	April 1- June 15
11+800 **Notman Township** **Unnamed Tributary to Little Tomiko**	12/08/2024 19/08/2024	**MNR: No fish community data available** **AECOM 2024 Survey:** Central Mudminnow, Brook Stickleback, Northern Redbelly Dace, White Sucker, Creek Chub	Juvenile, Adult	No	April 1- June 15
12+541 Notman Township **Unnamed Tributary to Little Tomiko River**	N/A	**MNR: No fish community data available** **AECOM 2024 survey:** Not fished	N/A	No	September 1 - June 15
14+073 **Notman Township** **Unnamed Tributary to Tomiko River**	12/08/2024	**MNR: No fish community data available** **AECOM 2024 Survey:** Brook Stickleback	Adult	No	April 1- June 15
14+408 **Notman township** **Unnamed Tributary to Tomiko River**	12/08/2024	**MNR: No fish community data available** **AECOM 2024 Survey**: None captured	N/A	No	April 1- June 15
14+926 **Notman Township** **Unnamed Tributary to Tomiko River**	N/A	**MNR: No fish community data available** **AECOM 2024 Survey:** Not fished	N/A	No	September 1 - June 15
16+060 **Notman Township** **Unnamed Tributary to Elbow Lake (Tomiko River)**	12/08/2024	**MNR: No fish community data available** **AECOM 2024 Survey:** Northern Pearl Dace, Northern Redbelly Dace, Finescale x Northern Redbelly Dace (*Chrosomus neogaeus x Chrosomus eos),* Creek Chub, Brook Stickleback, Central Mudminnow	Juvenile, Adult	No	April 1- June 15
16+278 **Notman Township** **Unnamed Tributary to Elbow Lake (Tomiko River)**	13/08/2024	**MNR: No fish community data available** **AECOM 2024 Survey:** Central Mudminnow	Juvenile	No	April 1- June 15

*Note: * When work below the high water mark, including within isolated work areas, is prohibited without explicit agency approval.*

4. Impact Assessment

The following provides a summary of the Project activities for the pre-construction vegetation clearing and how those activities could impact fish and fish habitat. Only waterbodies that directly support fish within 30 m of the vegetation clearing have been carried forward to the assessment for the potential of impacts to fish or fish habitat resulting from the Project. For additional detail, refer to the areas of impact in **Figure 2** of **Appendix A**.

4.1 Description of Proposed Works

This impact assessment focuses on the potential impacts associated with only the pre-construction activities of the Project, including close-cut vegetation clearing, and the installation or use of temporary water crossings that may be required by vegetation clearing equipment for access.

4.1.1 Close-cut Vegetation Clearing

Clearing of trees and shrubs within the limits of the proposed extended right-of-way (ROW) is proposed in advance of construction, largely to comply with timing windows required for the protection of migratory birds and bat SAR (where applicable). The vegetation clearing is expected to be accomplished using a combination of handheld chainsaws and feller bunchers. The methods of removal will be determined by the Contractor and likely dictated by the site conditions and extent of clearing required. Additional heavy equipment such as skidders will likely be used to remove and process the felled trees. The vegetation clearing will entail close-cutting of trees and shrubs only; grubbing and removal of herbaceous vegetation and low shrubs is not included as part of the pre-construction work, and the roots and stumps will remain undisturbed and in place until construction.

Highway widening and as such, widening of the ROW are required to complete the work. The vegetation clearing will take place only where necessary (i.e., trees and tall shrubs are present) within the limits of this proposed extended ROW. The precise limits or extent of the tree and shrub removal in this area are undetermined, as the Project is in the early design stages. For the purpose of this assessment, the total area within the proposed ROW and within 30 m of a fish-bearing waterbody was assumed as the maximum potential work area in which tree and vegetation clearing is proposed. Trees and shrubs within this work area will be removed as needed in the late fall and winter months. Herbaceous vegetation and low shrubs will be retained, and grubbing is not proposed as part of the advanced vegetation clearing. In work areas where tree and shrub close-cut clearing is not required, vegetation removal will not be completed. For example, natural areas within the proposed ROW and 30 m of the High Water Mark (HWM) of a fish-bearing waterbody where trees and tall shrubs are absent (e.g., wetlands) will not require vegetation removal. The total combined work areas within 30 m of fish habitat and in which vegetation removal will occur is 70,615.2 m^2. The specific waterbodies, locations (using MTO Station numbers), and maximum area within 30 m in which vegetation clearing is proposed are summarized in **Table 4-1**, and shown in **Figure 2** of **Appendix A**.

Table 4-1: Summary of Proposed Works

Chainage Range	Township	Waterbody	Proposed Work Area
15+925 to 16+125	Merrick	15+975/16+035 Little Sturgeon River	≤9394.4 m^2 of vegetation clearing
12+550 to +12+775	Blyth	12+725 Unnamed Tributary to Little Sturgeon River	≤5732.8 m^2 of vegetation clearing
13+350 to 13+525	Blyth	13+400 Unnamed Tributary to Little Sturgeon River	≤5009.4 m^2 of vegetation clearing
15+500 to 15+600	Blyth	15+512 Unnamed Tributary to Tomiko River	≤4594.6 m^2 of vegetation clearing
10+825 to 10+925	Notman	10+881 Unnamed Tributary to Little Tomiko River	≤3792.1 m^2 of vegetation clearing
11+775 to 11+850	Notman	11+800 Unnamed Tributary to Little Tomiko River	≤4378.9 m^2 of vegetation clearing
12+525 to 12+625	Notman	12+541 Unnamed Tributary to Little Tomiko River	≤3607.1 m^2 of vegetation clearing
14+025 to 14+125	Notman	14+073 Unnamed Tributary to Tomiko River	≤3097.4 m^2 of vegetation clearing
14+375 to 14+600	Notman	14+408 Unnamed Tributary to Tomiko River	≤5044.9 m^2 of vegetation clearing
14+675 to 15+200	Notman	14+926 Unnamed Tributary to Tomiko River	≤11745.8 m^2 of vegetation clearing
15+950 to 16+150	Notman	16+060 Unnamed Tributary to Elbow Lake (Tomiko River)	≤8534 m^2 of vegetation clearing
16+250 to 16+325	Notman	16+278 Unnamed Tributary to Elbow Lake (Tomiko River)	≤5683.8 m^2 of vegetation clearing

4.1.2 Temporary Crossings

Temporary crossings will not be used unless existing crossings or known access points (i.e., Highway 11) are unavailable. The need for, location, and method of temporary crossings will be dictated by the Contractor pending site conditions and are not known at this phase. If or where it is determined that any temporary water crossings will be required, the methods used will follow the MTO BMP for Temporary Watercourse Crossing, or the Fisheries and Oceans Canada (DFO) Code of Practice (CoP) for Ice Bridges and Snow Fills. The crossing methods that may be used that comply with the BMP or CoP include:

- A one-time ford in flowing water;
- Ford of dry waterbodies;
- A temporary bridge;
- An ice bridge; and,
- A snow fill.

Table 4-1 summarizes the locations of fish habitat and proposed pre-construction activities within 30 m of those waterbodies. The extent of the clearing and areas of clearing within 30 m of fish habitat are shown in **Figure 2** of **Appendix A**. A design considerations table was prepared for the proposed work near fish habitat (where considerations apply) in **Table 4-2**.

Table 4-2: Design Considerations Table

<table>
<tr><th>Factors to Consider</th><th>Design Considerations Provided by the Fisheries Assessment Specialist</th><th>Describe How Each Factor Was Addressed Through Design</th></tr>
<tr><td>In-water Works Timing Window</td><td>
■ In-water work timing windows are determined by the Ontario Ministry of Natural Resources (MNR) and are based on the spawning and early development periods of fish that occur in the watercourse in question. Limited fish community data was available for the watercourses in the Study Area, including through correspondence with MNR. The timing windows stipulated below were determined according to the In-water Work Timing Window Guidelines (MNR, 2013) and in consideration of the fish community data retrieved from background and field investigations, and thermal regime. Correspondence with MNR on June 4, 2025 provided confirmation and updates to timing windows for all watercourses in the Study Area.
■ Though no works are proposed below the High Water Mark (HWM) of any waterbody, the in-water work timing window does apply if any fording is proposed for temporary access during vegetation clearing, and to snow fills.
■ In addition, snow fills are to be removed prior to spring freshet, as well as any logs, swamp mats, woody debris, etc., used to stabilize ice bridges or approaches (e.g., approaches through wetlands adjacent to active channels).
■ The timing window (i.e., when works can occur below the HWM) for each waterbody location and connected habitat (i.e., waterbodies in the Study Area connected upstream or downstream to these locations) are:
<table>
<tr><td colspan="3">June 16 – March 31: When work can occur, for the protection of spring-spawning species</td></tr>
<tr><td>12+725 Blyth Township
Unnamed Tributary to Little Sturgeon River</td><td>13+400 Blyth Township
Unnamed Tributary to Little Sturgeon River</td><td>15+512 Blyth Township
Unnamed Tributary to Tomiko River</td></tr>
<tr><td>10+881 Notman Township
Unnamed Tributary to Little Tomiko River</td><td>11+800 Notman Township
Unnamed Tributary to Little Tomiko River</td><td>14+073 Notman Township
Unnamed Tributary to Tomiko River</td></tr>
<tr><td>14+408 Notman Township
Unnamed Tributary to Tomiko River</td><td>16+060 Notman Township
Unnamed Tributary to Elbow Lake (Tomiko River)</td><td>16+278 Notman Township
Unnamed Tributary to Elbow Lake (Tomiko River)</td></tr>
</table>
<table>
<tr><td colspan="3">June 16 – August 31: When work can occur, for the protection of spring and fall-spawning species</td></tr>
<tr><td>15+975/ 16+035 Merrick Township
Little Sturgeon River
*Note the Little Sturgeon River is not suitable for either snow fill or ford, due to water depth, bank conditions, and suitable spawning habitat.</td><td>12+541 Notman Township
Unnamed Tributary to Little Tomiko River</td><td>14+926 Notman Township
Unnamed Tributary to Tomiko River</td></tr>
</table>
-
</td><td>
■ All works below the HWM, including snow fills and fords, will abide by MNR's timing windows.
■ Snow fills and stabilizing measures will be removed prior to spring freshet.
</td></tr>
<tr><td>Fish Passage</td><td>
■ Pre-construction activities do not involve any designed structures or work in-water.
■ Components of temporary bridges should remain above the HWM.
■ Any materials (logs, swamp mats, etc.) used to stabilize approaches (e.g., wetlands) should remain outside of wetted active channels and removed prior to spring freshet.
■ Remove snow fills prior to spring freshet and the close of the spring in-water work timing window
</td><td>■ Works will remain outside of wetted active channels</td></tr>
<tr><td>Significant Fish Habitat</td><td>
■ No aquatic Species at Risk are known to occur in or near the Study Area.
■ Fording is prohibited by the conditions of the MTO Best Management Practice (BMP) in known spawning habitat. Suitable spawning habitat was observed at the locations listed below. The function of the habitat (where applicable) has not been confirmed through targeted surveys (i.e., spawning surveys, etc.). The function of the suitable habitat noted below is also pending species presence in the waterbody and access to the identified suitable habitat.
- 15+975/16+035 Merrick Township: 1) Juvenile Brook Trout (Salvelinus fontinalis) captured during summer assessment, and beds of clean gravel suitable for Brook Trout spawning habitat observed within the right-of-way (ROW). Suitable spawning and nursery habitat for Brook Trout were both observed. 2) Hummocks of narrow-emergent vegetation suitable for Northern Pike (Esox lucius) spawning habitat were present in the finger channels and flooded pockets between the main channel at 15+975, and side channel at 16+035, in the Zone of detailed Assessment (ZDA) upstream and downstream of Highway 11. 3) In addition to the suitable spawning habitat observed, the water depths and bank conditions at this location were not suitable for fording or snow fills.
- 10+881 Notman Township: Suitable spawning habitat for Northern Pike in narrow-emergent and riparian vegetation, on the north bank in the downstream ZDA of Highway 11.
- 11+800 Notman Township: Suitable spawning substrate material for Brook Trout was observed, outside of the ZDA (> 50 m downstream of Highway 11).
- 14+926 Notman Township: Clean beds of gravel suitable for Brook Trout spawning habitat observed in the downstream ZDA and ROW.
</td><td>■ Temporary water crossings will not be installed at those waterbodies listed where suitable spawning habitat was identified.</td></tr>
<tr><td>Constraints and Opportunities</td><td>■ NA</td><td>■ NA</td></tr>
<tr><td>Other Considerations</td><td>■ Equipment access and operation should also abide by the timing window for work in suitable spawning habitat for Northern Pike, identified in wetland habitat adjacent to 10+881 Notman Township and 15+975/16+035 Merrick Township and as shown in Figure 2 of Appendix A.</td><td>■ Vegetation clearing in identified spawning areas will abide by the timing windows.</td></tr>
</table>

4.2 Step 1 – MTO Routine Works

Under Step 1 of the Fisheries Protocol, Project activities were assessed against the list of MTO Routine Works in the Fisheries Guide. Routine Works are those within the MTO Right-of-way (ROW) (including shoulders and paved area) that are within 30 m, but not below, of the High Water Mark (HWM) of a waterbody and risk of a HADD to fish habitat or death to fish can be mitigated (e.g., prevent sediment/debris from entering the waterbody). Based on the list of Routine Works, the close-cut clearing and temporary crossing installation are not considered routine works; therefore, these works will be carried forward in the assessment to Step 3 of the Fisheries Protocol.

4.3 Step 3 – Best Management Practices

Project activities were assessed against the MTO BMPs as well as the DFO CoPs to determine which can be addressed by a BMP (or CoP) as per Step 3 of the Fisheries Protocol. Application of BMPs and CoPs require adherence to the operational constraints and protection measures identified in each. Certain conditions and provisions are outlined in each BMP or CoP (e.g., work must be completed within the allowable in-water work timing window, etc.), which must be met in order to remain compliant. Notification procedures are required for the use of BMPs and CoPs. **Table 4-3** summarizes the activities carried forward from Step 1 to Step 3, and the applicability of either a BMP or a CoP.

Table 4-3: Summary of Activity and Associated BMP

Activity	Associated Best Management Practice (BMP) or Code of Practice (CoP)	BMP or CoP Criteria and Applicable Activities	BMP or CoP Applicability
Temporary crossing installation to complete vegetation clearing	Temporary Crossing BMP	■ A one-time ford in flowing waters; ■ A seasonally dry waterbody ford; ■ A temporary bridge or ice bridge, no greater than one lane in width; ■ In-water work in accordance with timing window; ■ Fording not allowed if federally listed Species at Risk (SAR) are present. ■ This BMP does not apply to the following works: - Channel realignment; - Any component of temporary bridge in the wetted portion of a waterbody; - Dredging, infilling, grading, or excavating the waterbody bed or banks; - Fording in areas of known spawning locations; and, - Installation of a temporary culvert.	■ BMP applicable to ice bridges, fords, and temporary bridges (including swamp mats or log stringer). - Existing crossings and access (i.e., Highway 11) should be used where possible before the use of temporary access structures. - In instances with overlap between BMP and CoP (i.e., ice bridges), the BMP conditions, procedures, and notification process shall take precedence. - Areas of identified suitable spawning habitat should be avoided. - The Little Sturgeon River at 15+975/16+035 in Merrick Township is not suitable for temporary ford or snow fill due to water depth, etc.
	Ice Bridges and Snow Fills CoP	■ SAR or Critical Habitat are not present, including riparian Critical Habitat; ■ No temporary culvert;	■ CoP applicable to snow fills. - MTO BMP for Temporary Crossings should take

Activity	Associated Best Management Practice (BMP) or Code of Practice (CoP)	BMP or CoP Criteria and Applicable Activities	BMP or CoP Applicability
		■ No excavation, grading, dredging, fill, or realignment of the bed or banks of a watercourse; ■ No interference with fish passage or constriction of a channel; ■ Any water withdrawal does not exceed 10% of the actual flow; and ■ Loose material (gravel, etc.) are not used.	precedence and apply to ice bridges. - Existing crossings and access (i.e., Highway 11) should be used where possible before the use of snow fills. - The Little Sturgeon River at 15+975/16+035 in Merrick Township is not suitable for temporary ford or snow fill due to water depth, etc.
Vegetation removal within the road ROW to accommodate the road widening and culvert replacements	Riparian Vegetation Maintenance in Existing Right-of-Way	■ Mowing, brushing, topping, and slashing of terrestrial vegetation; ■ Alteration of select plants; ■ Work involving the maintenance of vegetation in an existing ROW for a transportation or utility corridor and not construction of a new ROW; ■ Vegetative maintenance techniques that allow the root system to stay intact; ■ In-water work in accordance with timing window; ■ Removal of not more than 1/3 of total woody vegetation in the ROW within 30 m of a waterbody HWM; ■ Complete clearing of riparian vegetation; and ■ Removal of riparian vegetation if the riparian area is identified as part of critical of a federally listed Species at Risk.	■ BMP not applicable. Removal of vegetation root systems and complete clearing of riparian vegetation will likely be required to accommodate road widening and culvert replacements. Vegetation removal carried forward to Step 4.

4.4 Step 4 - Fisheries Assessment Process

The Fisheries Assessment Process (Step 4 of the Fisheries Protocol) applies to project activities that may have an impact on fish habitat and that do not qualify as MTO Routine Works (Step 1) nor meet the conditions of an MTO BMP or DFO CoP (Step 3).

4.4.1 Pathway of Effects Assessment

The proposed tree clearing works do not meet the MTO Routine Works or MTO BMP/DFO CoP requirements and have been assessed to determine the potential effects to the fish and fish habitat. The potential effects for the tree clearing are therefore identified using the Pathway of Effects (PoE) diagrams provided in the Fisheries Guide. The PoE diagrams display how activities may impact the aquatic environment, and help determine where and how mitigation and protection measures can be used to minimize or avoid these impacts. This is accomplished through the use of pathways, stressors, and residual effects flow charts, and has been developed for both in-water and land-based construction activities. The use of these pathways and taking into account

applicable mitigation measures will ultimately demonstrate whether the potential negative effects can be mitigated or avoided, or if there are residual potential negative effects that remain that could lead to the death of fish or HADD of fish habitat.

The following is a summary of the potential effects to fish and fish habitat that may result from activities associated with the proposed work described in **Section 4.1.**

Land-based Activities

- Use of industrial equipment may result in alterations to contaminant concentrations from fuel or fluid leaks. An increase in sediment may result from increased erosion potential where industrial equipment has exposed and loosened soils.
- Vegetation clearing may result in alterations to sediment concentrations, habitat structure and cover, and water temperature because of increased erosion potential and sediment deposition from unstable or exposed banks and changes in shade. Changes in food supply and nutrient concentrations may result from the loss of external inputs with a reduction in riparian vegetation. The use of herbicides may result in changes to contaminant concentrations.

5. Mitigation

The following sections outline the specific mitigation measures stipulated in the applicable BMP, CoP, or identified through the Fisheries Assessment Process. The applicable Environmental Provisions for the Project are provided in **Section 5.4**.

5.1 MTO BMP for Temporary Crossings

Specific mitigations stipulated in the BMP for Temporary Crossings include:

- Machinery fording a flowing watercourse is limited to a one-time event (over and back). Fording is to only occur during low flow conditions, is to occur only if an existing crossing at another location is not available or practical to use.
- No aquatic SAR are present in the Project limits. Areas identified as suitable spawning habitat must not be forded. Equipment access or water crossings, or operation for vegetation clearing should also avoid areas of suitable Northern Pike spawning habitat during the timing restriction. These locations are shown in **Figure 2** of **Appendix A** and as follows:
    - **15+975/16+035 Merrick Township:** 1) Juvenile Brook Trout (*Salvelinus fontinalis*) captured during summer assessment, and beds of clean gravel suitable for Brook Trout spawning habitat observed within the right-of-way (ROW). Suitable spawning and nursery habitat for Brook Trout were both observed. **2)** Hummocks of narrow-emergent vegetation suitable for Northern Pike (*Esox lucius*) spawning habitat were present in the finger channels and flooded pockets between the main channel at 15+975, and side channel at 16+035, in the Zone of detailed Assessment (ZDA) upstream and downstream of Highway 11.
    - **10+881 Notman Township:** Suitable spawning habitat for Northern Pike in narrow-emergent and riparian vegetation, on the north bank in the downstream ZDA of Highway 11.
    - **11+800 Notman Township:** Suitable spawning substrate material for Brook Trout was observed, outside of the ZDA (> 50 m downstream of Highway 11
    - **14+926 Notman Township:** Clean beds of gravel suitable for Brook Trout spawning habitat observed in the downstream ZDA and ROW.

- Fording of seasonally dry waterbodies is not limited to a one-time event, so long as the waterbody is dry.
- No materials or components of temporary bridges can be placed below the HWM. Snow fills and fording in a flowing watercourse must abide by in-water work timing windows. The timing window (when fording or snow fill can occur) for most waterbodies suitable for fording or snow fill is from June 16 to March 31. The timing window at the Little Sturgeon River at 15+975/16+035 in Merrick Township, as well as an Unnamed Tributary to Little Tomiko River at 12+541 and an Unnamed Tributary to Tomiko River at 14+926, both in Notman Township, is from June 16 to August 31. However, the water depth, bank conditions, and spawning habitat at the Little Sturgeon River make this waterbody unsuitable for crossing.
- A temporary bridge or ice bridge may be used that is no greater than one lane in width;
- No dredging, grading, excavation, infilling, temporary culvert, or waterbody realignment;
- Cross at straight sections of the watercourse, perpendicular to the watercourse bank. Avoid unstable areas such as meander bends, braided streams, or alluvial fans that could result in erosion and scouring of channel beds.
- If minor rutting is likely to occur at temporary crossing approaches or from fording, waterbody bed protection methods (e.g., swamp mats, pads) shall be used, provided they do not constrict flows or block fish passage.
  - Grading of the waterbody banks for the approaches is not permitted.
- If the waterbody bed and waterbody banks are steep and highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation are likely to occur as a result of equipment fording, then a temporary bridge shall be used in order to protect these areas.

5.2 DFO's Standards and Codes of Practice

DFO has created standards and CoPs to follow when undertaking works or activities that could have an impact on fish and fish habitat. The standards and CoPs comply with the *Fisheries Act* (1985) and if properly implemented, HADD or death of fish is likely to be avoided. The CoP for Ice Bridges and Snow Fills applies to any snow fill temporary crossings that are used. Ice bridges are addressed in the MTO BMP (**Section 5.1**). Mitigations stipulated in the CoP are therefore specifically applicable to snow fills include:

- Work shall be scheduled to prevent disruption of sensitive life stages of fish by adhering to appropriate in-water work timing windows. Work below the HWM can only occur between **June 16th and March 31st** for all watercourses, with the exception of Little Sturgeon River, an Unnamed Tributary to Little Tomiko River at 12+541, and an Unnamed Tributary to Tomiko River at 14+926.
  - Little Sturgeon River at 15+975/16+035 Merrick Township, an Unnamed Tributary to Little Tomiko River at 12+541 Notman Township, and an Unnamed Tributary to Tomiko River at 14+926 Notman Township, have a shorter timing window (between June 16 and August 31). However, the conditions at Little Sturgeon River are not suitable for snow fill crossings due to water depth, bank conditions, and suitable spawning habitat.
- Water withdrawal for the reinforcement of ice bridges should not exceed 10% of the instantaneous flow.
- Ensure that materials (i.e., logs, snow, ice) used to construct the crossing are clean.
- Remove compacted snow from the snow fills prior to the spring freshet.
- Use existing trails, roads and access points.

- Temporary crossing site should occur where the watercourse is straight, and banks are stable.

5.3 Close-cut Vegetation Clearing

The following is a description of the design and mitigation measures that shall be incorporated into the contract documents to minimize or avoid the risk of harm to fish or HADD to fish habitat. These measures and controls have been applied to the Fisheries Assessment Process (Step 4 of the Fisheries Protocol) for the close-cut vegetation clearing near water that do not meet the criteria of an MTO BMP.

The following measures are prescribed in the Mitigation Measures Master Table in Appendix G2 of Section 5 of the Fisheries Guide and are applicable to the close-cut vegetation clearing. The applicable Environmental Provisions for the Project are provided in **Section 5.4**. A summary of the results of this assessment, mitigation measures, and residual effects is provided in the Aquatic Effects Assessment Table (Template D3) in **Appendix B**.

Management Practices and Controls

M-1 – Chemicals

- Ensure that building material used in a watercourse has been handled and treated in a manner to prevent the release or leaching of substances into the water that may be deleterious to fish.

M-3 – Equipment

- Whenever possible, operate machinery on land above the HWM, on ice, or from floating barge in a manner that minimizes disturbance to the banks and bed of the waterbody.
- Operate, store, and maintain (e.g. refuel, lubricate) all equipment, vehicles and associated materials in a manner that prevents the entry of any deleterious substance from entering the water.
- Any part of equipment entering the water or operating on the bank shall be free of fluid leaks, invasive species and noxious weeds and externally cleaned/degreased to prevent any deleterious substance from entering the water.

M-4 – Erosion and Sediment Controls

- Design and implement erosion and sediment controls to contain/isolate the construction zone, manage site drainage/runoff and prevent erosion of exposed soils and migration of sediment to adjacent waterbody during all phases of the Project.
- Erosion and sediment control measures should be maintained until all disturbed ground has been permanently stabilized, suspended sediment has resettled to the bed of the waterbody or settling basin, and runoff water is clear. The plan should, where applicable, include:
    - Installation of effective erosion and sediment control measures before starting work to prevent sediment from entering the waterbody,
    - Regular inspection and maintenance of erosion and sediment control measures and structures during construction,
    - Repairs to erosion and sediment control measures and structures if damage occurs, and
    - Removal of non-biodegradable erosion and sediment control materials once site is stabilized.

M-9 – Spills

- Ensure Spill Management Plan (including spill kit materials, instructions regarding their use, education of contract personnel, emergency contact numbers) is on-site at all times for immediate implementation in the event of accidental spill.

M-11 – Vegetation

- Use existing trails, roads, or cut lines wherever possible to avoid disturbance to the riparian vegetation and prevent soil compaction.
- Clearing of riparian vegetation should be kept to a minimum and if removal is necessary use proper clearing techniques and protect retained vegetation. When practical, prune or top the vegetation instead of grubbing/uprooting.

Operational Constraints

O-1 – Access

- Prohibit or limit access to banks or areas adjacent to waterbodies, to the extent required to protect the structural integrity of banks or shorelines.

O-3 – Timing of In-water works

- Implement timing restrictions for in-water work to protect sensitive life stages/processes of migratory and resident fish.
- Additional timing considerations:
    - minimize duration of in-water work.
    - conduct in-stream work during periods of low flow to allow work in water to be isolated from flows.
    - schedule work to avoid wet, windy and rainy periods that may increase erosion and sedimentation and allow for proper re-stabilization.

5.4 Environmental Provisions

The following is a list of the Ontario Provincial Standard Specifications that are prescribed in the MTO BMPs as well as relevant MTO Special Provisions and shall be added to the contract documents and implemented where applicable.

- OPSS 100 – MTO General Conditions of Contract;
- OPSS 180 – General Specification for the Management of Excess Materials;
- OPSS 182 – Environmental Protection for Construction in and around Waterbodies and on Waterbody Banks;
- SSP101F23 – Amendment to OPSS 182, Timing of In-water Works, Oversight Requirements, and Measures to Avoid Harm to Fish;
- OPSS 803 – Vegetative Cover;
- OPSS 804 – Temporary Erosion Control; and
- OPSS 805 – Temporary Sediment Control.

6. Determination of HADD

As detailed in **Section 4.4**, the Fisheries Assessment Process as per Step 4 of the Fisheries Protocol was completed for the close-cut vegetation clearing of riparian trees and shrubs that does not meet the criteria of MTO Routine Works, MTO BMP, or DFO CoP. This assessment, including the identification of environmental protection and mitigation measures, found that all of the mitigation measures prescribed through the Step 4 and PoE assessment process could not be implemented. The loss of riparian vegetation within the footprint of the advanced close-cut vegetation clearing and eventual widened highway cannot be mitigated or restored. The loss of riparian trees and shrubs is expected to result in possible changes to habitat structure and cover, water

temperature, food supply, and nutrient concentrations. These residual effects all result from the same stressors and will be discussed collectively.

All areas of riparian vegetation clearing (i.e. tree and tall shrub removal within 30 m of a fish-bearing waterbody bank, **Table 4-1**) will take place within or immediately adjacent to the existing cleared highway ROW, and will be an extension of the existing cleared footprint. Beyond the limits of the existing and proposed ROW, each of the watercourses is bordered by extensive expanses of natural areas. On a larger spatial scale and considering the entire watercourse or watercourse reach, the adjacent natural habitat is homogenous and abundant, and considering the copious amounts of similar natural landscape and riparian habitat at each of the waterbodies crossed by the Project, the widening of the existing cleared section of watercourse is comparatively minute in spatial scale. It is expected that the remaining overhanging riparian habitat throughout will maintain food and nutrient inputs, and water temperatures.

At a local scale in the immediate area of the tree and shrub clearing, the cover, shade, and external inputs provided by the riparian forest are also not limiting habitat features. The natural riparian and similar conditions adjacent to the proposed vegetation clearing will remain intact outside of the proposed ROW limits, and continue to provide these inputs to the waterbodies. Furthermore, the advanced vegetation removal is limited to trees and tall shrubs, and herbaceous and small shrubs will be retained. This further reduces the spatial extent and intensity of the residual effects, as the external inputs, overhanging cover, and shade will be maintained not only by the adjacent habitat as noted above, but also by this retained vegetation. In some areas of the proposed ROW where trees and tall shrubs are absent or sparse (e.g., some wetlands, existing ROW, meadow habitat, etc.), the changes in habitat and consequential effects will be avoided altogether. The spatial scale and intensity of the habitat changes and resulting changes to external inputs, water temperature (loss of shade), and overhanging cover are therefore negligible to none. The duration of the habitat changes and resulting residual effects is however considered to be high, since the vegetation will be removed permanently to accommodate construction and maintained within the widened highway ROW. Despite this, given the negligible spatial extent and intensity of the potential habitat changes and residual effects, changes to the access to habitat, habitat function, or habitat productivity will not be diminished, and there is no expected change to the ability for fish to carry out their life processes. The death of fish or HADD of fish habitat are not likely to result from the proposed advanced close-cut vegetation clearing.

7. Notification and Approvals

As described in **Section 3**, no records or known presence of aquatic SAR exist in the Study Area. Further assessment, review, or submission to regulatory agencies for compliance with the provincial *Endangered Species Act*, 2007 or federal *Species at Risk Act*, 2002 is not required.

Provided the vegetation clearing and temporary water crossings (if needed) meet all of the conditions and implement all applicable mitigation measures outlined in **Section 5,** the death of fish or HADD are expected to be avoided. These works can proceed following submission of a Project Notification Form to the MTO Regional Environmental Section. If any snow fill temporary water crossings are proposed, provided the conditions and all applicable mitigation measures outlined in **Section 5.2** are implemented, the death of fish or HADD are expected to be avoided. Snow fills are not captured in the MTO BMP for Temporary Water Crossings but can proceed without DFO review under the DFO CoP for Ice Bridges and Snow Fills. Snow fills can proceed following submission of a Project Notification Form to the DFO regional office.

8. Summary

Detailed assessments of the fish and fish habitat conditions along Highway 11 from Sand Dam Road northerly to Ellsmere Road (13.8 km) were documented in the *Fish and Fish Habitat Existing Conditions Report – Highway 11 Improvements from Sand Dam Road Northerly to Ellsmere Road (13.8 km) (GWP 5151-21-00)* (AECOM, 2025). Based on the identified fish habitat described in this report, this impact assessment memo follows the impact assessment process of the Fisheries Guide to determine the likelihood of the death of fish or HADD to result from close-cut tree clearing. This impact assessment memorandum was developed specifically to address the potential impacts, mitigations, agency submission or notification requirements that apply to the close-cut vegetation clearing to be completed in advance of construction. The close-cut vegetation clearing and temporary water crossings for GWP 5151-21-00: Highway 11 from Sand Dam Road northerly to Ellsmere Road (13.8 km) is advanced ahead of construction while Detail Design, environmental assessment, and permitting are underway. The impact assessment of all other Project activities to fish and fish habitat will be discussed under a separate cover.

Temporary water crossings structures may be required for equipment access to complete the vegetation clearing. Whether temporary water crossing structures are required, the locations, and the methods will be determined by the Contractor and dictated by site conditions. The death of fish or HADD in contravention of the *Fisheries Act*, 1985 can be avoided as well as DFO review by carrying out this component in line with the *MTO BMP for Temporary Watercourse Crossing* from the *Environmental Guide for Fisheries – Best Management Practices Manual* (MTO 2025b) or the DFO CoP for Ice Bridges and Snow Fills. The DFO CoP applies only to snow fills; ice bridges are captured in the MTO BMP which takes precedence. The specific conditions and constraints that must be met to proceed following this MTO BMP or DFO CoP are outlined in Section application of both the BMP and the CoP requires the conditions outlined in **Section 5.1** and **Section 5.2**. The Environmental Provisions prescribed in the MTO Fisheries Guide Best Management Practices Manual (MTO 2025b) and listed in **Section 5.4** must be implemented, maintained, and repaired as needed. Project notification is required for submission to the MTO Regional Environmental Section for work to be completed under an MTO BMP. If snow fills will be used, a CoP Project Notification Form is required to be submitted to DFO.

As described in **Section 4.4**, the close-cut clearing of riparian vegetation (i.e. within 30 m from the bank of a fish-bearing waterbody) does not align with an MTO BMP or a DFO CoP and was therefore carried forward to a Step 4 Assessment as per the 2025 Fisheries Protocol. By applying mitigation measures recommended in the 2025 Fisheries Guide, the potential negative effects resulting from this work are partially mitigated and avoided. The residual effects, including changes to overhanging habitat structure and cover, shade and water temperature, and external inputs of food and nutrients, are not likely to be to a degree that will affect the function, access, or productivity of the habitat or harm fish. The vegetation clearing will not result in the death of fish or HADD. Project notification is required for submission to the MTO Regional Environmental Section for work assessed under Step 4 of the Fisheries Protocol.

All Project components require the proper and effective implementation, monitoring, maintenance, and repair of the mitigation measures described in **Section 5**, where they apply. All of these measures are important for minimizing or avoiding residual negative effects and in turn HADD or death of fish.

9. Literature Cited

AECOM Canada ULC, 2025:
Fish and Fish Habitat Existing Conditions Report – Ontario Ministry of Transportation, Highway 11 Improvements from Sand Dam Road Northerly to Ellsmere Road (13.8 km) (GWP 5151-21-00)

Ontario Ministry of Natural Resources, 2013:
In-water Work Timing Window Guidelines. Queens Printer for Ontario.

Ontario Ministry of Transportation (MTO), 2013:
Environmental Reference for Highway Design. Queen's Printer of Ontario

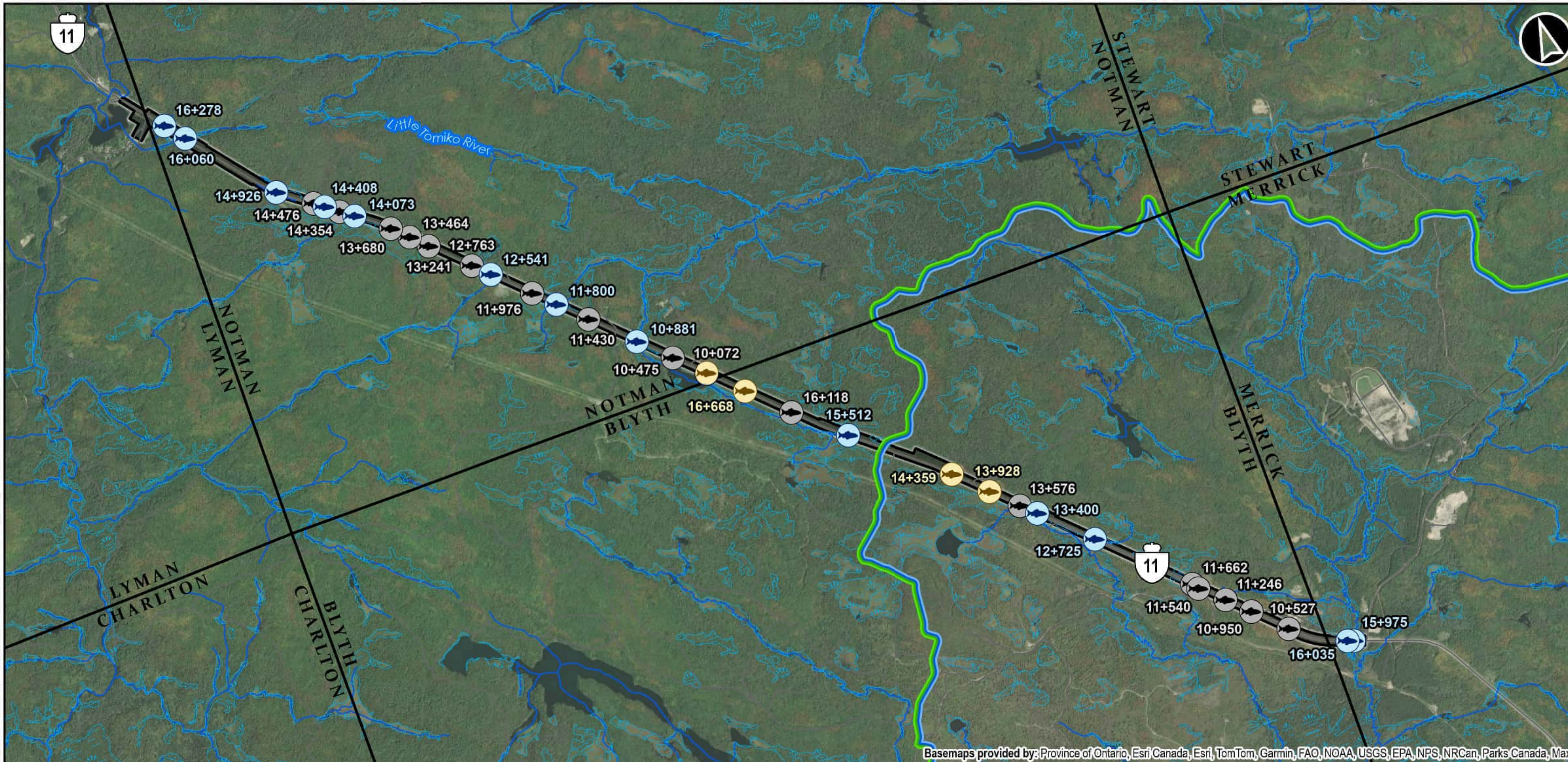
Ontario Ministry of Transportation (MTO), 2020:
Interim Environmental Guide for Fisheries. Queen's Printer of Ontario

Ontario Ministry of Transportation (MTO), 2025a:
Environmental Guide for Fisheries (Draft). King's Printer of Ontario

Ontario Ministry of Transportation (MTO), 2025b:
Environmental Guide for Fisheries – Best Management Practices Manual. Queen's Printer of Ontario.

Appendix A

Figures



LEGEND

- Township
- Preliminary Project Area

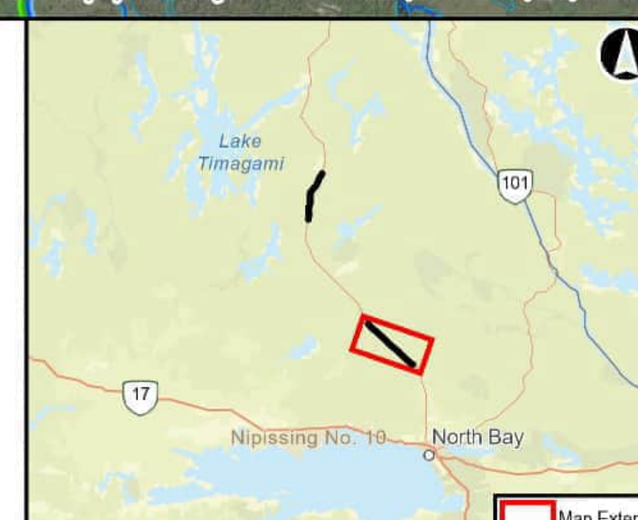
FishHabitat

- Direct
- Indirect
- Not Fish Habitat

- Watercourse
- Unevaluated Wetland

Watershed Name

- Little Sturgeon River
- Tomiko River



Fish and Fish Habitat Existing Conditions Report - Preliminary Design and Class Environmental Assessment (EA) Study for Highway 11 2+1 GWP 5121-21-00

Location of Fisheries Studies for GWP-5151-21-00

0 0.25 0.5 1 1.5 2 2.5 3 km

NAD 1983 CSRS MTM 10

Data Sources:
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AECOM

Ontario

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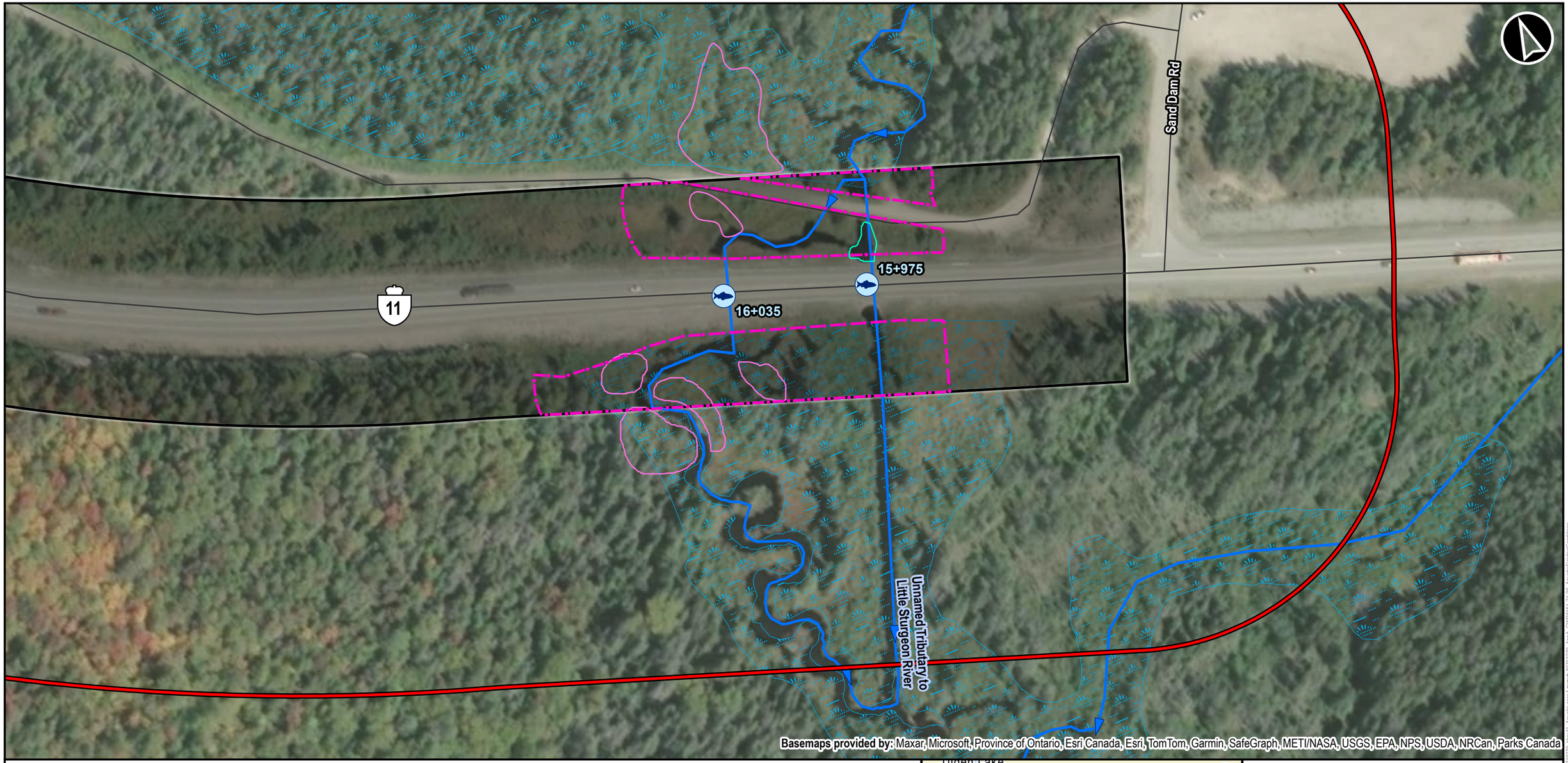


LEGEND

- Study Area (200m)
- Close-cut Clearing - Impact Area
- Fish Habitat 30m Buffer
- Unevaluated Wetland

Suitable Spawning Habitat

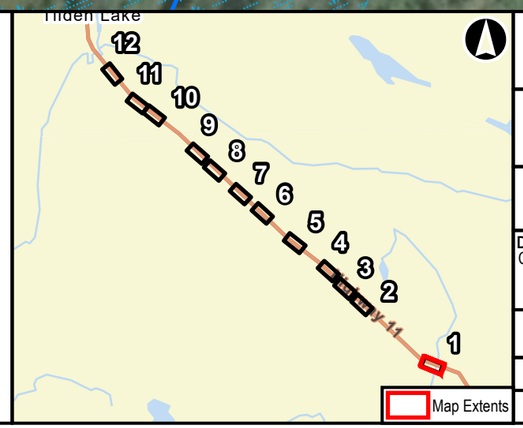
- Northern Pike
- Brook Trout

Fish Habitat

- Direct
- Direction of Flow

Flow-Thermal Regime

- Permanent-Cold



Highway 11 2+1 GWP 5121-21-00 Close-Cut Clearing

Impact Area

0 25 50 100 M

NAD 1983 CSRS MTM 10

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Apr, 2025	1:1,700
P:60731727	Rev:00

Figure 2-1

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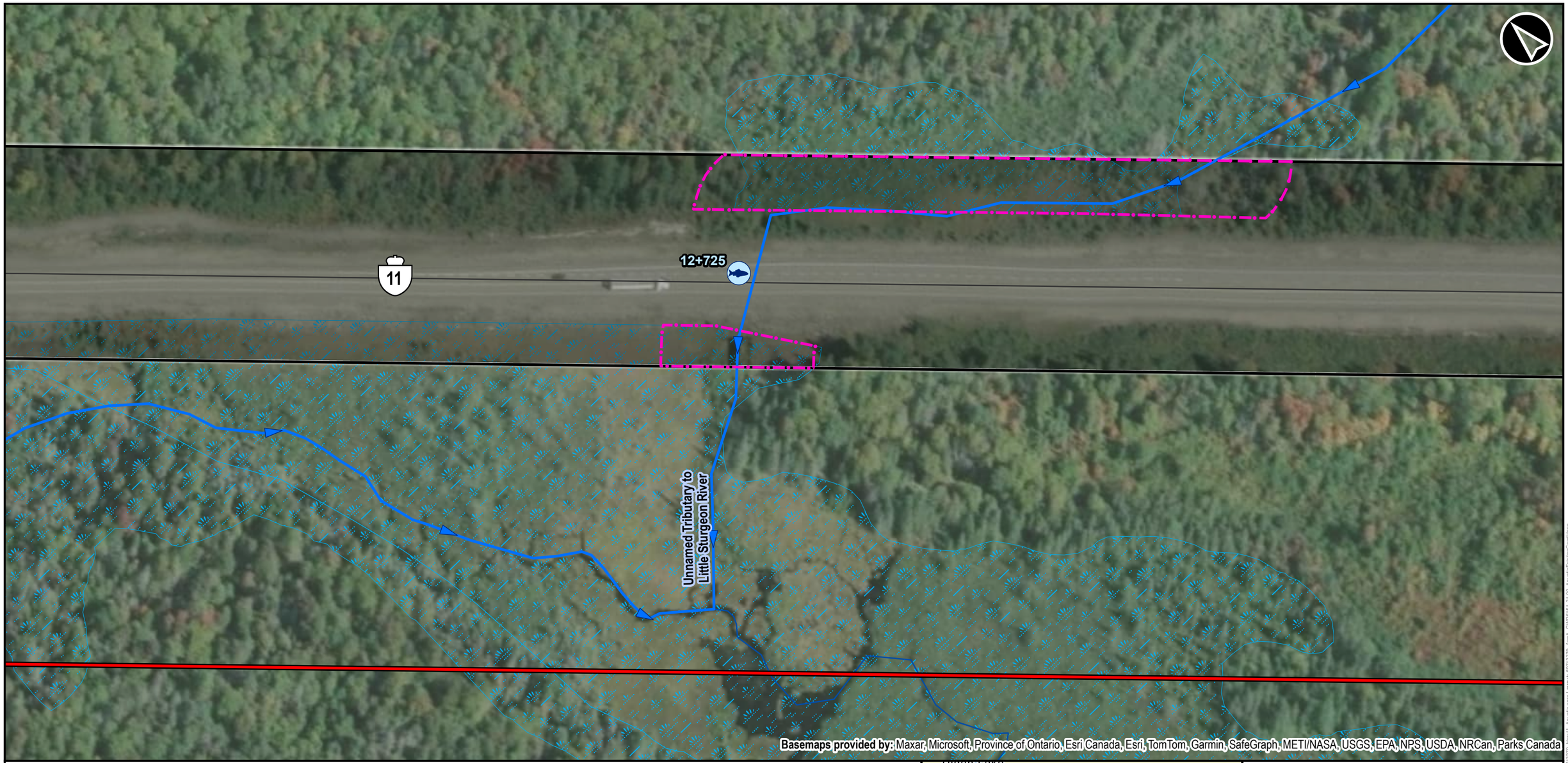


LEGEND

- Study Area (200m)
- Close-cut Clearing - Impact Area
- Fish Habitat 30m Buffer
- Unevaluated Wetland

Suitable Spawning Habitat

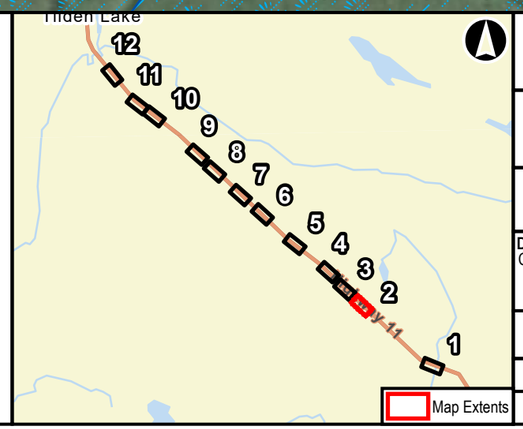
- Northern Pike
- Brook Trout

Fish Habitat

- Direct
- Direction of Flow

Flow-Thermal Regime

- Permanent-Cold



Highway 11 2+1 GWP 5121-21-00 Close-Cut Clearing

Impact Area

0 25 50 100 M

NAD 1983 CSRS MTM 10

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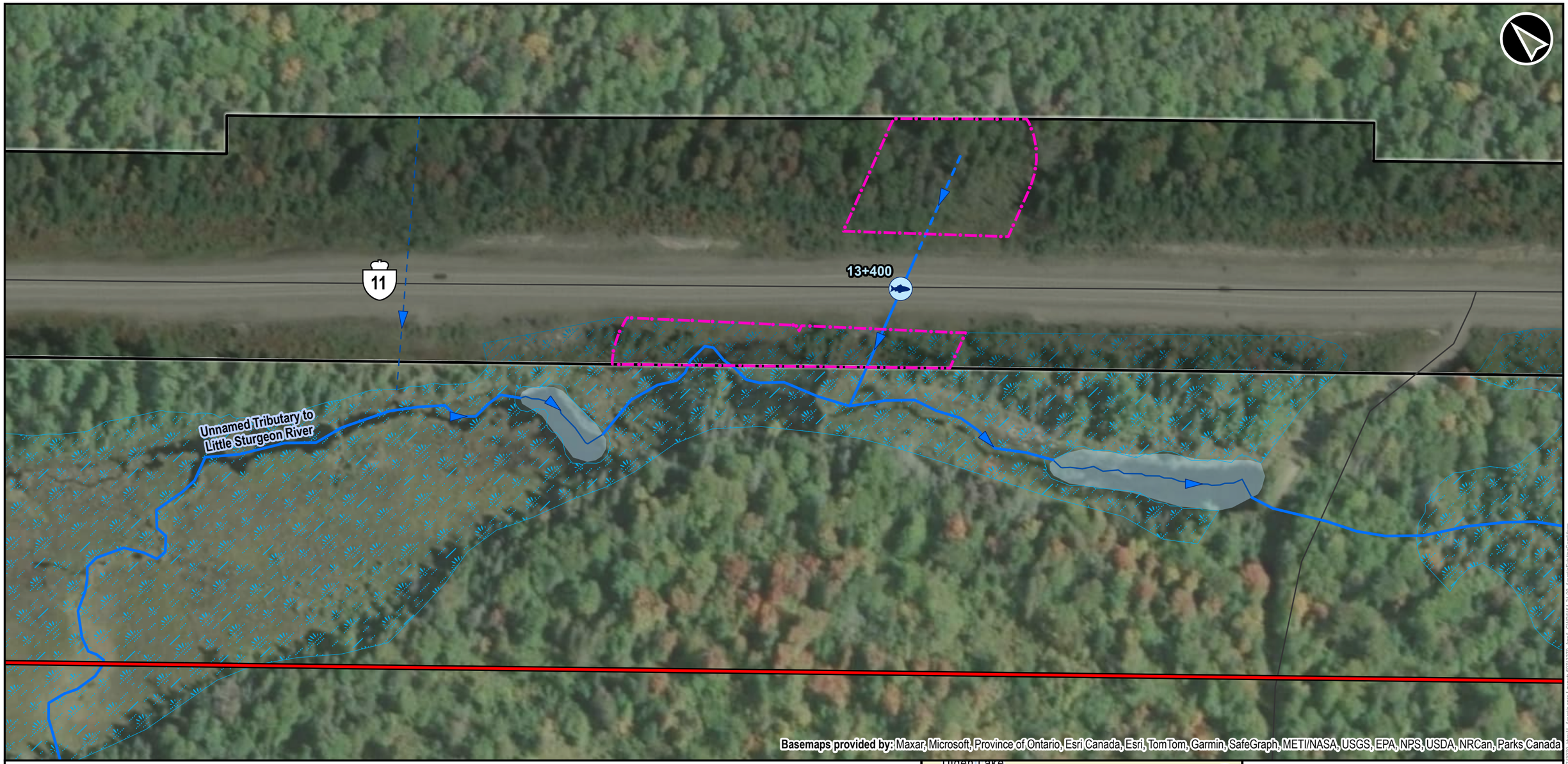
Apr, 2025	1:1,500
P:60731727	Rev:00

Figure 2-2



LEGEND

- Study Area (200m)
- Close-cut Clearing - Impact Area
- Fish Habitat 30m Buffer
- Unevaluated Wetland

Suitable Spawning Habitat

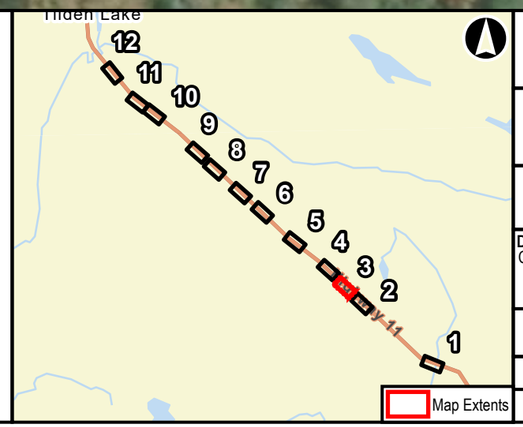
- Northern Pike
- Brook Trout

Fish Habitat

- Direct
- Direction of Flow

Flow-Thermal Regime

- Permanent-Cold
- Intermittent-Cold



Highway 11 2+1 GWP 5121-21-00 Close-Cut Clearing

Impact Area

0 25 50 100 M

NAD 1983 CSRS MTM 10

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14+359

11

13+928

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LEGEND

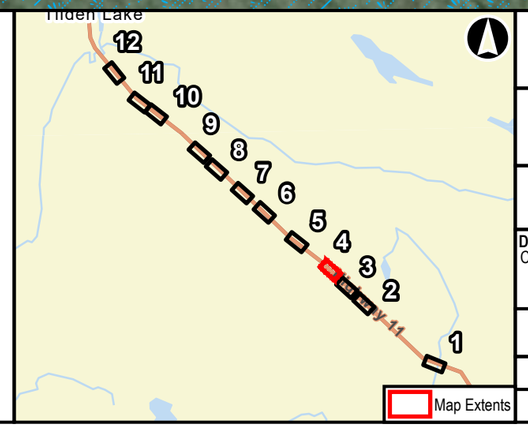
- Study Area (200m)
- Close-cut Clearing - Impact Area
- Fish Habitat 30m Buffer
- Unevaluated Wetland

Suitable Spawning Habitat

- Northern Pike
- Brook Trout

Fish Habitat

- Indirect
- Direction of Flow



Highway 11 2+1 GWP 5121-21-00 Close-Cut Clearing

Impact Area

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NAD 1983 CSRS MTM 10

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Unnamed Tributary to Little Tomiko River

15+512

11

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LEGEND

- Study Area (200m)
- Close-cut Clearing - Impact Area
- Fish Habitat 30m Buffer
- Unevaluated Wetland

Suitable Spawning Habitat

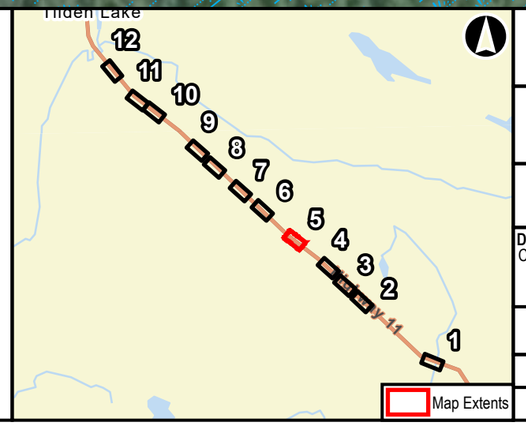
- Northern Pike
- Brook Trout

Fish Habitat

- Direct
- Direction of Flow

Flow-Thermal Regime

- Permanent-Warm



Highway 11 2+1 GWP 5121-21-00 Close-Cut Clearing

Impact Area

0 25 50 100 M

NAD 1983 CSRS MTM 10

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16+668

11

10+072

Basemaps provided by: Maxar, Microsoft, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada

LEGEND

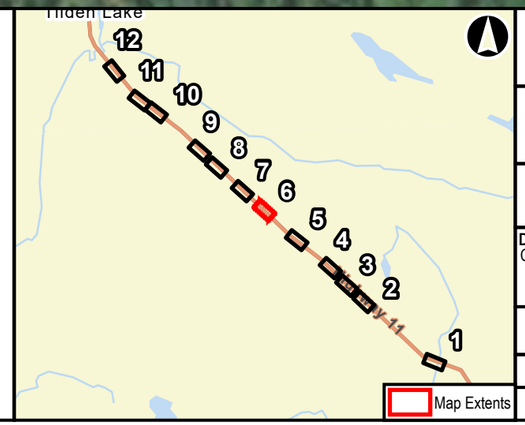
- Study Area (200m)
- Close-cut Clearing - Impact Area
- Fish Habitat 30m Buffer
- Unevaluated Wetland

Suitable Spawning Habitat

- Northern Pike
- Brook Trout

Fish Habitat

- Indirect
- Direction of Flow



Highway 11 2+1 GWP 5121-21-00 Close-Cut Clearing

Impact Area

0 25 50 100 M

NAD 1983 CSRS MTM 10

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Unnamed Tributary to Little Tomiko River

11

10+881

Basemaps provided by: Maxar, Microsoft, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada

LEGEND

- Study Area (200m)
- Close-cut Clearing - Impact Area
- Fish Habitat 30m Buffer
- Unevaluated Wetland

Suitable Spawning Habitat

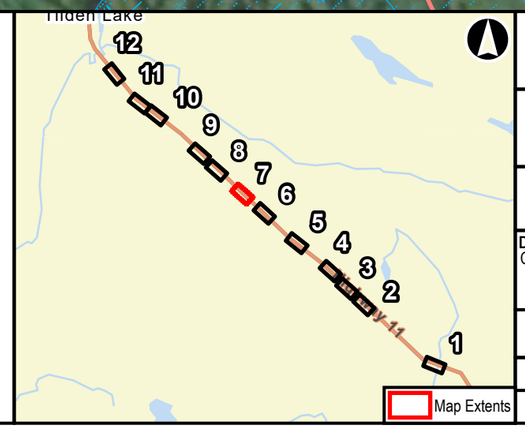
- Northern Pike
- Brook Trout

Fish Habitat

- Direct
- Direction of Flow

Flow-Thermal Regime

- Permanent-Warm



Highway 11 2+1 GWP 5121-21-00 Close-Cut Clearing

Impact Area

0 25 50 100 M

NAD 1983 CSRS MTM 10

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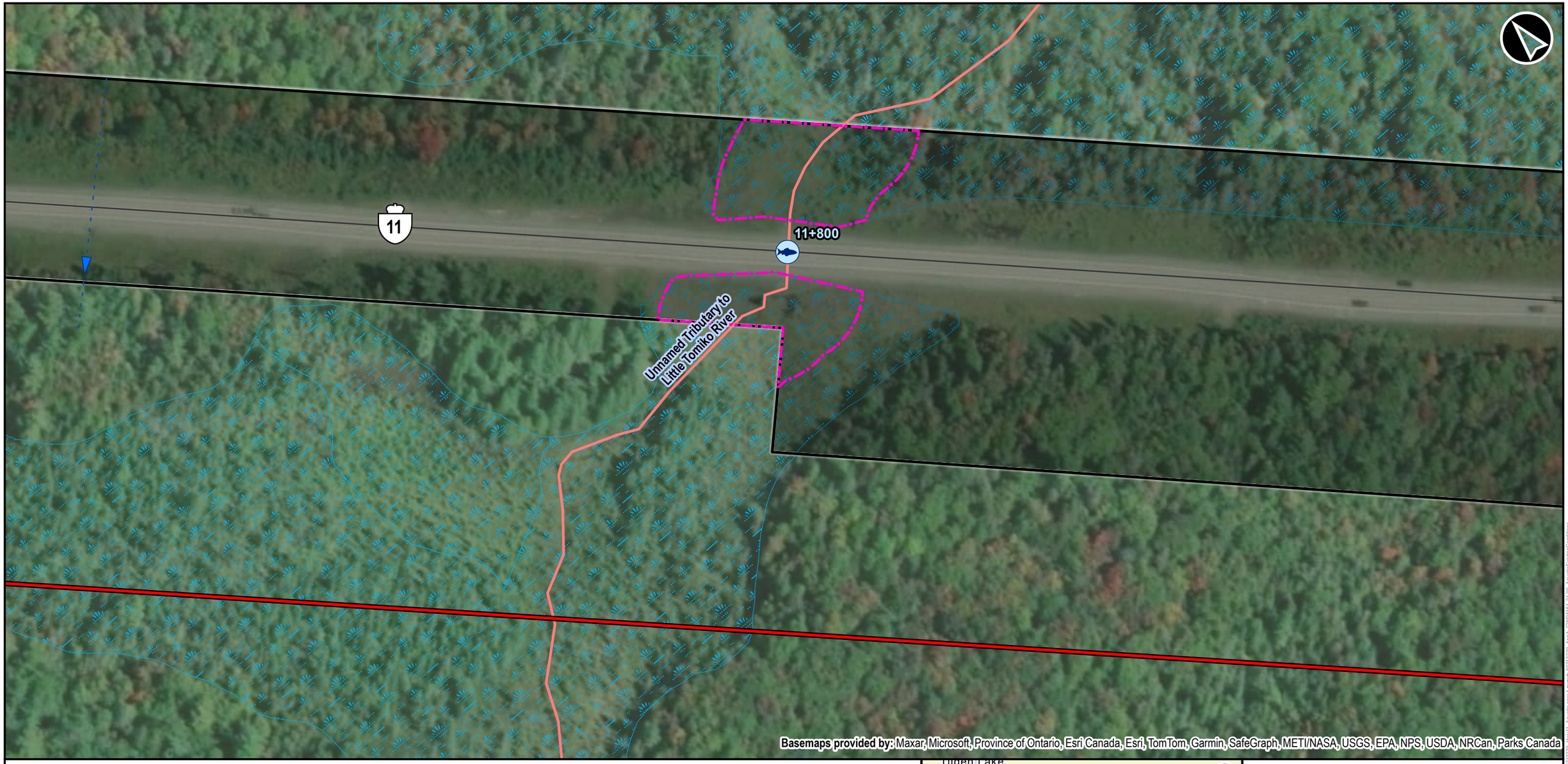


Basemaps provided by: Maxar, Microsoft, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada

LEGEND

- Study Area (200m)
- Close-cut Clearing - Impact Area
- Fish Habitat 30m Buffer
- Unevaluated Wetland

Suitable Spawning Habitat

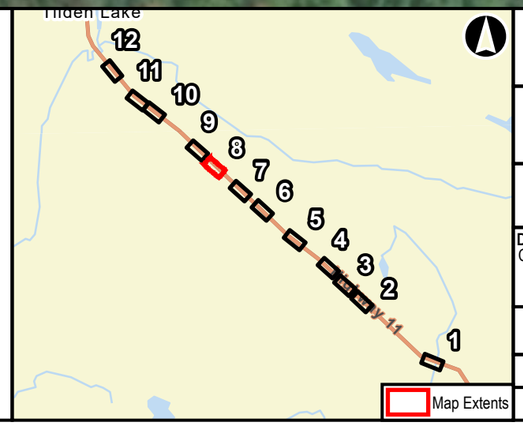
- Northern Pike
- Brook Trout

Fish Habitat

- Direct
- Direction of Flow

Flow-Thermal Regime

- Permanent-Warm



Highway 11 2+1 GWP 5121-21-00 Close-Cut Clearing

Impact Area

0 25 50 100 M

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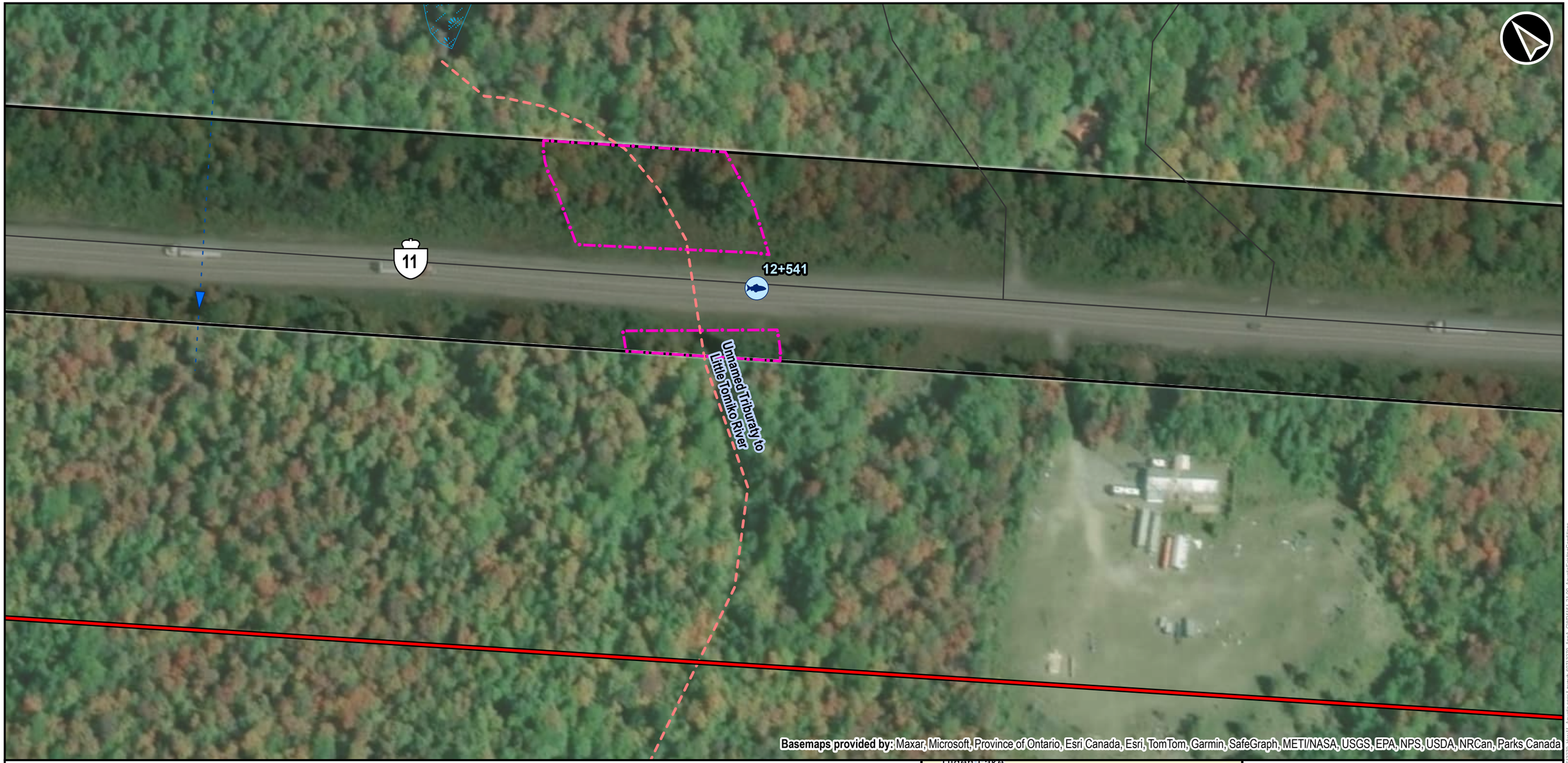


Basemaps provided by: Maxar, Microsoft, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada

LEGEND

- Study Area (200m)
- Close-cut Clearing - Impact Area
- Fish Habitat 30m Buffer
- Unevaluated Wetland

Suitable Spawning Habitat

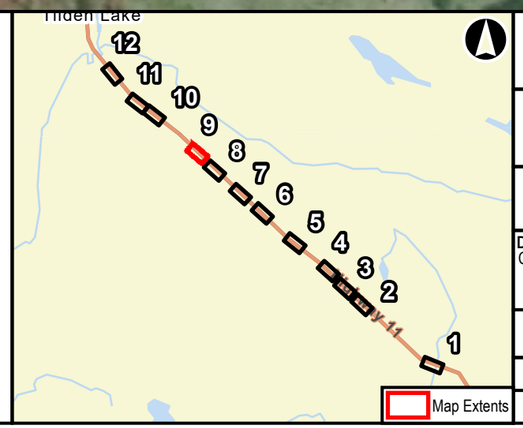
- Northern Pike
- Brook Trout

Fish Habitat

- Direct
- Direction of Flow

Flow-Thermal Regime

- Intermittent-Warm



Highway 11 2+1 GWP 5121-21-00 Close-Cut Clearing

Impact Area

0 25 50 100 M

NAD 1983 CSRS MTM 10

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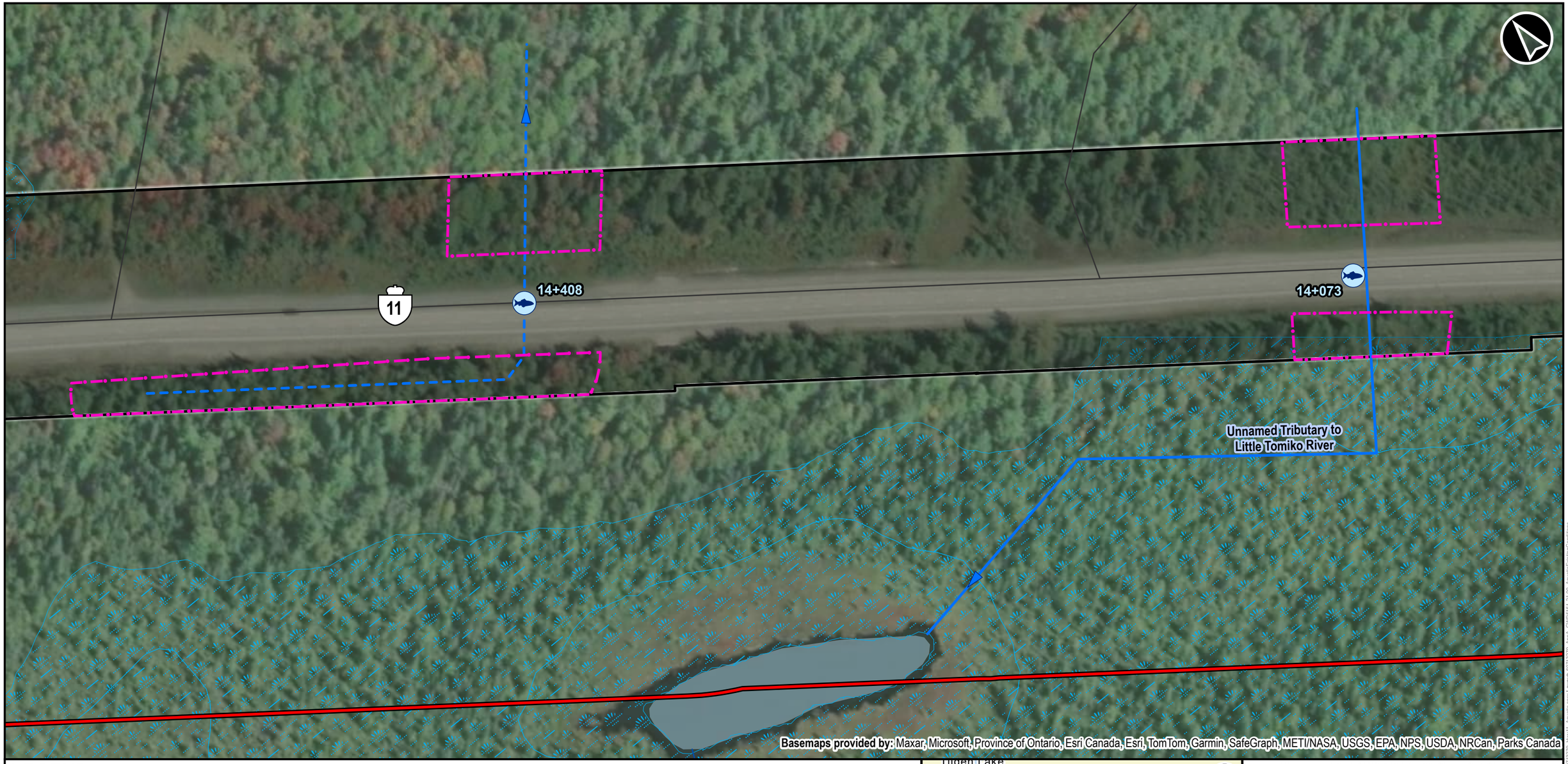


Basemaps provided by: Maxar, Microsoft, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada

LEGEND

- Study Area (200m)
- Close-cut Clearing - Impact Area
- Fish Habitat 30m Buffer
- Unevaluated Wetland

Suitable Spawning Habitat

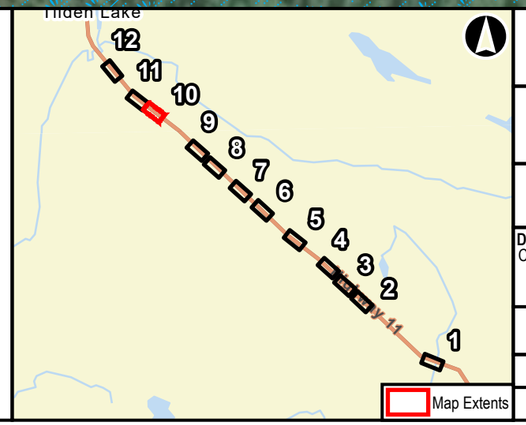
- Northern Pike
- Brook Trout

Fish Habitat

- Direct
- Direction of Flow

Flow-Thermal Regime

- Permanent-Cold
- Intermittent-Cold



Highway 11 2+1 GWP 5121-21-00 Close-Cut Clearing

Impact Area

0 25 50 100 M

NAD 1983 CSRS MTM 10

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Unnamed Tributary to Tomiko River

11

14+926

Basemaps provided by: Maxar, Microsoft, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada

LEGEND

- Study Area (200m)
- Close-cut Clearing - Impact Area
- Fish Habitat 30m Buffer
- Unevaluated Wetland

Suitable Spawning Habitat

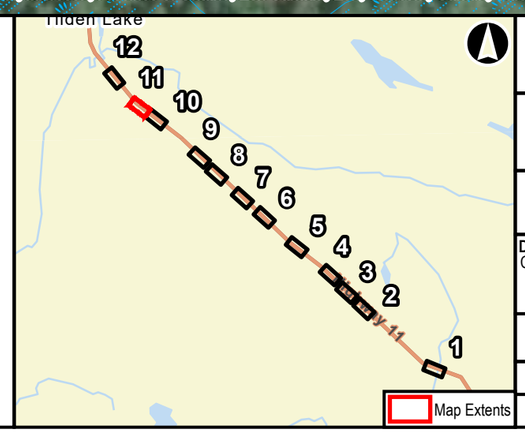
- Northern Pike
- Brook Trout

Fish Habitat

- Direct
- Direction of Flow

Flow-Thermal Regime

- Intermittent-Cold



Highway 11 2+1 GWP 5121-21-00 Close-Cut Clearing

Impact Area

0 25 50 100 M

NAD 1983 CSRS MTM 10

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Apr, 2025	1:1,500
P:60731727	Rev:00

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16+278

11

16+060

Unnamed Tributary to Little Tomiko River

Unnamed Tributary to Little Tomiko River

Basemaps provided by: Maxar, Microsoft, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada

LEGEND

- Study Area (200m)
- Close-cut Clearing - Impact Area
- Fish Habitat 30m Buffer
- Unevaluated Wetland

Suitable Spawning Habitat

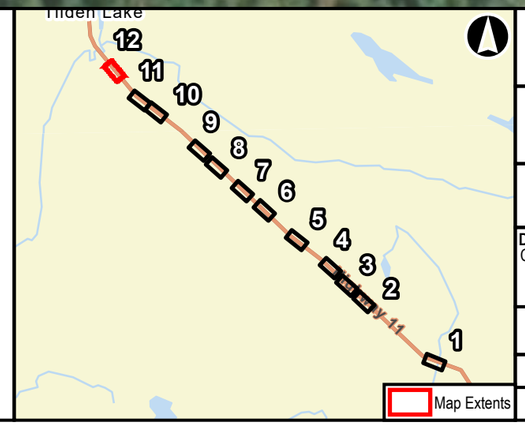
- Northern Pike
- Brook Trout

Fish Habitat

- Direct
- Direction of Flow

Flow-Thermal Regime

- Permanent-Warm



Highway 11 2+1 GWP 5121-21-00 Close-Cut Clearing

Impact Area

0 25 50 100 M

NAD 1983 CSRS MTM 10

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Appendix B

MTO Aquatic Effects Assessment Table (Template D3)

Aquatic Effects Assessment Table (Template D3)

• Pathway of Effect	• Stressor (Potential Effect)	• Mitigation	• Anticipated Residual Effect
• Land-based Activities	•	•	•
• Industrial Equipment	Use of mobile industrial equipment may promote changes to bank stability/exposed soils, re-suspension and entrainment of sediment and oil/grease/fuel leaks that can result in: - Potential for mortality of fish/eggs/ova from equipment; - Change in sediment concentrations; and, - Change in contaminant concentration.	**O-1 – Access** • Access to banks and adjacent to waterbodies will be limited to that required to complete the work to protect the structural integrity of banks and shorelines. • If required, fording will be limited to a one-time event (i.e., over and back), and only if no alternative crossing method is available. Fording will follow the conditions and requirements of the MTO Temporary Crossing BMP. • If repeated crossings of the watercourse are required, a temporary crossing structure will be used following the MTO Temporary Crossing BMP or DFO Ice Bridges and Snow Fills CoP. • Temporary crossing structures or other practices will be used to cross streams or waterbodies with steep and highly erodible (e.g., dominated by organic materials and silts) banks and beds. • For fording equipment without a temporary crossing structure, stream bank and bed protection methods (e.g., swamp mats, pads) will be used if minor rutting is likely to occur. • Temporary crossings and equipment operation, if required, will avoid suitable spawning habitat. • ▪ **O-3 – Timing of In-water works** • Timing restrictions will be implemented for temporary water crossings where applicable and as per the MTO BMP or DFO CoP. • Additional timing considerations: o No in-water work is proposed for vegetation clearing. Where possible, work will avoid wet, windy, and rainy periods that may increase erosion and sedimentation and allow for proper re-stabilization and re-vegetation as appropriate prior to winter. • **M-3 – Equipment** • Machinery will operate on land above the high-water level, on ice, or from floating barge in a manner that minimizes disturbance to the banks and bed of the waterbody. • All equipment, vehicles, and associated materials will operate, be stored, and maintained (e.g. refuel, lubricate) in a manner that prevents the entry of any deleterious substance from entering the water. • Any part of equipment entering the water or operating on the bank shall be free of fluid leaks, invasive species and noxious weeds, and externally cleaned/degreased to prevent any deleterious substance from entering the water. **Erosion and Sediment Controls** • Erosion and sediment controls to contain/isolate the construction zone, manage site drainage/runoff and prevent erosion of exposed soils and migration of sediment to adjacent waterbodies will be implemented during all phases of the project. • Erosion and sediment control measures will be maintained until all disturbed ground has been permanently stabilized, suspended sediment has resettled to the bed of the waterbody or settling basin and runoff water is clear. The plan will, where applicable, include: o Installation of effective erosion and sediment control measures before starting work to prevent sediment from entering the waterbody. o Regular inspection and maintenance of erosion and sediment control measures and structures during construction. o Repairs to erosion and sediment control measures and structures if damage occurs.	• **None** - Provided applicable mitigation measures are implemented, the use of industrial equipment is not expected to result in residual effects.

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		○ Removal of non-biodegradable erosion and sediment control materials once the site is stabilized. **M-9 – Spills** • Spill Management Plan (including spill kit materials, instructions regarding their use, education of contract personnel, emergency contact numbers) will be on-site at all times for immediate implementation in the event of an accidental spill. **R-1 – Waterbody Bank** - Banks of waterbodies will be stabilized as needed. If rock reinforcement/armouring is required, appropriately-sized material will be used and installed at a similar slope to the existing and not interfere with fish passage or alter the bankful channel profile. **R-3 – Exposed Soils/ Surfaces** • Excavation is not required. If ground is disturbed or exposed from equipment use, areas of disturbed/exposed soil that drain to a waterbody will be stabilized and may include: ○ Rolled erosion control blankets, etc., and ○ Installation of appropriately designed structural materials or rock protection.	
• Vegetation Clearing	▪ Alteration of riparian vegetation, changes in shading, and changes to bank stability/exposed soils and the addition or removal of in-stream organic structure can result in: - Changes in habitat structure and cover, - Change in water temperature, - Change in sediment concentrations, - Changes in food supply and nutrient concentrations.	**M-11 – Vegetation** - Existing trails, roads, or cut lines will be used wherever possible to avoid disturbance to the riparian vegetation and prevent soil compaction, and - Clearing of riparian vegetation will be kept to a minimum where possible. . **M-1 – Chemicals** - Fertilizers, pesticides, or herbicides will not be used. Ensure that building material used in a watercourse has been handled and treated in a manner to prevent the release or leaching of substances into the water that may be deleterious to fish. **M-4 – Erosion and Sediment Controls** - Erosion and sediment controls will be installed where needed to contain/isolate the construction zone, manage site drainage/runoff and prevent erosion of exposed soils and migration of sediment to adjacent waterbody during all phases of the project, - Erosion and sediment control measures will be maintained until all disturbed ground has been permanently stabilized. The plan will, where applicable, include: ○ Installation of effective erosion and sediment control measures before starting work, where needed, to prevent sediment from entering the waterbody, ○ Regular inspection and maintenance of erosion and sediment control measures and structures during construction, ○ Repairs to erosion and sediment control measures and structures if damage occurs, ○ And ○ Removal of non-biodegradable erosion and sediment control materials once site is stabilized. **R-1 – Waterbody Bank** - If rock reinforcement/armouring is required, appropriately-sized material will be used and installed at a similar slope to the existing. and not interfere with fish passage or alter the bankful channel profile.	• NEGATIVE - The clear-cut vegetation removal will be permanent, and all of the potential negative residual effects to fish and fish habitat could not be fully mitigated. By applying mitigation measures, the potential negative effects resulting from this work are partially mitigated and avoided. • The residual effects, including changes to overhanging habitat structure and cover, shade and water temperature, and external inputs of food and nutrients, are not likely to be to a degree that will affect the function, access, or productivity of the habitat or harm fish.

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		R-3 – Exposed Soils/ Surfaces • Excavation is not required. If ground is disturbed or exposed from equipment use, areas of disturbed/exposed soil that drain to a waterbody will be stabilized and may include: - o Rolled erosion control blankets, etc. o Installation of appropriately designed structural materials or rock protection.	