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Fish and Fish Habitat Preliminary Impact Assessment Report

Highway 401 Planning Study
from Cobourg to Colborne
(GWP 4060-11-00)

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1.0 Introduction

The Ministry of Transportation (MTO) retained Stantec Consulting Ltd. (Stantec) to undertake a Planning, Preliminary Design, and Class Environmental Assessment (Class EA) Study on Highway 401 for the replacement and rehabilitation of structures, interchange modifications, establishing the footprint of future six and eight lanes to address current and future transportation needs, and commuter parking lot improvements, from 2 km east of Nagle Road to Percy Street (approximately 18 km) (**Figure 1**). The purpose of the study is to identify a Recommended Plan that addresses current and future transportation needs in the Study Area as part of the MTO's ongoing review of safety and operational needs for the provincial highway network. The study includes reviewing existing conditions, developing and evaluating alternatives, identifying appropriate improvements, and developing environmental protection / mitigation measures for the Recommended Plan.

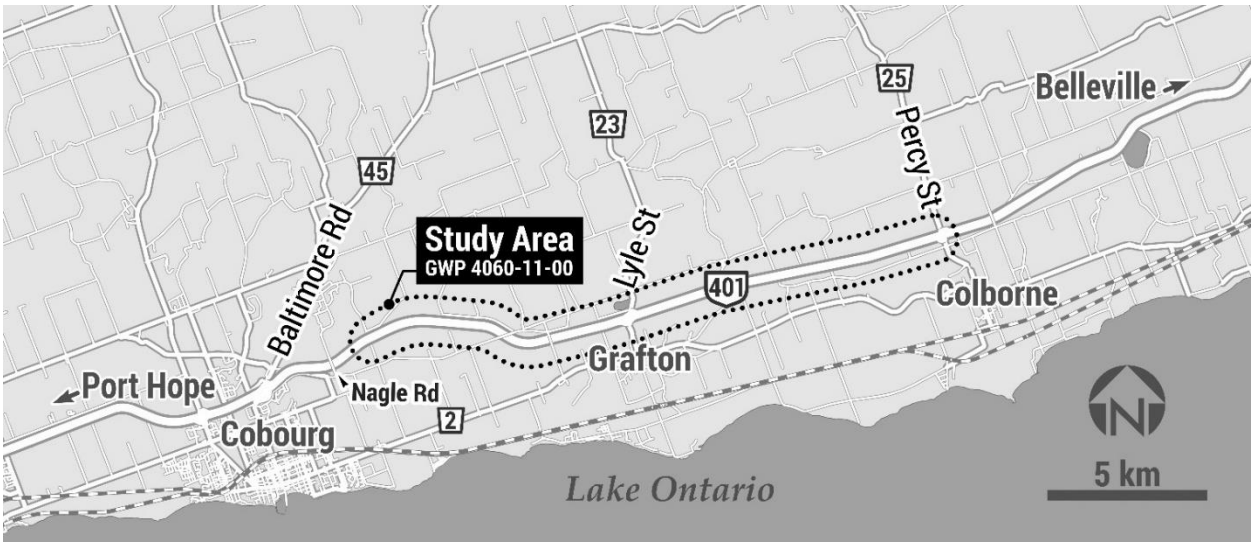

Figure 1: Location of Study Area

This *Fish and Fish Habitat Preliminary Impact Assessment Report* summarizes locations that provide fish habitat in the Study Area (**Figure 2** in **Appendix A**) and provides a preliminary impact assessment based on the Recommended Plan. Detailed methods and results of background data collection and field investigations, including photographs and field notes are available in the *Fish and Fish Habitat Existing Conditions Report* previously prepared for the project (Stantec 2018).

Following completion of field work and the *Fish and Fish Habitat Existing Conditions Report* (Stantec 2018), changes to the federal *Fisheries Act* came into force in August 2019. The *MTO/DFO/MNRF Protocol for the Protection of Fish and Fish Habitat on Provincial Undertakings* (the Protocol) (MTO 2020a) and the *Environmental Guide for Fisheries* (the Fish Guide) (MTO 2020b) were revised and updated in 2020. This report was completed in accordance with the *Environmental Reference for Highway Design* (MTO 2013) and the *Environmental Guide for Fish and Fish Habitat* (MTO 2009); however, terminology and definitions regarding effects on fish habitat reflect the changes to the *Fisheries Act* legislation and the revised Fish Guide (MTO 2020b).

2.0 Methods

Details of agency correspondence, background data sources, and the methods and results of the 2017 field investigations are described in the *Fish and Fish Habitat Existing Conditions Report* for the project (Stantec 2018).

Fish and fish habitat field investigations were conducted from June 7 to June 14, 2017 (spring survey) and September 18 to September 19, 2017 (summer survey).

Information with respect flow regime, thermal regime and constructed drains was updated for this *Fish and Fish Habitat Preliminary Impact Assessment Report* (illustrated in **Figure 2**). Fisheries and Oceans Canada's (DFO) aquatic species at risk (SAR) maps and the Natural Heritage Information Centre (NHIC) database were reviewed for updates regarding aquatic SAR.

Correspondence with the Ministry of Natural Resources and Forestry (MNRF) and Ministry of Environment, Conservation and Parks (MECP) received for the *Fish and Fish Habitat Existing Conditions Report* (Stantec 2018) is provided in **Appendix B**.

3.0 Summary of Existing Conditions

Tabular summaries of existing conditions for fish and fish habitat are provided in **Table 1**. For consistency with the *Fish and Fish Habitat Existing Conditions Report* (Stantec 2018), **Table 1** has not been revised since the 2018 report was issued; however, the information provided is consistent with Template D2A and Template D2B of the 2020 Fish Guide (MTO 2020b).

Among the 14 potential watercourse crossings investigated within the Study Area, direct fish habitat was documented within the Highway 401 right of way (ROW) at 11 sites (**Table 1** and **Figure 2**). Indirect habitat was documented within the Highway 401 ROW at two sites, and one site did not provide fish habitat within the Highway 401 ROW. The majority of watercourse crossings in the Study Area are natural, coldwater watercourses that generally drain southerly to Lake Ontario and provide Brook Trout (*Salvelinus fontinalis*) habitat.

Twelve common fish species were captured during the 2017 surveys (**Table 1**); the most common species were Brook Trout, Rainbow Trout (*Oncorhynchus mykiss*), Creek Chub (*Semotilus atromaculatus*) and Blacknose Dace (*Rhinichthys atratulus*).

Three culverts were identified in the *Preliminary Drainage Report* (Stantec 2021) that have the potential to support fish habitat but were not included in Stantec's 2017 field investigations. The three culverts are included in **Figure 2** and listed in the footnotes in **Table 1**.

Table 1: Summary of Fish and Fish Habitat Existing Conditions during Spring and Summer 2017* (GWP 4060-11-00)

Waterbody[a]	Flow Regime	Thermal Regime[b]	Habitat Description	Fish Habitat	Fish Species Present and Species at Risk Present[c,d]	Substrate Type	Riparian and Instream Vegetation	Constraints and Opportunities	Significant Habitat	In-water Works Timing Window[e]
Unnamed Tributary 01	Permanent (MNRF 2022a)	Cold (MNRF 2017; MNRF 2018a; MNRF 2022a)	Upstream: large riffle flowing down gradient over boulder/cobble substrates, approximately 2 m wide and 15 cm deep. Downstream: riffle/pool/riffle/pool/run/ cascade sequence over gravel and sand substrates, approximately 1 m to 3 m wide and 15 cm to 45 cm deep	Direct	<u>Fish Species Present:</u> Stantec: Brook Trout MNRF (2017; 2018d): Brook Trout, Creek Chub, Eastern Blacknose Dace, Longnose Dace, Rainbow Trout, White Sucker <u>Species at Risk Present:</u> None identified	Boulder, cobble, gravel and sand	Riparian Vegetation: cedars Instream Vegetation: none	None	Yes (coldwater thermal regime) Iron Staining upstream and downstream – possible groundwater input for Brook Trout spawning	July 1 to Sept 30 (MNRF 2018a)
Unnamed Tributary 02 (Site 21X-0467/C0)	Permanent (MNRF 2022a)	Cold (MNRF 2017; MNRF 2018a; MNRF 2022a)	Upstream: no access, dense cedars Downstream: large pool 4.5 m wide and 80 cm deep at culvert, school of Brook Trout observed, narrows to a run 1.8 m to 2 m wide and 25 cm deep and a riffle at ROW fence approximately 2 m wide. Large seep observed immediately downstream on the east bank.	Direct	<u>Fish Species Present:</u> Stantec: Brook Trout, Rainbow Trout MNRF (2017; 2018d): Brook Trout, Creek Chub, Eastern Blacknose Dace, Longnose Dace, Rainbow Trout, White Sucker <u>Species at Risk Present:</u> None identified	Cobble, gravel, sand, silt, muck and detritus	Riparian Vegetation: cedars Instream Vegetation: tapegrass and cattails	None	Yes (coldwater thermal regime) Iron Staining and watercress downstream – possible groundwater input for Brook Trout spawning	July 1 to Sept 30 (MNRF 2018a)

Waterbody[a]	Flow Regime	Thermal Regime[b]	Habitat Description	Fish Habitat	Fish Species Present and Species at Risk Present[c,d]	Substrate Type	Riparian and Instream Vegetation	Constraints and Opportunities	Significant Habitat	In-water Works Timing Window[e]
Unnamed Tributary 03	Permanent (MNRF 2022a)	Cold (MNRF 2017; MNRF 2018a; MNRF 2022a)	Upstream: trickle flow from cattails to the west, 0.5 m wide and 1 cm to 2 cm deep. A channelized feature drains west along the edge of the ROW approximately 400 m to the highway culvert. During the spring the feature was 1 m wide and 5 cm deep and dry during the summer field investigation. Several headcuts located along the feature would prevent upstream fish movement. Downstream: large plunge pool at culvert, followed by a riffle/cascade/run sequence approximately 1 m wide and 8 cm deep.	Direct	<u>Fish Species Present:</u> Stantec: Brook Stickleback, Creek Chub, Fathead Minnow, Rainbow Trout MNRF (2017; 2018d): American Brook Lamprey, Atlantic Salmon, Black Crappie, Bluntnose Minnow, Brook Trout, Brown Bullhead, Brown Trout, Central Mudminnow, Coho Salmon, Common Shiner, Creek Chub, Eastern Blacknose Dace, Emerald Shiner, Fantail Darter, Fathead Minnow, Johnny Darter/Tesselated Darter, Longnose Dace, Northern Brook Lamprey, Northern Hog Sucker, Northern Redbelly Dace, Pumpkinseed, Rainbow Darter, Rainbow Trout, Rock Bass, Sea Lamprey, Smallmouth Bass, Stonecat, White Sucker <u>Species at Risk Present:</u> None identified	Clay, silt, cobble, boulder and gravel	Riparian vegetation: mixed forest Instream Vegetation: watercress, cattails and *Phragmites*	Address perched culvert (approximately 1.6 m high) Stabilize collapsed embankment on downstream side	Yes (coldwater thermal regime) Iron staining at downstream culvert and watercress upstream Groundwater upwelling observed just downstream of the culvert on the right side	July 1 to Sept 30 (MNRF 2018a)

Waterbody[a]	Flow Regime	Thermal Regime[b]	Habitat Description	Fish Habitat	Fish Species Present and Species at Risk Present[c,d]	Substrate Type	Riparian and Instream Vegetation	Constraints and Opportunities	Significant Habitat	In-water Works Timing Window[e]
Unnamed Tributary 04 (Site 21X-0270/C0)	Permanent (MNRF 2022a)	Cold (MNRF 2017; MNRF 2018a; MNRF 2022a)	Upstream: riffle over boulder/cobble substrates, which transitions to a pool-run sequence at the culvert. Wetted width ranged from 4 m to 8 m wide and 0.1 m to 0.7 m deep. Downstream: riffle-pool-run sequence over gravel, sand and cobble substrates, approximately 4 m wide and 0.2 m to 0.5 m deep. Culvert – a grade control structure in the culvert consists of large concrete ledges across the full width of the culvert that during normal or low flow would prevent fish passage for non-jumping species.	Direct	<u>Fish Species Present:</u> Stantec: Rainbow Trout, Central Mudminnow, lamprey ammocoete MNRF (2017; 2018d): American Brook Lamprey, Atlantic Salmon, Black Crappie, Bluntnose Minnow, Brook Trout, Brown Bullhead, Brown Trout, Central Mudminnow, Coho Salmon, Common Shiner, Creek Chub, Eastern Blacknose Dace, Emerald Shiner, Fantail Darter, Fathead Minnow, Johnny Darter/Tesselated Darter, Longnose Dace, Northern Brook Lamprey, Northern Hog Sucker, Northern Redbelly Dace, Pumpkinseed, Rainbow Darter, Rainbow Trout, Rock Bass, Sea Lamprey, Smallmouth Bass, Stonecat, White Sucker <u>Species at Risk Present:</u> None identified	Gravel, cobble, sand and boulder	Riparian Vegetation: mixed forest Instream Vegetation: none	Address barrier to fish movement (grade control system in the culvert consists of large concrete ledges across the full width of the culvert that during low flow would prevent fish passage for non-jumping species)	Yes (coldwater thermal regime) Watercress and iron staining upstream side of culvert.	July 1 to Sept 30 (MNRF 2018a)

Waterbody[a]	Flow Regime	Thermal Regime[b]	Habitat Description	Fish Habitat	Fish Species Present and Species at Risk Present[c,d]	Substrate Type	Riparian and Instream Vegetation	Constraints and Opportunities	Significant Habitat	In-water Works Timing Window[e]
Unnamed Tributary 05	Permanent (MNRF 2022a) south of the Highway 401 ROW (no mapped watercourse within the ROW)	Cold (MNRF 2017; MNRF 2018a; MNRF 2022a)	Upstream: no mapped watercourse Downstream: watercourse not assessed as it is not located within Highway 401 ROW	Not fish habitat in the Highway 401 ROW Indirect fish habitat downstream of the Highway 401 ROW	<u>Fish Species Present:</u> Stantec: not fished; not located within Highway 401 ROW MNRF (2017; 2018d): American Brook Lamprey, Atlantic Salmon, Black Crappie, Bluntnose Minnow, Brook Trout, Brown Bullhead, Brown Trout, Central Mudminnow, Coho Salmon, Common Shiner, Creek Chub, Eastern Blacknose Dace, Emerald Shiner, Fantail Darter, Fathead Minnow, Johnny Darter/Tesselated Darter, Longnose Dace, Northern Brook Lamprey, Northern Hog Sucker, Northern Redbelly Dace, Pumpkinseed, Rainbow Darter, Rainbow Trout, Rock Bass, Sea Lamprey, Smallmouth Bass, Stonecat, White Sucker <u>Species at Risk Present:</u> None identified	N/A	N/A	N/A	N/A	July 1 to Sept 30 (MNRF 2018a)

Waterbody[a]	Flow Regime	Thermal Regime[b]	Habitat Description	Fish Habitat	Fish Species Present and Species at Risk Present[c,d]	Substrate Type	Riparian and Instream Vegetation	Constraints and Opportunities	Significant Habitat	In-water Works Timing Window[e]
Unnamed Tributary 06 (Site 21X-0470/C0)	Permanent (MNRF 2022a)	Cold (MNRF 2017; MNRF 2018a; MNRF 2022a)	Upstream: run over fine substrates, slumping bank on east side. Trickle flow from constructed drainage feature on east side. Downstream: plunge pool-run-cascade-run sequence approximately 2 m wide and 0.1 m to 0.7 m deep. Woody debris jam at ROW fence that would impede fish passage.	Direct	<u>Fish Species Present:</u> Stantec: Brook Trout MNRF (2017; 2018d): Mudminnows, Sticklebacks, Brook Stickleback, Creek Chub, Eastern Blacknose Dace, Fathead Minnow, Johnny/Tesselated Darter, Longnose Dace, Mottled Sculpin, Northern Redbelly Dace, Pumpkinseed, Rainbow Trout, Threespine Stickleback, White Sucker <u>Species at Risk Present:</u> None identified	Sand, silt, gravel, muck, boulder and cobble	Riparian Vegetation: mixed forest Instream Vegetation: watercress and speedwell	Address perched culvert (0.55 m high) on downstream side Stabilize slumping banks on upstream side Retain root wads and woody debris on the downstream side Limit riparian tree removal	Yes (coldwater thermal regime) Watercress on upstream and downstream side	July 1 to Sept 30 (MNRF 2018a)
Shelter Valley Creek (Site 21X-0270/C0)	Permanent (MNRF 2022a)	Cold (MNRF 2017; MNRF 2018a; MNRF 2022a)	Upstream and Downstream: riffle-run sequence over boulder, cobble and gravel substrates. Wetted width ranged between 6 m and 8 m and depth ranged between 0.2 m and 0.6 m.	Direct	<u>Fish Species Present:</u> Stantec: Rainbow Trout, Mottled Sculpin, YOY salmonid, lamprey ammocoete, and Chinook Salmon observed MNRF (2017; 2018d): American Eel, Atlantic Salmon, Chinook Salmon, Black Bullhead, Bluegill, Bluntnose Minnow, Brook Stickleback, Brook Trout, Brown Bullhead, Brown Trout, Central Mudminnow, Coho Salmon, Common Shiner, Creek Chub, Eastern Blacknose Dace, Emerald Shiner, Fantail Darter, Fathead Minnow, Finescale	Cobble, boulder, gravel and sand	Riparian Vegetation: mixed forest Instream Vegetation: none	Stabilize downstream west bank at meander bend	Yes (coldwater thermal regime) Watercress and iron staining	July 1 to Sept 30 (MNRF 2018a)

Waterbody[a]	Flow Regime	Thermal Regime[b]	Habitat Description	Fish Habitat	Fish Species Present and Species at Risk Present[c,d]	Substrate Type	Riparian and Instream Vegetation	Constraints and Opportunities	Significant Habitat	In-water Works Timing Window[e]
					Dace, Golden Shiner, Johnny Darter/Tesselated Darter, Largemouth Bass, Logperch, Longnose Dace, Mottled Sculpin, Northern Brook Lamprey, Northern Hog Sucker, Northern Redbelly Dace, Pumpkinseed, Rainbow Trout, Rock Bass, Sea Lamprey, Smallmouth Bass, Spottail Shiner, Threespine Stickleback, White Sucker, Yellow Perch <u>Species at Risk Present:</u> MNRF (2017; 2018a; 2018b; 2022b): American Eel DFO 2022: None identified					
Unnamed Tributary 07	Permanent (MNRF 2022a)	Cold (MNRF 2017; MNRF 2018a; MNRF 2022a)	Upstream: riffle-run sequence over cobble, gravel and boulder substrates, 0.6 m to 1.6 m wide and 0.1 m to 0.3 m deep. Downstream: riffle approximately 1.2 m wide and 0.15 m deep over cobble, boulder and gravel substrates. Flows into dense cedar bush beyond ROW. Highway drainage down west riprap lined embankment.	Direct	<u>Fish Species Present:</u> Stantec: Blacknose Dace, and salmonid observed MNRF (2017; 2018d): Mudminnows, Bluntnose Minnow, Brook Stickleback, Creek Chub, Eastern Blacknose Dace, Fathead Minnow, Northern Redbelly Dace, Rainbow Trout, White Sucker <u>Species at Risk Present:</u> None identified	Cobble, gravel, boulder	Riparian Vegetation: cedars Instream Vegetation: none	None	Yes (coldwater thermal regime) Watercress upstream and downstream.	July 1 to Sept 30 (MNRF 2018a)

Waterbody[a]	Flow Regime	Thermal Regime[b]	Habitat Description	Fish Habitat	Fish Species Present and Species at Risk Present[c,d]	Substrate Type	Riparian and Instream Vegetation	Constraints and Opportunities	Significant Habitat	In-water Works Timing Window[e]
Unnamed Tributary 08	Permanent (MNRF 2022a)	Cold (MNRF 2017; MNRF 2018a; MNRF 2022a)	Upstream: main source of flow appears to be from the east side of Vernonville Road, north of Rutherford Road and not as mapped from the east. Flat habitat 1.8 m wide and 1-2 cm deep with a pool at the catch basin. Downstream: pool at culvert 1.8 m wide and 0.45 m deep, transitions into a run that ranged between 0.4 m and 1.1 m wide and 9 cm to 15 cm deep. Flow continued as a flat through grassy vegetation beyond ROW. Upstream and Downstream: dry in the summer	Indirect habitat in the Highway 401 ROW Direct habitat downstream of the Highway 401 ROW	<u>Fish Species Present:</u> Stantec: no catch MNRF (2017; 2018d): Mudminnows, Bluntnose Minnow, Brook Stickleback, Creek Chub, Eastern Blacknose Dace, Fathead Minnow, Northern Redbelly Dace, Rainbow Trout, White Sucker <u>Species at Risk Present:</u> None identified	Gravel, silt, cobble, sand and muck	Riparian Vegetation: grasses Instream Vegetation: grasses, sedges and cattails	None	No	July 1 to Sept 30 (MNRF 2018a)

Waterbody[a]	Flow Regime	Thermal Regime[b]	Habitat Description	Fish Habitat	Fish Species Present and Species at Risk Present[c,d]	Substrate Type	Riparian and Instream Vegetation	Constraints and Opportunities	Significant Habitat	In-water Works Timing Window[e]
Unnamed Tributary 09 (Site 21X-0576/C0)	Permanent (MNRF 2022a)	Cold (MNRF 2017; MNRF 2018a; MNRF 2022a)	Upstream: run-riffle-pool sequence over cobble, gravel and sand substrates, approximately 3 m wide and 0.25 m deep through cedar bush. Downstream: wide, deep pool, transitions to a run over sand and boulder, beyond pedestrian bridge, channel narrows and a riffle forms over cobble and gravel substrates and transitions into a run.	Direct	<u>Fish Species Present:</u> Stantec: White Sucker, Creek Chub, Brook Trout, Blacknose Dace MNRF (2017; 2018d): American Brook Lamprey, Lampreys, Bluntnose Minnow, Brook Stickleback, Brook Trout, Coho Salmon, Creek Chub, Eastern Blacknose Dace, Fathead Minnow, Golden Shiner, Johnny Darter/Tesselated Darter, Logperch, Longnose Dace, Mottled Sculpin, Northern Redbelly Dace, Pumpkinseed, Rainbow Smelt, Rainbow Trout, Rock Bass, Sea Lamprey, Slimy Sculpin, Smallmouth Bass, White Sucker <u>Species at Risk Present:</u> None identified	Gravel, cobble, sand and boulder	Riparian Vegetation: cedar Instream Vegetation: none	Remove instream fencing to facilitate larger fish passage	Yes (coldwater thermal regime) Iron staining observed downstream, east side	July 1 to Sept 30 (MNRF 2018a)

Waterbody[a]	**Flow Regime**	**Thermal Regime**[b]	**Habitat Description**	**Fish Habitat**	**Fish Species Present and Species at Risk Present**[c,d]	**Substrate Type**	**Riparian and Instream Vegetation**	**Constraints and Opportunities**	**Significant Habitat**	**In-water Works Timing Window**[e]
Unnamed Tributary 10	Permanent (MNRF 2022a)	Cold (MNRF 2017; MNRF 2018a; MNRF 2022a)	Upstream: slightly meandering run over sand substrates through a grassy ROW. Scour at meander near culvert 0.35 m deep. Downstream: large, altered square pool at culvert, narrows to a flat at ROW fence and turns 90 degrees and flows west beyond fence.	Direct	<u>Fish Species Present:</u> Stantec: Creek Chub, Blacknose Dace MNRF (2017; 2018d): American Brook Lamprey, Lampreys, Bluntnose Minnow, Brook Stickleback, Brook Trout, Coho Salmon, Creek Chub, Eastern Blacknose Dace, Fathead Minnow, Golden Shiner, Johnny Darter/Tesselated Darter, Logperch, Longnose Dace, Mottled Sculpin, Northern Redbelly Dace, Pumpkinseed, Rainbow Smelt, Rainbow Trout, Rock Bass, Sea Lamprey, Slimy Sculpin, Smallmouth Bass, White Sucker <u>Species at Risk Present:</u> None identified	Sand, gravel, silt and muck	Riparian Vegetation: none Instream Vegetation: watercress and cattails	Naturalize large, altered pool on downstream side Retain large ash tree on upstream side	Yes (coldwater thermal regime) Watercress at downstream ROW fence	July 1 to Sept 30 (MNRF 2018a)

Waterbody[a]	Flow Regime	Thermal Regime[b]	Habitat Description	Fish Habitat	Fish Species Present and Species at Risk Present[c,d]	Substrate Type	Riparian and Instream Vegetation	Constraints and Opportunities	Significant Habitat	In-water Works Timing Window[e]
Unnamed Tributary 11	Permanent (MNRF 2022a)	Cold (MNRF 2017; MNRF 2018a; MNRF 2022a)	Upstream: trickle flow through muck and detritus substrates, no defined channel or bed, flow seeps out of ground. Seep 15 m east of culvert contributes flow, approximately 10 cm to 30 cm wide and 1 cm to 3 cm deep. Downstream: trickle flow through dense cattails, 30 cm wide and 6 cm deep. Turns 90 degrees at ROW fence to flow east and then south into the woods. Channelized within woods, approximately 50 cm wide and 50 cm deep. Upstream and Downstream: dry during the summer field investigation.	Indirect	<u>Fish Species Present:</u> Stantec: too little water to fish MNRF (2017; 2018d): American Brook Lamprey, Lampreys, Bluntnose Minnow, Brook Stickleback, Brook Trout, Coho Salmon, Creek Chub, Eastern Blacknose Dace, Fathead Minnow, Golden Shiner, Johnny Darter/Tesselated Darter, Logperch, Longnose Dace, Mottled Sculpin, Northern Redbelly Dace, Pumpkinseed, Rainbow Smelt, Rainbow Trout, Rock Bass, Sea Lamprey, Slimy Sculpin, Smallmouth Bass, White Sucker <u>Species at Risk Present:</u> None identified	Silt, muck and detritus	Riparian Vegetation: mixed forest Instream Vegetation: cattails and horsetail	Increase riparian cover	Yes (coldwater thermal regime)	July 1 to Sept 30 (MNRF 2018a)

Waterbody[a]	Flow Regime	Thermal Regime[b]	Habitat Description	Fish Habitat	Fish Species Present and Species at Risk Present[c,d]	Substrate Type	Riparian and Instream Vegetation	Constraints and Opportunities	Significant Habitat	In-water Works Timing Window[e]
Unnamed Tributary 12	Permanent (MNRF 2022a)	Cold (MNRF 2017; MNRF 2018a; MNRF 2022a)	Upstream: riffle-run sequence over coarse substrates, approximately 1.2 m to 2.6 m wide and 0.15 m deep. Drainage down a steep rip rap lined embankment has resulted in erosion. Downstream: scour/plunge pool at culvert, transitions into a run-riffle over coarse substrates. Seep located 5 m east of creek around old rusty culvert.	Direct	<u>Fish Species Present:</u> Stantec: Brook Trout, Fathead Minnow and Creek Chub MNRF (2017; 2018d): American Brook Lamprey, Lampreys, Bluntnose Minnow, Brook Stickleback, Brook Trout, Coho Salmon, Creek Chub, Eastern Blacknose Dace, Fathead Minnow, Golden Shiner, Johnny Darter/Tesselated Darter, Logperch, Longnose Dace, Mottled Sculpin, Northern Redbelly Dace, Pumpkinseed, Rainbow Smelt, Rainbow Trout, Rock Bass, Sea Lamprey, Slimy Sculpin, Smallmouth Bass, White Sucker <u>Species at Risk Present:</u> None identified	Sand, gravel, cobble, boulder	Riparian Vegetation: cedars Instream Vegetation: grass	Stabilize embankment erosion	Yes (coldwater thermal regime) Iron staining at culvert, possible seepage within embankment	July 1 to Sept 30 (MNRF 2018a)

Waterbody[a]	Flow Regime	Thermal Regime[b]	Habitat Description	Fish Habitat	Fish Species Present and Species at Risk Present[c,d]	Substrate Type	Riparian and Instream Vegetation	Constraints and Opportunities	Significant Habitat	In-water Works Timing Window[e]
Unnamed Tributary 13	Permanent (MNRF 2022a)	Cold (MNRF 2017; MNRF 2018a; MNRF 2022a)	Upstream: riffle over cobble/gravel in concrete lined channel at culvert, flows into large catch basin. Upstream of fence, dense vegetation and cattail lined channel (no access). Dry during the summer field investigation. Downstream: concrete lined channel approximately 7 m long, drops into plunge pool 0.7 m deep, gravel and cobble lined. Boulder cascade approximately 35 m downstream, 1.2 m wide and 0.1 m deep, transitions into a run underlain with boulder/gravel/sand and then into a flat over gravel/sand, 0.8 m wide and 0.05 m wide.	Direct	<u>Fish Species Present:</u> Stantec: Blacknose Dace, Northern Redbelly Dace and Creek Chub MNRF (2017; 2018d): American Brook Lamprey, Lampreys, Bluntnose Minnow, Brook Stickleback, Brook Trout, Coho Salmon, Creek Chub, Eastern Blacknose Dace, Fathead Minnow, Golden Shiner, Johnny Darter/Tesselated Darter, Logperch, Longnose Dace, Mottled Sculpin, Northern Redbelly Dace, Pumpkinseed, Rainbow Smelt, Rainbow Trout, Rock Bass, Sea Lamprey, Slimy Sculpin, Smallmouth Bass, White Sucker <u>Species at Risk Present:</u> None identified	Gravel, cobble, boulder and sand	Riparian Vegetation: deciduous trees Instream Vegetation: cattails and speedwell	Address barrier to fish movement (concrete apron on culvert, 0.6 m high)	Yes (coldwater thermal regime)	July 1 to Sept 30 (MNRF 2018a)

* June 7 to June 14, 2017 (spring survey) and September 18 to September 19, 2017 (summer survey)

a Additional watercourse crossings with potential to provide fish habitat (as per Stantec 2021): Site 21X-0468/C0, Site 21X-0469/C0, Culvert 000904010086 (see Figure 2)

b The *Fish and Fish Habitat Existing Conditions Report* (Stantec 2018) includes information on constructed drains and DFO Drain classifications, based on the Constructed Drain Layer available from the LIO database. The updated constructed drain layer (MNRF 2022c) does not identify constructed drains in the Study Area

c DFO 2022; MNRF 2017; MNRF 2018a; MNRF 2018b; MNRF 2022b. MNRF data sources provide species lists that do not include year-class or other information.

d MNRF correspondence included records of Silver Lamprey (within 1 km of the Study Area) and Northern Brook Lamprey (within 5 km of the Study Area); however, these species are not regulated by the *Species at Risk Act* or the *Endangered Species Act*, 2007 and specific watercourses were not identified.

e Period during which in-water work can occur. The timing window is consistent with the restricted activity period of October 1 to June 30, provided by the MNRF (MNRF 2018a) for coldwater streams in the Peterborough District.

4.0 Constraints and Opportunities

4.1 Fish and Fish Habitat

Within the Highway 401 ROW, eleven of the fourteen water crossings where fish and fish habitat field investigations were conducted were identified as watercourses that directly provide fish habitat. Additionally, two watercourses provided indirect fish habitat within the ROW and one watercourse did not provide fish habitat. Species lists from background data sources and Stantec's field surveys indicate that the fish communities within the Study Area are comprised primarily of Brook Trout, Rainbow Trout and several small-bodied fish species. The eleven sites that directly provide fish habitat have a permanent flow regime (MNRF 2022a; MNRF 2019).

Opportunities for habitat enhancement in the Study Areas include stabilizing eroding banks and removing barriers or impediments to fish passage, such as perched culverts (Unnamed Tributary 03, Unnamed Tributary 06, Unnamed Tributary 13; see **Table 1**), and the consideration of grade control at Unnamed Tributary 04.

Field investigations are required during Detail Design at three locations to determine if fish habitat is present. The following three culverts were identified in Stantec's *Preliminary Drainage Report* (Stantec 2021) and were not assessed during the 2017 fisheries field investigations (see **Figure 2**):

- Site 21X-0468/C0
- Site 21X-0469/C0
- Culvert 000904010086

4.2 Aquatic Species at Risk

One aquatic SAR, American Eel, has been recorded in Shelter Valley Creek (MNRF 2017; MNRF 2018a; MNRF 2018b; MNRF 2022b). American Eel is Endangered and protected by the *Endangered Species Act*, 2007 (ESA). Project design and construction will need to consider American Eel and its habitat; consultation with the MECP regarding the potential need for an ESA permit will occur at a later stage of project design. Updates regarding the status and distribution of aquatic SAR is also recommended.

As part of the provincially legislated recovery process, the MNRF released the *Recovery Strategy for American Eel in Ontario* (MacGregor et al. 2013). The Recovery Strategy states that, in Ontario, American Eel is at the northern extreme of its range. The Ontario population represents a large, important portion of the spawning biomass of the global population (MacGregor et al. 2013).

The American Eel population has been in decline for the last century and, for the recovery of the population, the Recovery Strategy outlines the importance of removing barriers that prevent upstream migration to habitat (MacGregor et al. 2013).

In-stream vegetation and the interstitial spaces formed by rock piles and woody debris provide cover for eels during the day. The Recovery Strategy recommends protecting these areas as habitat (MacGregor et al. 2013). No in-stream vegetation was observed within the surveyed reach of the Shelter Valley Creek arched culvert. However, there were numerous large boulders, some overhanging vegetation and a fallen cedar tree that could provide cover for American Eel.

5.0 Preliminary Impact Assessment

5.1 Description of Work

The Recommended Plan for Highway 401 from Cobourg to Colborne includes the future footprint of Highway 401 to an interim 6-lane cross section and ultimate 8-lane cross-section. The plan includes the replacement and/or rehabilitation of bridges and structural culverts, and interchange modifications at Lyle Street and Percy Street. The interchange modifications include the relocation and expansion of commuter parking lots. The MTO will be prioritizing bridge and culvert replacement and rehabilitation; the future widening of Highway 401 does not have a planned timeline.

With respect to fish habitat in the Study Area, the proposed modifications to culverts where fish habitat was identified may be implemented in advance of the need for 6-laning or in conjunction with the expansion to six lanes, depending on the condition of structures and funding. The ultimate 8-lane configuration relates to the additional modifications carried out in conjunction with the future implementation of the ultimate highway footprint.

Preliminary Design plans for structural culverts and non-structural culverts at watercourses in the Study Area that support, or may support, fish habitat are provided in **Table 2**. **Table 2** includes the phase (interim vs. ultimate) during which the work may occur.

5.2 Applicability of Best Management Practices and Routine Works

In consultation with DFO, MTO has developed the *Best Management Practices Manual for Fisheries* (MTO 2020c) and a table of Routine MTO Works for activities within the MTO ROW that are not within a waterbody (Table 2 of the Protocol). The Best Management Practices (BMPs) and Table 2 of the Protocol were developed for routine activities in or near water with minimal to no impacts to fish and fish habitat. If a project is located within 30 m of the high water level of a waterbody and the activity is listed in Table 2 of the Protocol, it can proceed without a fisheries assessment (Step 1 of the Protocol). Mitigation measures must be implemented to reduce the risk of the death of fish and the harmful alteration, disruption or destruction (HADD) of fish habitat.

The BMPs streamline the regulatory review process for routine highway activities and provide mitigation measures to reduce the risk of the death of fish and HADD of fish habitat. A project can proceed without DFO review if the conditions and mitigation measures outlined in a BMP can be met (Step 3 of the Protocol). Where a BMP is used, an MTO Project Notification Form is completed and filed by MTO (Step 5).

If a project cannot meet the conditions of a BMP at Step 3 of the Protocol (MTO 2020c), a fisheries assessment is conducted to determine the likelihood of the HADD of fish habitat (Step 4). Projects proceed to Step 5 (MTO Notification) when there are no federally listed SAR and it is determined that HADD of fish habitat is not likely. Where HADD is likely and/or where federally listed SAR are present, the project proceeds to Step 6 of the Protocol where a Request for Review Application Form is submitted to DFO for review under the *Fisheries Act*.

The applicability of Table 2 of the Protocol should be determined during the Detail Design phase of the project for work that occurs within 30 m of fish habitat. Where activities in Table 2 of the Protocol do not apply, the applicability of BMPs should be determined for work in or within 30 m of water crossings where fish habitat was identified in the Study Area and at additional water crossings where habitat is identified during Detail Design (if applicable). Based on the Preliminary Design information summarized herein, and general arrangement drawings for the replacement of seven structural culverts (**Appendix C**), the following BMPs should be considered at Step 3 of the Protocol during Detail Design:

- **Like-for-Like Culvert Replacement** – this BMP will not be applicable if the final design confirms that the new culverts will be longer than under existing conditions. Other conditions and constraints of the BMP must also be met.
- **Clear Span Bridges** – this BMP is not applicable to the replacement of culverts with bridges.

- **Ditch Maintenance within 30 m of a Waterbody** – the nature and extent of ditch maintenance is not known and should be assessed during Detail Design.
- **Temporary Watercourse Crossing** – the need for temporary crossings has not been identified; however, this BMP may be applicable when construction access routes have been determined.

In order to be in compliance with the *Fisheries Act* and the Protocol, the design and construction of work in or near fish habitat must be undertaken in accordance with operational conditions, constraints and the protection measures provided in the BMPs. Aquatic effects assessments are discussed below.

5.3 Preliminary Aquatic Effects Assessment

Table 2 provides a summary of information available from the Recommended Plan and identifies sites that for which an aquatic effects assessment may be required during Detail Design. At each site, the spatial extent of fish habitat directly affected by the project will need to be determined once the following information is confirmed:

- Culvert length (applicable to replacements and extensions)
- Culvert dimensions / details of culvert liners
- The need for rock protection (areal extent, aggregate size)
- The need for channel realignments
- Details of other in-water work and activities that may affect fish and fish habitat

If rock protection (waterbody material) is proposed within the bankfull channel, the extent (area) of rock protection to be added and the area that will directly affect fish habitat should be determined during Detail Design and documented in the aquatic effects assessment. The rock protection (waterbody material) particle size should be determined using expected water velocities and selected from Table 3 or Table 4 of Ontario Provincial Standard Specification (OPSS) 1005. The addition of Granular B to the waterbody material should be considered to maintain wetted habitat to the extent possible by reducing water loss among the interstitial spaces in the rock protection. Design considerations are provided in **Table 3**.

As part of the fisheries assessment to be completed during Detail Design, Pathways of Effects (POEs) for land-based and in-water activities will need to be applied to determine the likelihood of the death of fish and/or HADD of fish habitat.

5.4 Species at Risk

There are no federally regulated aquatic SAR in the Study Area. Consultation with the MECP is recommended early in the Detail Design process to determine the need for an ESA permit or authorization at Shelter Valley Creek due to the records of American Eel, as identified by the MNRF (MNRF 2017; MNRF 2018a; MNRF 2018b; MNRF 2022b) and as presented in the *Fish and Fish Habitat Existing Conditions Report* (Stantec 2018).

Table 2: Proposed Work at Sites with Direct Fish Habitat or the Potential to Support Fish Habitat - Cobourg to Colborne (GWP 4060-11-00)

Waterbody	Culvert ID / Site	Station	Existing Structure				New Structure / Proposed Work				Proposed Work / Construction Phase[1]	Impact Assessment Rationale / Next Steps[2]
			Type	Length (m)	Width (m)	Height (m)	Type	Length (m)	Width (m)	Height (m)		
Unnamed Tributary 01	00080401 0047	24+810 (Hamilton)	Concrete Box	73.1	2.450	1.850	See comments	TBD[3]			Extend culvert. <u>Interim (construct during 6-laning of Highway 401):</u> Extend culvert; new total length to be determined during Detail Design.	Proposed work at this site is not a Protocol Table 2 activity and there is no BMP for culvert extensions. Conduct an aquatic effects assessment to address the culvert extensions.
Unnamed Tributary 02	21X-0467/C0[4]	10+712 (Haldimand)	Concrete Box	146	3.100	1.800	Arch	178.5	2.7	1.7	Extend and line culvert. <u>Interim (construct during 6-laning of Highway 401):</u> Slip line the existing culvert with a 1.7 m by 2.7 m arch. Extend culvert; new total length will be approximately 178.5 m (extension on downstream end). Construct a new 1.5 m diameter overflow culvert using pipe jacking or pipe ramming. The invert of the new overflow culvert should be set approximately 0.3 m higher than the existing streambed so that low flow and fish passage remain unchanged in the existing culvert. Assuming 3:1 embankment slopes, the length of the new overflow culvert will be approximately 178.5 m.	Proposed work at this site is not a Protocol Table 2 activity and there is no BMP for culvert liners. Conduct an aquatic effects assessment to address the liner, extension, and the overflow culvert construction activities.
Unnamed (west of Unnamed Tributary 03)	21X-0468/C0[4]	12+426 (Haldimand)	Concrete Box	71.7	3.100	1.500	Concrete Box	95.3	3.100	1.500	<u>Interim (construct during 6-laning of Highway 401):</u> Rehabilitate culvert. <u>Ultimate (construct during 8-laning of Highway 401):</u> Replace culvert at the same location with a 3.1 m x 2.4 m concrete box culvert.	Fisheries assessment (field investigation) required during Detail Design. <u>Interim:</u> Apply the Protocol steps to the rehabilitation measures to determine if an aquatic effects assessment is required.

Waterbody	Culvert ID / Site	Station	Existing Structure				New Structure / Proposed Work				Proposed Work / Construction Phase[1]	Impact Assessment Rationale / Next Steps[2]
			Type	Length (m)	Width (m)	Height (m)	Type	Length (m)	Width (m)	Height (m)		
											Assuming 3:1 embankment slopes, the new culvert length will be 95.3 m.	<u>Ultimate:</u> Proposed work at this site is not a Protocol Table 2 activity and there is no BMP for culvert replacement with a longer culvert. Conduct an aquatic effects assessment if fish habitat is identified at this location.
Unnamed Tributary 03	904010048	12+720 (Haldimand)	Concrete Box	60.9	1.540	1.570	See comments	TBD			Extend culvert; repair scour and embankment. <u>Interim (construct during 6-laning of Highway 401):</u> Extend culvert; new total length to be determined during Detail Design.	Proposed work at this site is not a Protocol Table 2 activity and there is no BMP for culvert extensions. Conduct an aquatic effects assessment to address the culvert extensions.
Unnamed (West of Unnamed Tributary 04)	21X-0469/C0[4]	14+138 (Haldimand)	Concrete Box	91.5	3.700	1.800	Arch	147.6	3.4	1.7	Extend and line culvert. <u>Interim (construct during 6-laning of Highway 401):</u> Slip line the existing culvert with a 1.7 m x 3.4 m arch. Extend culvert (both ends). Assuming 3:1 embankment slopes, the new culvert length will be 147.6 m. The culvert extension will match the shape of the steel liner.	Fisheries assessment (field investigation) required during Detail Design. Proposed work at this site is not a Protocol Table 2 activity and there are no BMPs for culvert liners and culvert extensions. Conduct an aquatic effects assessment if fish habitat is identified at this location.

Waterbody	Culvert ID / Site	Station	Existing Structure				New Structure / Proposed Work				Proposed Work / Construction Phase[1]	Impact Assessment Rationale / Next Steps[2]
			Type	Length (m)	Width (m)	Height (m)	Type	Length (m)	Width (m)	Height (m)		
Unnamed Tributary 04	21X-0270/C0[4]	14+198 (Haldimand)	Concrete Arch	91.5	9.760	4.880	Bridge (See comments)				<u>Interim (construct during 6-laning of Highway 401):</u> Rehabilitate culvert. <u>Ultimate (construct during 8-laning of Highway 401):</u> Replace with a twin single-span (58.0 m) bridge.	<u>Interim:</u> Apply the Protocol steps to the rehabilitation measures to determine if an aquatic effects assessment is required. <u>Ultimate:</u> Proposed work at this site is not a Protocol Table 2 activity and there are no BMPs for the replacement of culverts with bridges. Conduct an aquatic effects assessment during Detail Design.
Unnamed Tributary 05	00090401 0068	15+150 (Haldimand)	CSP (plastic lined) Circular	48.3	0.900	n/a	Circular pipe	TBD	1.200	n/a	<u>Interim (construct during 6-laning of Highway 401):</u> Replace with 900 mm or 1200 mm circular pipe. Extend culvert; new total length to be determined during Detail Design.	Preliminary impact assessment not required; fish habitat not identified in the Highway 401 ROW. Habitat was assessed within the current Highway 401 ROW only. Indirect Fish Habitat identified downstream of the current ROW may need to be assessed if the Detail Design plans identifies the need for additional ROW.

Waterbody	Culvert ID / Site	Station	Existing Structure				New Structure / Proposed Work				Proposed Work / Construction Phase[1]	Impact Assessment Rationale / Next Steps[2]
			Type	Length (m)	Width (m)	Height (m)	Type	Length (m)	Width (m)	Height (m)		
Unnamed Tributary 06	21X-0470/C0[4]	17+170 (Haldimand)	Concrete Box	91.6	3.100	1.800	Arch	135.3	2.7	1.4	<u>Interim (construct during 6-laning of Highway 401):</u> Slip line the existing culvert with a 1.4 m by 2.7 m arch. Extend culvert; new total length will be approximately 135.3 m (extension on both ends). Construct a new 1.2 m diameter overflow culvert using pipe jacking or pipe ramming. The invert of the new overflow culvert should be set approximately 0.3 m higher than the existing streambed so that low flow and fish passage remain unchanged in the existing culvert. Assuming 3:1 embankments slopes, the length of the new overflow culvert will be approximately 135.3 m.	Proposed work at this site is not a Protocol Table 2 activity and there is no BMP for culvert liners. Conduct an aquatic effects assessment to address the liner, extension, and the overflow culvert construction activities.
Shelter Valley Creek	21X-0272/C0[4]	19+345 (Haldimand)	Concrete Arch	100.6	15.200	7.700	Bridge (See comments)				<u>Interim (construct during 6-laning of Highway 401):</u> Potential rehabilitation (e.g., concrete patching, crack injection) of the existing arch culvert, pending a concrete deterioration survey. Construct a retaining wall above the existing culvert to allow grading associated with 6-laning of Highway 401. <u>Ultimate (construct during 8-laning of Highway 401):</u> Replace with a twin, square two span overpass that will also span Shelter Valley Road. Eastbound structure span lengths: 60 m and 62 m Westbound structure span lengths: 65 m and 58 m	<u>Interim:</u> Proposed work is not a Protocol Table 2 activity. Assess the applicability of the Culvert Maintenance BMP during Detail Design. Contact MECP regarding potential need for permitting under the ESA due to MNRF records of American Eel in Shelter Valley Creek. <u>Ultimate:</u> Proposed work at this site is not a Protocol Table 2 activity and there are no BMPs for the replacement of culverts with bridges.

Waterbody	Culvert ID / Site	Station	Existing Structure				New Structure / Proposed Work				Proposed Work / Construction Phase[1]	Impact Assessment Rationale / Next Steps[2]
			Type	Length (m)	Width (m)	Height (m)	Type	Length (m)	Width (m)	Height (m)		
											Re-align Shelter Valley Creek to the east and tie-in to existing channel south of Highway 401.	Conduct an aquatic effects assessment during Detail Design. DFO review will be required due to the need for channel realignment/ relocation. Contact MECP regarding potential need for permitting under the ESA due to MNRF records of American Eel in Shelter Valley Creek.
Unnamed Tributary 07	00904010 033	20+590 (Haldimand)	Concrete Box	79.5	1.800	1.550	See comments	TBD			Extend culvert; repair concrete and embankment erosion. <u>Interim (construct during 6-laning of Highway 401):</u> Extend culvert; new total length to be determined during Detail Design.	Proposed work at this site is not a Protocol Table 2 activity and there is no BMP for culvert extensions. Conduct an aquatic effects assessment to address the culvert extensions.
Unnamed Tributary 08	un-numbered	See comments	CSP (See comments)				See comments				Not a centreline culvert (catch basin on north side of Highway 401).	No culvert work identified since it is not a centreline culvert. Habitat was assessed within the current Highway 401 ROW only. Direct Fish Habitat was identified downstream of the current Highway 4 01 ROW may need to be assessed if the Detail Design plans identifies the need for additional ROW.

Waterbody	Culvert ID / Site	Station	Existing Structure				New Structure / Proposed Work				Proposed Work / Construction Phase[1]	Impact Assessment Rationale / Next Steps[2]
			Type	Length (m)	Width (m)	Height (m)	Type	Length (m)	Width (m)	Height (m)		
Unnamed (East of Unnamed Tributary 08)	00090401 0086	21+030 (Haldimand)	Concrete Box	86.8	1.500	1.200	See comments	TBD			Extend culvert; repair embankment. <u>Interim (construct during 6-laning of Highway 401):</u> Extend culvert; new total length to be determined during Detail Design.	Fisheries assessment (field investigation) required during Detail Design. If fish habitat is identified at this location: Proposed work at this site is not a Protocol Table 2 activity and there is no BMP for culvert extensions. Conduct an aquatic effects assessment to address the culvert extensions.
Unnamed Tributary 09	21X-0576/C0[4]	22+125 (Haldimand)	Concrete Box	81	3.100	2.500	Arch	126.9	2.7	2.2	<u>Ultimate (construct during 8-laning of Highway 401):</u> Slip line the existing culvert with a 2.2 m by 2.7 m arch. Extend culvert; new total length will be approximately 126.9 m (extension on both ends). Construct a new 1.5 m diameter overflow culvert using pipe jacking or pipe ramming. The invert of the new pipe culvert should be set approximately 0.3 m higher than the existing streambed so that low flow and fish passage remain unchanged in the existing culvert. Assuming 3:1 embankments slopes, the length of the new culvert will be approximately 126.9 m.	Proposed work at this site is not a Protocol Table 2 activity and there is no BMP for culvert liners. Conduct an aquatic effects assessment to address the liner, extension, and the overflow culvert construction activities.
Unnamed Tributary 10	00090401 0014	22+315 (Haldimand)	Concrete Box	60.3	1.200	1.200	See comments	TBD			Extend culvert. <u>Interim (construct during 6-laning of Highway 401):</u> Extend culvert; new total length to be determined during Detail Design.	Proposed work at this site is not a Protocol Table 2 activity and there is no BMP for culvert extensions. Conduct an aquatic effects assessment to address the culvert extensions.

Waterbody	Culvert ID / Site	Station	Existing Structure				New Structure / Proposed Work				Proposed Work / Construction Phase[1]	Impact Assessment Rationale / Next Steps[2]
			Type	Length (m)	Width (m)	Height (m)	Type	Length (m)	Width (m)	Height (m)		
Unnamed Tributary 11	00090401 0004	22+700 (Haldimand)	Concrete Box	62.9	1.200	1.200	See comments	TBD			Extend culvert. <u>Interim (construct during 6-laning of Highway 401):</u> Extend culvert; new total length to be determined during Detail Design.	Proposed work at this site is not a Protocol Table 2 activity and there is no BMP for culvert extensions. Conduct an aquatic effects assessment to address the culvert extensions.
Unnamed Tributary 12	00090401 0003	23+770 (Haldimand)	Concrete Box	70.1	1.850	1.800	See comments	TBD			Extend culvert. <u>Interim (construct during 6-laning of Highway 401):</u> Extend culvert; new total length to be determined during Detail Design.	Proposed work at this site is not a Protocol Table 2 activity and there is no BMP for culvert extensions. Conduct an aquatic effects assessment to address the culvert extensions.
Unnamed Tributary 13	00100401 0030	11+143 (Cramahe)	Concrete Box	52.4	1.800	1.500	Concrete Box	TBD	2.400	1.500	<u>Interim (construct during 6-laning of Highway 401):</u> Replace with 2400 mm x 1500 mm box culvert. Total length to be determined during Detail Design.	Proposed work at this site is not a Protocol Table 2 activity. Assess the applicability of the Like-for-Like Culvert Replacement BMP during Detail Design; however, due to highway widening, an aquatic effects assessment is likely required for the longer culvert.

[1] Highway 401 construction phase during which the proposed work will be completed

[2] Conduct aquatic effects assessments for the Interim construction phase unless stated otherwise

[3] TBD: To Be Determined during Detail Design

[4] See General Arrangement Drawing in Appendix C

Table 3 Design Considerations - Cobourg to Colborne (GWP 4060-11-00)

Factors to Consider	Design Considerations Provided by the Fisheries Assessment Specialist	Describe How Each Factor Was Addressed Through Design
In-water Works Timing Window	The watercourses in the Study Area have a coldwater thermal regime. The timing window within which in-water work can occur is July 1 to September 30, inclusive.	To be provided during Detail Design
Fish Passage	Migratory fish present (site-specific; see **Table 1**): Rainbow Trout, Brook Trout, potential for Atlantic Salmon, Coho Salmon The maintenance of fish passage must be considered during Detail Design (i.e., determine changes to fish passage due to potential changes in water velocity and culvert length). Fish passage is not applicable at locations where the upstream (north) side of Highway 401 is categorized as Indirect Fish Habitat or Not Fish Habitat, as identified in **Table 1**.	To be provided during Detail Design
Significant Fish Habitat*	Potential Brook Trout spawning habitat is identified at specific locations, as identified in **Table 1**. The final design and contract should consider reducing impacts to potential spawning areas. Native substrates and habitat characteristics of the significant habitat will be maintained by: • Avoiding the use of rock protection in the bed of the waterbodies identified as Significant Habitat • Avoid adding geotextile to the creek bed and banks	To be provided during Detail Design
Constraints and Opportunities	Items that should be addressed through design: • Where culverts are being replaced, remove perched conditions and/or other barriers to fish passage as identified in **Table 1**. • Address erosion, retain vegetation as per site-specific Constraints and Opportunities identified in **Table 1**. • Protect groundwater upwelling areas, as identified in **Table 1**. • Where feasible, direct stormwater runoff to ditches or other treatment and not directly to centreline culverts identified as fish habitat.	To be provided during Detail Design
Other Considerations	Shelter Valley Creek: • The relocation/realignment of Shelter Valley Creek will require review by DFO due to the potential for the HADD of fish habitat. • The need for DFO to review proposed work at other locations will be determined during Detail Design. • If records of American Eel are confirmed by MECP, design and construction must consider the species and its habitat. The MECP should be consulted to determine the potential need for a permit under the ESA. Other Watercourses: • If fish habitat is identified at Site 21X-0468/C0, Site 21X-0469/C0, design must consider fish passage, opportunities and constraints, as applicable. • If fish habitat is identified at Culvert 000904010086 and in-water work is required, Design must consider fish passage, opportunities and constraints, as applicable.	To be provided during Detail Design

* Means fish habitat that meets one or more of the following criteria (MTO 2020b):

- rare or uncommonly found habitat that may (but may not) be one of the limiting factors to the fish population
- specialized habitat that fish populations are highly dependent on to support critical life functions
- areas contributing to fisheries productivity that are exceptionally productive, likely to be limiting and are rare or relatively uncommon

6.0 Mitigation Measures

6.1 Design

The following measures should be incorporated into the project design to reduce the risk of impacts to fish and fish habitat:

- Where channel relocation is required (e.g., Shelter Valley Creek), apply natural channel design principles in the design of the replacement watercourse in order to convey expected flows while maintaining or enhancing fish habitat and fish passage
- Design drainage systems to reduce changes in drainage to watercourses that provide fish habitat
- Design and plan activities and works such that loss of fish habitat or disturbance to fish habitat is reduced to the extent possible
- Design stormwater management measures to reduce effects on watercourses that provide fish habitat to the extent possible
- Design a rehabilitation/re-vegetation plan for long-term stability of the areas disturbed during construction and to provide or restore shade to watercourses
- Reduce the need for rock protection in the creek beds to the extent possible; particularly at locations identified as Significant Habitat in **Table 1**. Where rock protection is required below the normal high water level, use appropriately-sized material and install at a similar slope to the existing, maintain a uniform bank/shoreline, and maintain a natural bank/shoreline alignment such that it does not interfere with fish passage or alter the bankfull channel profile

6.2 Construction

Timing Windows

Work in watercourses that provide fish habitat, or have the potential to support fish habitat, is restricted to timing windows to reduce the risk of construction related impacts to fish during their most sensitive / vulnerable life cycles (i.e., during reproduction and early development stages).

Within the Study Area, in water construction activities at locations that support fish and fish habitat are permitted from July 1 to September 30 inclusive (i.e., in-water work is not permitted from October 1 to June 30) (MNRF 2018a). The timing window does not apply to work above the ordinary high water level.

Ontario Provincial Standard Specifications

The following OPSSs may be applicable to the project:

- OPSS.PROV 180 - General Specification for the Management of Excess Materials
- OPSS.PROV 182 - General Specification for Environmental Protection for Construction in and Around Waterbodies and on Waterbody Banks
- OPSS.PROV 517 - Construction Specification for Dewatering
- OPSS.PROV 803 - Construction Specification for Vegetative Cover (issued in April 2021 to replace the former OPSS.PROV 804)
- OPSS.PROV 804 – Construction Specification for Temporary Erosion Control (issued in April 2021 to replace the erosion control components of former OPSS.PROV 805)
- OPSS.PROV 805 - Construction Specification for Temporary Sediment Control (issued in November 2020 to replace the sediment control components of former OPSS.PROV 805)
- OPSS.PROV 825 - Construction Specification for Placement of Aggregates in Waterbodies
- OPSS.PROV 1005 - Material Specification for Aggregates - Waterbody

The following OPSSs are applicable to the following general activities:

- **Equipment Use** - Use of equipment shall be in accordance with OPSS 182.
- **Fish Salvage** - Fish salvage operations shall be conducted in accordance with OPSS.PROV 182.
- **Dewatering and the Use of Pumps** - Dewatering activities and the use of pumps shall be conducted in accordance with OPSS.PROV 517 and OPSS.PROV 182.
- **Preservation of Riparian Vegetation** - Removal of riparian vegetation shall be in accordance with OPSS.PROV 182.
- **Erosion and Sediment Control** - The installation, monitoring, maintenance, and removal of temporary erosion and sediment control measures shall be according to OPSS.PROV 182, OPSS.PROV 804, and OPSS.PROV 805.
- **Placement of Aggregates in Waterbodies** - Use of aggregate in waterbodies shall be according to OPSS.PROV 825 and OPSS.PROV 1005.
- **Restoration of Disturbed Areas** - Vegetation protection and rehabilitation shall be in accordance with OPSS.PROV 182, OPSS.PROV 803, and OPSS.PROV 804.

- **Management of Excess Materials** - All excess material shall be managed in accordance with OPSS.PROV 180 and Ontario Regulation 406/19.

Additional Measures

Additional site-specific mitigation measures may be required pending final design details for the project.

7.0 Determination of HADD

Aquatic effects assessments cannot be completed until the design details are available and finalized. The assessment should be conducted during Detail Design to assess the risk of the project to result in the death of fish or HADD of fish habitat.

The relocation/realignment of Shelter Valley Creek will require review by DFO due to the potential for the HADD of fish habitat. The need for DFO to review proposed work at other locations will be determined during Detail Design.

8.0 Summary

The MTO retained Stantec to undertake a Planning, Preliminary Design, and Class EA Study on Highway 401 for the replacement and rehabilitation of structures, interchange modifications, establishing the footprint of future six and eight lanes to address current and future transportation needs, and commuter parking lot improvements, from 2 km east of Nagle Road to Percy Street (approximately 18 km) (GWP 4060-11-00).

This *Fish and Fish Habitat Preliminary Impact Assessment Report* provides a summary of fish communities and fish habitat in the Study Area and provides the preliminary impact assessment for the Recommended Plan.

Fourteen potential watercourse crossings were investigated within the Study Area; eleven of these crossings were identified as watercourses that provide direct fish habitat within the Highway 401 ROW. Species lists from background data sources and Stantec's field surveys indicate that the fish communities are comprised primarily of Brook Trout, Rainbow Trout and numerous small-bodied fish species.

During the Detail Design phase of the project, fish and fish habitat assessments (i.e., field investigations) should be completed at Site 21X-0468/C0, Site 21X-0469/C0 and Culvert 000904010086 to support impact assessments, as applicable. Based on available data sources, these three culverts are not associated with mapped watercourse crossings; therefore, were not included in Stantec's 2017 habitat assessments.

Based on the Recommended Plan, aquatic effects assessments will be required for proposed work at seven or more of the watercourse crossings assessed during Stantec's fish and fish habitat field investigations. Pending the outcome of Detail Design plans for the project, aquatic effects assessments may also be necessary at other water crossing locations assessed by Stantec in 2017 (i.e., if BMPs do not apply or if additional work is identified) and/or at additional sites where fish and fish habitat is identified during future field investigations in the Study Area.

The relocation/realignment of Shelter Valley Creek will require review by DFO due to the potential for the HADD of fish habitat. The need for DFO to review proposed work at other locations will be determined during Detail Design.

One aquatic SAR, American Eel, has been recorded in Shelter Valley Creek (MNRF 2017; MNRF 2022b; MNRF 2018a; MNRF 2018b). American Eel is Endangered and protected by the ESA. Through correspondence with the MECP, confirmation of the species' distribution in Shelter Valley Creek (and the status and distribution of aquatic SAR in the Study Area) is recommended during Detail Design. If MECP confirms that the distribution of American Eel includes Shelter Valley Creek, design and construction will need to consider American Eel and its habitat. Once information is available regarding the nature and extent of work required at Shelter Valley Creek, the MECP should be consulted to determine the potential need for a permit under the ESA.

9.0 References

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Appendix A
Figure 2

Stantec

Legend

- To Be Assessed at Detail Design
- Contract Extent - GWP 4060-11-00

Fish Habitat Within the ROW

- Direct Fish Habitat

Base Data

- Flow Direction
- MTO Right-of-way
- Watercourse (Intermittent)
- Watercourse (Permanent)
- Thermal Regime, Cold
- Municipal Boundary, Lower
- Waterbody

0 1 km

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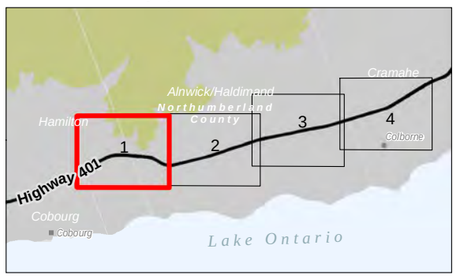
Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2022.

- Oak Ridges Moraine
- Greenbelt Natural Heritage System



Project Location
Northumberland County

165001090 REV4
Prepared by JSa on 2023-04-12

Client/Project
MINISTRY OF TRANSPORTATION
HIGHWAY 401 PLANNING STUDY FROM COBOURG TO COLBORNE (GWP 4060-11-00)

Figure No.
2-1

Title
Fish and Fish Habitat - Opportunities and Constraints

\\IC\40224-PRS\001\work_group\01650\active\165001090\preliminary\gis\MXD\Aquatics\Report\figure1a\1090_Rpt2_Fish_Fishhab_fig.mxd Revised: 2023-04-12 By: ra

Stantec

Legend

- To Be Assessed at Detail Design

Fish Habitat Within the ROW

- Direct Fish Habitat
- Not Fish Habitat

Base Data

- Flow Direction
- MNRF Fish Survey Point (ARA)
- MTO Right-of-way
- Watercourse (Intermittent)
- Watercourse (Permanent)
- Thermal Regime, Cold
- Thermal Regime, Cold
- Thermal Regime, Cool
- Municipal Boundary, Lower
- Waterbody

0 1 km

1:20,000 (At original document size of 11x17)

Notes

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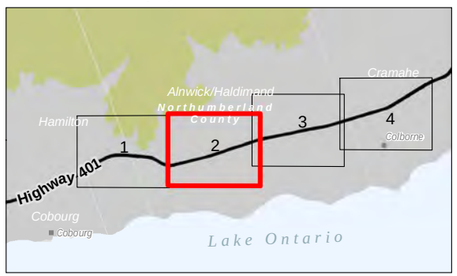
- Greenbelt Natural Heritage System



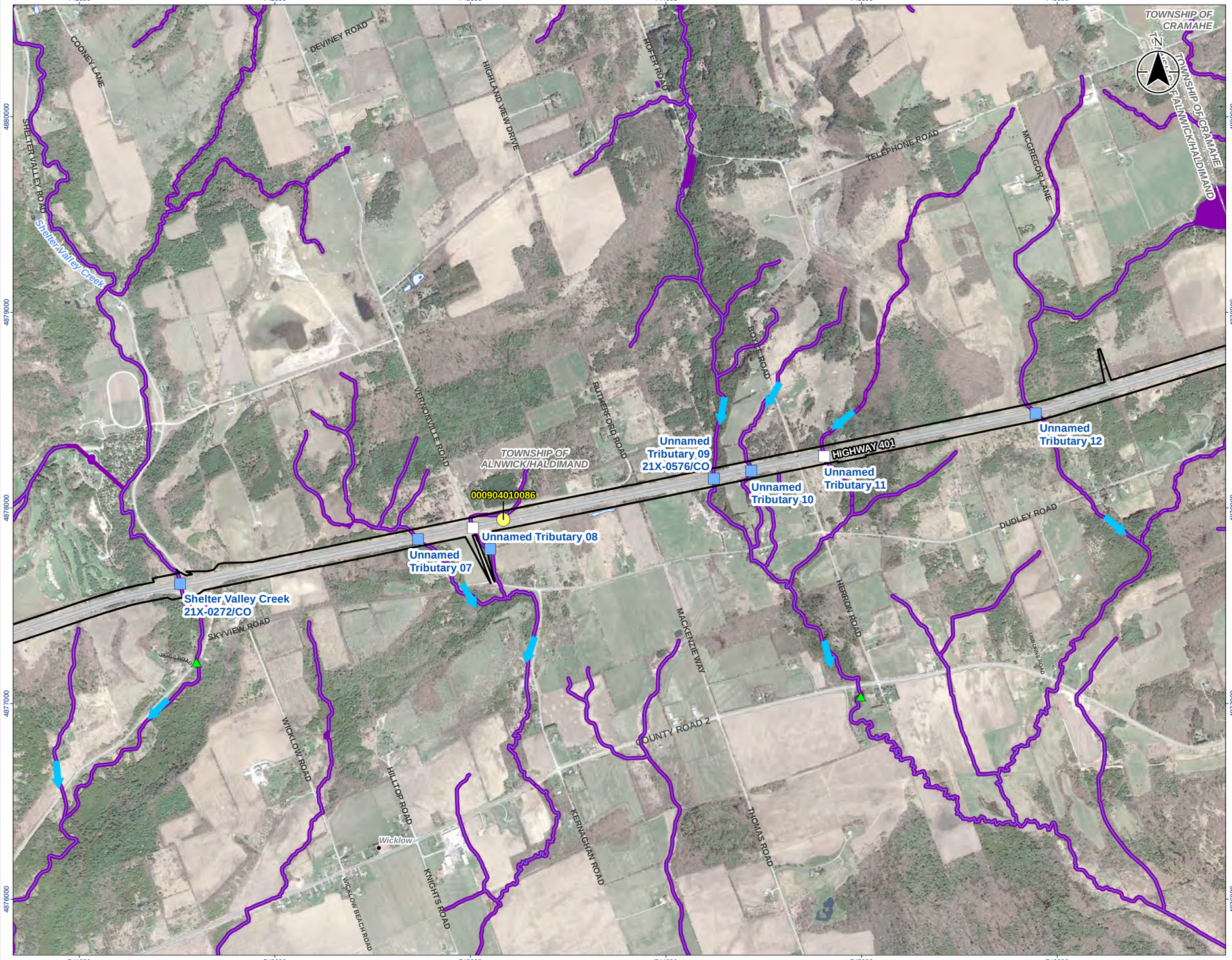
Project Location
Northumberland County

165001090 REV4
Prepared by JSa on 2023-04-12

Client/Project
MINISTRY OF TRANSPORTATION
HIGHWAY 401 PLANNING STUDY FROM COBOURG TO COLBORNE (GWP 4060-11-00)

Figure No.
2-2

Title
Fish and Fish Habitat - Opportunities and Constraints



Stantec

Legend

- To Be Assessed at Detail Design

Fish Habitat Within the ROW

- Direct Fish Habitat
- Indirect Fish Habitat

Base Data

- Flow Direction
- MNRF Fish Survey Point (ARA)
- MTO Right-of-way
- Watercourse (Intermittent)
- Watercourse (Permanent)
- Thermal Regime, Cold
- Thermal Regime, Cold
- Municipal Boundary, Lower
- Waterbody

0 1 km

1:20,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2022.

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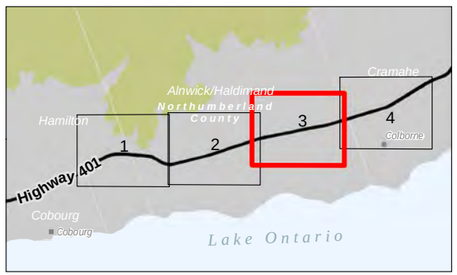
- Greenbelt Natural Heritage System



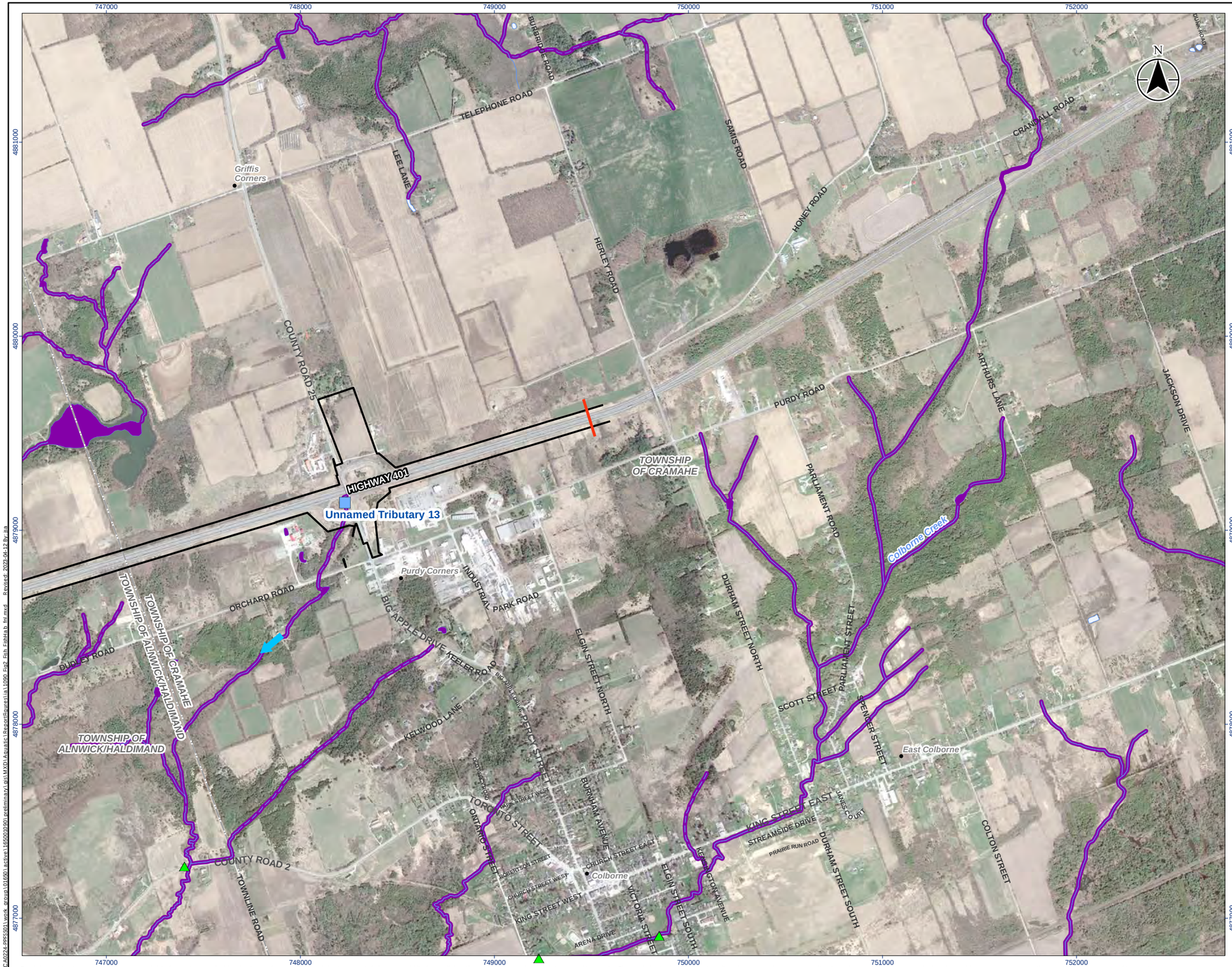
Project Location
Northumberland County

165001090 REV4
Prepared by JSa on 2023-04-12

Client/Project
MINISTRY OF TRANSPORTATION
HIGHWAY 401 PLANNING STUDY FROM COBOURG TO COLBORNE (GWP 4060-11-00)

Figure No.
2-3

Title
Fish and Fish Habitat - Opportunities and Constraints



Stantec

Legend

- Contract Extent - GWP 4060-11-00

Fish Habitat Within the ROW

- Direct Fish Habitat

Base Data

- Flow Direction
- MNRF Fish Survey Point (ARA)
- MTO Right-of-way
- Watercourse (Intermittent)
- Watercourse (Permanent)
- Thermal Regime, Cold
- Thermal Regime, Cold
- Municipal Boundary, Lower
- Waterbody

0 1 km

1:20,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2022.

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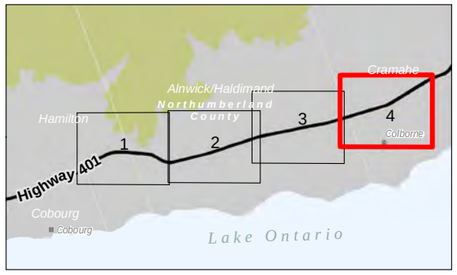

Project Location
Northumberland County

165001090 REV4
Prepared by JSa on 2023-04-12

Client/Project
MINISTRY OF TRANSPORTATION
HIGHWAY 401 PLANNING STUDY FROM COBOURG TO COLBORNE (GWP 4060-11-00)

Figure No.
2-4

Title
Fish and Fish Habitat - Opportunities and Constraints

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Appendix B
Agency Correspondence

From:	Easterling, Katie
To:	"Formsma, Julie (MNRF)"
Cc:	Nevena Gazibara (Nevena.Gazibara@stantec.com); Kathleen Todd (kathleen.todd@stantec.com)
Subject:	RE: MTO Widening of Highway 401 for approximately 18 km between Cobourg and Colbourne - Application for a Licence to Collect Fish
Date:	Monday, May 29, 2017 10:49:00 AM
Attachments:	MNRF Peterborough Fish Application MTO Hwy 401 Cobourg to Colborne.pdf

Hello Julie,

I just wanted to follow up with you regarding the status of our licence to collect fish for MTO as our spring field work is schedule to start Monday next week (June 5). Any update you can provide would be much appreciated.

Thanks,
Katie

Katie Easterling, B.Sc (Hon)
Aquatic Ecologist
Stantec
100-300 Hagey Boulevard, Waterloo ON N2L 0A4
Phone: (519) 575-4111
Cell: (519) 859-8391
Fax: (519) 579-4239
Katie.Easterling@stantec.com

From: Easterling, Katie
Sent: Thursday, May 04, 2017 10:39 AM
To: 'Formsma, Julie (MNRF)' <julie.formsma@ontario.ca>
Cc: Nevena Gazibara (Nevena.Gazibara@stantec.com) <Nevena.Gazibara@stantec.com>; Kathleen Todd (kathleen.todd@stantec.com) <kathleen.todd@stantec.com>
Subject: MTO Widening of Highway 401 for approximately 18 km between Cobourg and Colbourne - Application for a Licence to Collect Fish

Hello Julie,

The Ontario Ministry of Transportation has retained Stantec Consulting to complete environmental investigations and collect existing conditions data for a future Preliminary Design and Environmental Assessment for the widening of Highway 401 for approximately 18 km between Cobourg and Colbourne. The future project includes the widening of Highway 401 to six lanes and interchange improvements, modifications and ultimate configurations.

Attached is an application for a LCFSP and accompanying VHS questionnaire for the above-referenced project.

Fish will be collected using standard minnow traps, seine net and/or an electro-fisher and dip nets. Mesh size on collection gear will be ¼ inch or smaller to ensure the capture of fish of all sizes, including small-bodied fish. All electro-fishing will be overseen by a certified Class 2 electrofishing crew leader. Field personnel have completed the Royal Ontario Museum Fish Identification Workshop and are experienced in the identification of freshwater fishes of Canada. All fish will be identified on site and released live into the reaches from which they were collected except for specimens which may need to be retained for species verification.

Best Management practices will be employed to prevent the spread of invasive species and Viral Hemorrhagic Septicemia (VHS) following the guidance provided in the Ministry of Natural Resources Fisheries Section VHS Technical Bulletin (see attached VHS questionnaire).

One spring sampling session will be conducted between **May 15 and June 21, 2017** and one summer sampling session will be conducted between **June 21 and September 30, 2017**. The attached Application to Collect Fish for Scientific Purposes should contain all the details you require. If you have any questions, please let me know.

Cheers,
Katie

Katie Easterling, B.Sc (Hon)
Aquatic Ecologist
Stantec
100-300 Hagey Boulevard, Waterloo ON N2L 0A4
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Cell: (519) 859-8391
Fax: (519) 579-4239
Katie.Easterling@stantec.com

Naylor, Carol

From: Formsma, Julie (MNRF) <julie.formsma@ontario.ca>
Sent: Thursday, June 01, 2017 7:11 PM
To: Easterling, Katie
Cc: Gazibara, Nevena; Todd, Kathleen
Subject: RE: MTO Widening of Highway 401 for approximately 18 km between Cobourg and Colbourne - Application for a Licence to Collect Fish
Attachments: 2017 Easterling, K Stantec Hwy 401 Hamilton to Cramahe LCFSP 1086878 and conditions for signatures.pdf; Watercourse ID and Fish Community Information from MNRF.docx

HI Katie,
Here is the licence to collect fish for scientific purposes for the culvert locations along the 401 from Hamilton to Cramahe for the preliminary fish community assessments. Most are cold water creeks.
I've included the fish community information we have on file along with the timing windows for in water work. Please ensure you follow conditions and look for spawning fish prior to sampling for this assessment.

Please review, print and sign the licence and conditions and return a copy to me for our files.

A mandatory report will be due to this office by the end of January 2018 at the latest. I will forward the form in a separate email to be returned to me via secure file transfer since the macros prevent transfer via regular email.

Please carry the licence and conditions on your person while in the field, please have any named assistant also carry it while acting on your behalf in the field.

If you have any questions, please let me know.

Julie

Julie Formsma
Fish & Wildlife Technical Specialist
Peterborough District MNRF 300 Water St, 1 South, Peterborough, ON K9J 8M5
Phone: 705-755-3296 Fax: 705-755-3125

From: Easterling, Katie [mailto:Katie.Easterling@stantec.com]
Sent: May 29, 2017 10:50 AM
To: Formsma, Julie (MNRF)
Cc: Gazibara, Nevena; Todd, Kathleen
Subject: RE: MTO Widening of Highway 401 for approximately 18 km between Cobourg and Colbourne - Application for a Licence to Collect Fish

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Subject: MTO Widening of Highway 401 for approximately 18 km between Cobourg and Colbourne - Application for a Licence to Collect Fish

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Katie

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Phone: (519) 575-4111
Cell: (519) 859-8391
Fax: (519) 579-4239
Katie.Easterling@stantec.com

Review of Fish Community Information from MNRF Peterborough District

Watercourse ID	Easting	Northing	thermal	species	timing window
Shelter Valley Creek	260560	4877535	cold	American eel,Atlantic salmon,Chinook salmon,black bullhead,bluegill,bluntnose minnow,brook stickleback,brook trout,brown bullhead,brown trout,central mudminnow,coho salmon,common shiner,creek chub,eastern blacknose dace,emerald shiner,fantail darter,fathead minnow,finescale dace,golden shiner,johnny darter/tesselated darter,largemouth bass,logperch,longnose dace,mottled sculpin,northern brook lamprey,northern hog sucker,northern redbelly dace,pumpkinseed,rainbow trout,rock bass,sea lamprey,smallmouth bass,spottail shiner,threespine stickleback,white sucker,yellow perch	Sept 15-May 31
Unnamed Tributary 01	732308	4876453	cold	brook trout,creek chub,eastern blacknose dace,longnose dace, rainbow trout,white sucker	Oct 1-May 31
Unnamed Tributary 02	733246	4876374	cold	brook trout,creek chub,eastern blacknose dace,longnose dace, rainbow trout,white sucker	Oct 1-May 31
Unnamed Tributary 03	735157	4875780	cold	American brook lamprey,Atlantic salmon,black crappie, bluntnose minnow,brook trout,brown bullhead,brown trout, central mudminnow,coho salmon,common shiner,creek chub, eastern blacknose dace,emerald shiner,fantail darter, fathead minnow,johnny darter/tesselated darter,longnose dace,northern brook lamprey,northern hog sucker, northern redbelly dace,pumpkinseed,rainbow darter, rainbow trout,rock bass,sea lamprey,smallmouth bass, stonecat,white sucker	Sept 15-May 31
Unnamed Tributary 04	736569	4876090	cold	American brook lamprey,Atlantic salmon,black crappie,bluntnose minnow,brook trout,brown bullhead,brown trout,central mudminnow,coho salmon,common shiner,creek chub,eastern blacknose dace,emerald shiner,fantail darter,fathead minnow,johnny darter/tesselated darter,longnose dace,northern brook lamprey,northern hog sucker,northern redbelly dace,pumpkinseed,rainbow darter,rainbow trout,rock bass,sea lamprey,smallmouth bass,stonecat,white sucker	Sept 15-May 31

Review of Fish Community Information from MNRF Peterborough District

Watercourse ID	Easting	Northing	thermal	species	timing window
Unnamed Tributary 05	737656	4876304	cold	American brook lamprey,Atlantic salmon,black crappie,bluntnose minnow,brook trout,brown bullhead,brown trout,central mudminnow,coho salmon,common shiner,creek chub,eastern blacknose dace,emerald shiner,fantail darter,fathead minnow,johnny darter/tesselated darter,longnose dace,northern brook lamprey,northern hog sucker,northern redbelly dace,pumpkinseed,rainbow darter,rainbow trout,rock bass,sea lamprey,smallmouth bass,stonecat,white sucker	Sept 15-May 31
Unnamed Tributary 06	739449	4876949	cold	Mudminnows,Sticklebacks,brook stickleback,creek chub,eastern blacknose dace,fathead minnow,johnny darter/tesselated darter,longnose dace,mottled sculpin,northern redbelly dace,pumpkinseed,rainbow trout,threespine stickleback,white sucker	April 1 - June 15
Unnamed Tributary 07	261790	4877676	cold	Mudminnows,bluntnose minnow,brook stickleback,creek chub,eastern blacknose dace,fathead minnow,northern redbelly dace,rainbow trout,white sucker	April 1 - June 15
Unnamed Tributary 08	262074	4877712	cold	Mudminnows,bluntnose minnow,brook stickleback,creek chub,eastern blacknose dace,fathead minnow,northern redbelly dace,rainbow trout,white sucker	April 1 - June 15
Unnamed Tributary 09	263320	4877873	cold	American brook lamprey,Lampreys,bluntnose minnow,brook stickleback,brook trout,chum salmon,creek chub,eastern blacknose dace,fathead minnow,golden shiner,johnny darter/tesselated darter,logperch,longnose dace,mottled sculpin,northern redbelly dace,pumpkinseed,rainbow smelt,rainbow trout,rock bass,sea lamprey,slimy sculpin,smallmouth bass,white sucker	Oct 1-May 31
Unnamed Tributary 10	263515	4877898	cold	American brook lamprey,Lampreys,bluntnose minnow,brook stickleback,brook trout,chum salmon,creek chub,eastern blacknose dace,fathead minnow,golden shiner,johnny darter/tesselated darter,logperch,longnose dace,mottled sculpin,northern redbelly dace,pumpkinseed,rainbow smelt,rainbow trout,rock bass,sea lamprey,slimy sculpin,smallmouth bass,white sucker	Oct 1-May 31

Review of Fish Community Information from MNRF Peterborough District

Watercourse ID	Easting	Northing	thermal	species	timing window
Unnamed Tributary 11	263892	4877946	cold	American brook lamprey,Lampreys,bluntnose minnow,brook stickleback,brook trout,chum salmon,creek chub,eastern blacknose dace,fathead minnow,golden shiner,johnny darter/tesselated darter,logperch,longnose dace,mottled sculpin,northern redbelly dace,pumpkinseed,rainbow smelt,rainbow trout,rock bass,sea lamprey,slimy sculpin,smallmouth bass,white sucker	Oct 1-May 31
Unnamed Tributary 12	264988	4878088	cold	American brook lamprey,Lampreys,bluntnose minnow,brook stickleback,brook trout,chum salmon,creek chub,eastern blacknose dace,fathead minnow,golden shiner,johnny darter/tesselated darter,logperch,longnose dace,mottled sculpin,northern redbelly dace,pumpkinseed,rainbow smelt,rainbow trout,rock bass,sea lamprey,slimy sculpin,smallmouth bass,white sucker	Oct 1-May 31
Unnamed Tributary 13	267367	4878575	cold	American brook lamprey,Lampreys,bluntnose minnow,brook stickleback,brook trout,chum salmon,creek chub,eastern blacknose dace,fathead minnow,golden shiner,johnny darter/tesselated darter,logperch,longnose dace,mottled sculpin,northern redbelly dace,pumpkinseed,rainbow smelt,rainbow trout,rock bass,sea lamprey,slimy sculpin,smallmouth bass,white sucker	Oct 1-May 31

From:	Penyk, Henry (MNRF)
To:	Gazibara, Nevena
Subject:	Re: Preliminary design and Class EA Hwy 401 from Cobourg to Colborne (18-HAMI-NOR-EAE-2677 and PB2018-0448)
Date:	Wednesday, June 06, 2018 2:35:07 PM
Attachments:	BW_Cranberry (Little) Lake Wetland.pdf CranberryLakeWetlandSummary.pdf FishScreeningMapCH2018-06-06.pdf FishScreeningTableCH2018-06-06.xlsx

---

Good Afternoon Nevena,

MNRF Peterborough District has received your email (dated 04-26-2018) regarding the MTO Environmental Assessment for Highway 401 rehabilitation and future widening with respect to the project area located in the from 2km east of Nagle Road to Percy street (approximately 18 km). We provide the following general information and technical advice for your consideration:

General: MNRF Data and Information

MNRF's natural heritage and natural resources GIS data layers (including wetlands, ANSIs, and species at risk observations) can be obtained through the Ministry's Land Information Ontario (LIO) website. You may also view natural heritage information online (e.g. Provincially Significant Wetlands, ANSIs, woodlands, species at risk 1 km screening squares) using the Natural Heritage Make a Map tool. To determine which species are protected under the Endangered Species Act, please refer to the Species at Risk in Ontario List.

We recommend that you use the above-noted sources of information during review of your project proposal.

Wetlands

The subject property is adjacent to Provincially Significant Wetlands, Cranberry (little) Lake PSW adjacent to 401 at County Road 23 exit (North Side of 401). We recommend contacting your local Conservation Authority for more information on approvals that may be required.
In areas without Conservation Authority (CA) coverage, the delegated CA responsibilities fall to the municipality.

Fisheries

All crossings involve cold water streams, both spring and fall spawners, apply both in water work timing windows (Oct.1 to June 30th).

Attached to the email is the relevant map and table for Fisheries information.

Please contact Department of Fisheries and Oceans and/or the local Conservation Authority for any approvals that may be required and/or sediment/erosion control measures that may be required to be installed prior/during/after construction.

Species at Risk

A review of our best available information indicates that there are observations of the following species (endangered/threatened/special concern) in the immediate area of the

site (1 km radius):

1. American Eel (END)
2. Bank Swallow (THR)
3. Barn Swallow (THR)
4. Eastern Meadowlark (THR)
5. Peregrine Falcon (SC)
6. Silver Lamprey (Great Lakes – Upper St. Lawrence Populations) (SC)
7. Snapping Turtle (SC)
8. Wood Thrush (SC)

Also, there are observations of the following species (endangered/threatened/special concern) in the general area (5 km) of the proposed activities:

1. Blanding's Turtle (THR)
2. Bobolink (THR)
3. Butternut (END)
4. Canada warbler (SC)
5. Cerulean Warbler (THR)
6. Chimney Swift (THR)
7. Cucumber Tree (END)
8. Eastern Hog-nosed Snake (THR)
9. Eastern Prairie Fringed Orchid (END)
10. Eastern Ribbonsnake (SC)
11. Eastern Wood-pewee (SC)
12. Lake Sturgeon (Great Lakes – Upper St. Lawrence River Population) (THR)
13. Little Brown Myotis (END)
14. Loggerhead Shrike (END)
15. Northern Brook Lamprey (SC)
16. Red-headed Woodpecker (SC)
17. Short-eared Owl (SC)

Although no other threatened or endangered species or their habitat have been documented in the area of the proposed projects, these features may be present and this list should not be considered complete.

Species listed as endangered or threatened on the Species at Risk in Ontario (SARO) list are protected under the Endangered Species Act, 2007 (ESA). Section 9(1) of the ESA prohibits a person from killing, harming, harassing, capturing or taking a member of a species listed as endangered, threatened or extirpated on the SARO list. Section 10(1) of the ESA prohibits the damage or destruction of habitat of a species listed as endangered or threatened on the SARO list.

Since comprehensive mapping for most species at risk is not available, a site assessment is recommended to identify the presence of any species at risk and/or their habitat on the subject lands, as a decision should not be made in the absence of such information. The focus of the site assessment can include a review of the information about known occurrences provided by MNRF above along with other information sources such as species distributions and habitat requirements as well as field visits using MNRF approved protocols during the appropriate seasons by a qualified professional.

Due to the species that are potentially present at this site, the following recommendations should help prevent adverse impacts:

Birds

Workers must be vigilant and check work areas for the presence of breeding birds and nests containing eggs and/or young. If breeding birds and/or nests are encountered, works should not continue in the location of the nest until after August 1 (or as soon as it has been determined that that the young have left the nest). Please note that the breeding bird season in the subject area extends from April 15 to July 31.

Specific Barn Swallow Information: Barn Swallow nests may be present under bridges and/or culverts. Therefore, the underside of these structures should be assessed for Barn Swallow nests before proceeding. If no nests are present, a contravention of the ESA is unlikely. However, if nests are present, construction should not begin until after August 15 of any year. If nests will be impacted during the nesting season or if the structure will no longer be suitable for nesting post-construction, ESA requirements will apply to the activity. A regulatory provision is available that allows eligible activities that impact to Barn Swallow to register and follow all the rules in regulation in place of applying for a permit under the ESA. See this website for more information on regulatory requirements for Barn Swallow.

Turtles and Snakes

Workers must be vigilant and check work areas for the presence of turtles. If turtles or snakes are encountered, whenever possible, work should be temporarily suspended until the animal is out of harm's way. Workers should report any turtle observations (including photographs and coordinates) to the Peterborough District Office immediately at 705-755-2001. **Please note that the turtle nesting season in the subject area extends from May 15th to September 30th.** Therefore, activities which may cause adverse impacts to a species or habitat (e.g. use of heavy equipment) should commence after September 30th.

If you are proposing to conduct SAR/habitat surveys, please contact us for appropriate survey protocols.

Butternut:

If a Butternut tree(s) is identified and is to be removed, trimmed or is in close proximity to the application of herbicides, a Butternut Health Assessment must be conducted by an individual trained and certified by MNRF as a Butternut Health Assessor (BHA) as per the Ontario Butternut Assessment Guidelines (Dec 2014). All Butternut Health Assessments must be submitted to the MNRF District office for a 30 day review period before proceeding. Depending on the results of the assessment, you may have different options for how to proceed. Please see our online factsheet for more information. Please note that the ideal time of year to properly identify Butternut is during the leaf on period (approximately June to August). Workers should report any Butternut observations (including photographs and coordinates) to the Peterborough District Office immediately upon discovery. For those Butternut that are not proposed for removal, a minimum protective buffer of a 25 metre radius from the stem of each Butternut is required to prevent root disturbance. A larger area up to 50 m is also considered protected habitat for the tree. Within the 25 metre buffer area, activities that would remove or significantly compact the roots and soil, and cause direct harm to the Butternut are not permitted. Within the 25-50 metre buffer area, activities that would significantly damage or destroy habitat e.g. by impacting the tree's ability to disperse seeds are also not permitted. Removal of other vegetation and careful logging practices within this radius are permitted.

Regulatory Provisions and Further Registration Options
The ESA provides regulatory provisions for certain eligible activities to proceed without an ESA permit. To be eligible, the proponent register with the MNRF and adhere to specific rules in regulation under the ESA. To assess your eligibility please see the links below:

- Information on the ESA regulatory provision
- ESA regulation (O. Reg. 242/08).

If an impact to a species at risk or its habitat cannot be avoided, a person(s) should contact MNRF to discuss options, including applying for an authorization under the ESA. In situations where an activity is not registered with or authorized by the MNRF, a person(s) must comply with the ESA by modifying proposed activities to avoid impacts to species at risk and habitat protected under the ESA.

It is highly recommended that landowners and on-site workers familiarize themselves with MNRF's Species at Risk website.

During on-site activities, should any species at risk or their habitat be potentially impacted, MNRF should be contacted immediately and operations should be modified to avoid any negative impacts to species at risk or their habitat until further discussions with MNRF can occur regarding opportunities for mitigation. If any species at risk are found, the MNRF Peterborough District Office should be contacted at **705-755-2001**. If possible, pictures of the species at risk and coordinates for the location where it was observed should be provided to MNRF.

Petroleum Wells & Oil, Gas and Salt Resource Act
There may be petroleum wells within the proposed project area. Please consult the Ontario Oil, Gas and Salt Resources Library website (www.ogsrlibrary.com) for the best known data on any wells recorded by MNRF. Please reference the 'Definitions and Terminology Guide' listed in the publications on the Library website in order to better understand the well information available. Any oil and gas wells in your project area are regulated by the *Oil, Gas and Salt Resource Act*, and the supporting regulations and operating standards. If any unanticipated wells are encountered during development of the project, or if the proponent has questions regarding petroleum operations, the proponent should contact the Petroleum Operations Section at 519-873-4634.

General Information Regarding MNRF approvals:

Fish and Wildlife Conservation Act
Please note that you may require a Scientific Collector's Permit from our office if you will be doing any fish or wildlife sampling, collection, salvage, or relocation within Peterborough District. For more information about Scientific Collector's Permits, please contact Julie Formsma, Fish and Wildlife Technical Specialist at 705-755-3296.

Other Approvals
It is the responsibility of the proponent to acquire all other information and necessary approvals from any other municipal, provincial or federal authority under other legislation. We recommend that you contact your local Conservation Authority, Department of Fisheries and Oceans, Ministry of the Environment and Climate Change, Ministry of Tourism, Culture and Sport, etc.

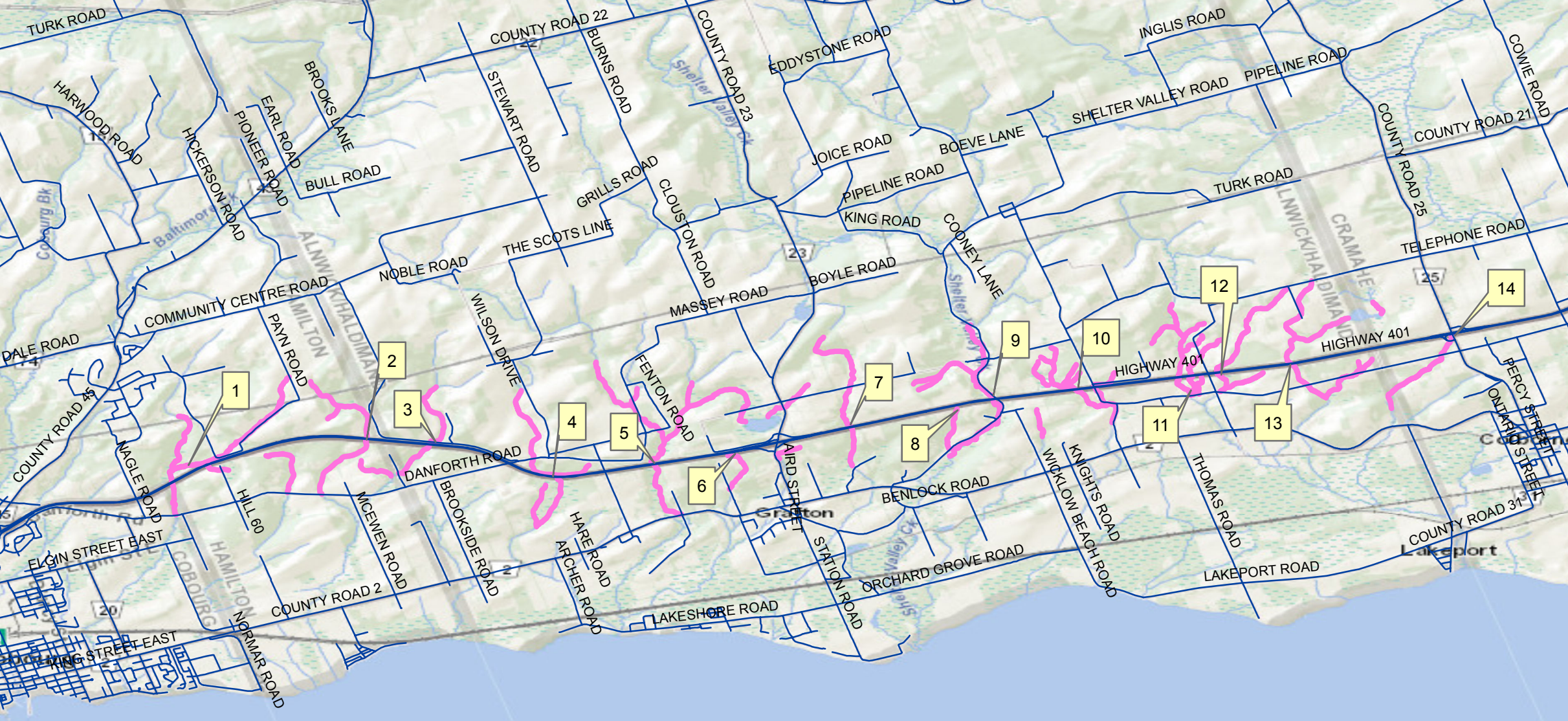
If you have any questions regarding the above comments, don't hesitate to contact me. Please reference file number **18-HAMI-NOR-EAE-2677 and PB2018-0448** for any future correspondence.

Sincerely,
Henry Penyk

Henry Penyk
Land Use Planning Assistant
Peterborough District, Ministry of Natural Resources and Forestry
300 Water St. Peterborough ON, K9J 3C7

Henry.penyk@ontario.ca

Please note: As part of providing accessible customer service, please let me know if you have any accommodation needs or require communication supports or alternate formats.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INGLIS ROAD
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GRILLS ROAD
CLOUSTON ROAD
JOICE ROAD
BOEVE LANE
SHELTER VALLEY ROAD
COUNTY ROAD 21
COUNTY ROAD 25
PIPELINE ROAD
KING ROAD
COONEY LANE
TURK ROAD
TELEPHONE ROAD
THE SCOTS LINE
NOBLE ROAD
BOYLE ROAD
MASSEY ROAD
COMMUNITY CENTRE ROAD
WILSON DRIVE
PAYN ROAD
DALE ROAD
FENTON ROAD
HIGHWAY 401
COUNTY ROAD 45
NAGLE ROAD
DANFORTH ROAD
BENLOCK ROAD
WICKLOW BEACH ROAD
KNIGHTS ROAD
THOMAS ROAD
PERCY STREET
ONTARIO STREET
HILL 60
MCEWEN ROAD
BROOKSIDE ROAD
HARE ROAD
ARCHER ROAD
AIRD STREET
STATION ROAD
ELGIN STREET EAST
COUNTY ROAD 2
ORCHARD GROVE ROAD
LAKESHORE ROAD
LAKEPORT ROAD
COUNTY ROAD 31
KING STREET EAST
NORMAR ROAD
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Location (from Fish Screening Map)	Species	Thermal Regime	Timing Window (no in-water work)
1	brook stickleback,brook trout,common shiner,creek chub,eastern blacknose dace,fathead minnow,johnny darter/tesselated darter,longnose dace,mottled sculpin,northern redbelly dace,rainbow trout,white sucker	Cold	Oct. 1-June 30
2	brook trout,creek chub,eastern blacknose dace,longnose dace,rainbow trout,white sucker	Cold	Oct. 1-June 30
3	brook trout,creek chub,eastern blacknose dace,longnose dace,rainbow trout,white sucker	Cold	Oct. 1-June 30
4	American brook lamprey,Atlantic salmon,black crappie,bluntnose minnow,brook trout,brown bullhead,brown trout,central mudminnow,coho salmon,common shiner,creek chub,eastern blacknose dace,emerald shiner,fantail darter,fathead minnow,johnny darter/tesselated darter,longnose dace,northern brook lamprey,northern hog sucker,northern redbelly dace,pumpkinseed,rainbow darter,rainbow trout,rock bass,sea lamprey,smallmouth bass,stonecat,white sucker	Cold	Oct. 1-June 30
5	American brook lamprey,Atlantic salmon,black crappie,bluntnose minnow,brook trout,brown bullhead,brown trout,central mudminnow,coho salmon,common shiner,creek chub,eastern blacknose dace,emerald shiner,fantail darter,fathead minnow,johnny darter/tesselated darter,longnose dace,northern brook lamprey,northern hog sucker,northern redbelly dace,pumpkinseed,rainbow darter,rainbow trout,rock bass,sea lamprey,smallmouth bass,stonecat,white sucker	Cold	Oct. 1-June 30
6	American brook lamprey,Atlantic salmon,black crappie,bluntnose minnow,brook trout,brown bullhead,brown trout,central mudminnow,coho salmon,common shiner,creek chub,eastern blacknose dace,emerald shiner,fantail darter,fathead minnow,johnny darter/tesselated darter,longnose dace,northern brook lamprey,northern hog sucker,northern redbelly dace,pumpkinseed,rainbow darter,rainbow trout,rock bass,sea lamprey,smallmouth bass,stonecat,white sucker	Cold	Oct. 1-June 30
7	American brook lamprey,Lampreys,brook stickleback,brook trout,creek chub,eastern blacknose dace,fathead minnow,finescale dace,johnny darter/tesselated darter,northern redbelly dace,rainbow trout. Mudminnows,longnose dace,mottled sculpin, pumpkinseed,threespine stickleback,white sucker	Cold	Oct. 1-June 30
8	American eel,Atlantic salmon,Chinook salmon,black bullhead,bluegill,bluntnose minnow,brook stickleback,brook trout,brown bullhead,brown trout,central mudminnow,coho salmon,common shiner,creek chub,eastern blacknose dace,emerald shiner,fantail darter,fathead minnow,finescale dace,golden shiner,johnny darter/tesselated darter,largemouth bass,logperch,longnose dace,mottled sculpin,northern brook lamprey,northern hog sucker,northern redbelly dace,pumpkinseed,rainbow trout,rock bass,sea lamprey,smallmouth bass,spottail shiner,threespine stickleback,white sucker,yellow perch	Cold	Oct. 1-June 30
9	American eel,Atlantic salmon,Chinook salmon,black bullhead,bluegill,bluntnose minnow,brook stickleback,brook trout,brown bullhead,brown trout,central mudminnow,coho salmon,common shiner,creek chub,eastern blacknose dace,emerald shiner,fantail darter,fathead minnow,finescale dace,golden shiner,johnny darter/tesselated darter,largemouth bass,logperch,longnose dace,mottled sculpin,northern brook lamprey,northern hog sucker,northern redbelly dace,pumpkinseed,rainbow trout,rock bass,sea lamprey,smallmouth bass,spottail shiner,threespine stickleback,white sucker,yellow perch	Cold	Oct. 1-June 30
10	Mudminnows,bluntnose minnow,brook stickleback,creek chub,eastern blacknose dace,fathead minnow,northern redbelly dace,rainbow trout,white sucker	Cold	Oct. 1-June 30
11	American brook lamprey,Lampreys,bluntnose minnow,brook stickleback,brook trout,chum salmon,creek chub,eastern blacknose dace,fathead minnow,golden shiner,johnny darter/tesselated darter,logperch,longnose dace,mottled sculpin,northern redbelly dace,pumpkinseed,rainbow smelt,rainbow trout,rock bass,sea lamprey,slimy sculpin,smallmouth bass,white sucker	Cold	Oct. 1-June 30
12	American brook lamprey,Lampreys,bluntnose minnow,brook stickleback,brook trout,chum salmon,creek chub,eastern blacknose dace,fathead minnow,golden shiner,johnny darter/tesselated darter,logperch,longnose dace,mottled sculpin,northern redbelly dace,pumpkinseed,rainbow smelt,rainbow trout,rock bass,sea lamprey,slimy sculpin,smallmouth bass,white sucker	Cold	Oct. 1-June 30
13	American brook lamprey,Lampreys,bluntnose minnow,brook stickleback,brook trout,chum salmon,creek chub,eastern blacknose dace,fathead minnow,golden shiner,johnny darter/tesselated darter,logperch,longnose dace,mottled sculpin,northern redbelly dace,pumpkinseed,rainbow smelt,rainbow trout,rock bass,sea lamprey,slimy sculpin,smallmouth bass,white sucker	Cold	Oct. 1-June 30
14	American brook lamprey,Lampreys,bluntnose minnow,brook stickleback,brook trout,chum salmon,creek chub,eastern blacknose dace,fathead minnow,golden shiner,johnny darter/tesselated darter,logperch,longnose dace,mottled sculpin,northern redbelly dace,pumpkinseed,rainbow smelt,rainbow trout,rock bass,sea lamprey,slimy sculpin,smallmouth bass,white sucker	Cold	Oct. 1-June 30

From:	Prell, Phil (MNRF)
To:	Gazibara, Nevena
Subject:	Revised Species at Risk list for the Preliminary Design and Class Environmental Assessment for Highway 401 Planning Study for Cobourg to Colborne
Date:	Tuesday, September 04, 2018 2:53:08 PM

Dear Nevena,

Below is the revised list of species at risk for the hwy 401 project. Not much as changed (see below).

Revised list of Species at Risk (this changed in early August):

Species at Risk
A review of our best available information indicates that there are observations of the following species (endangered/threatened/special concern) in the immediate area of the site (1 km radius):

1. American Eel (END)
2. Bank Swallow (THR)
3. Barn Swallow (THR)
4. Eastern Meadowlark (THR)
5. Peregrine Falcon (SC)
6. Silver Lamprey (Great Lakes – Upper St. Lawrence Populations) (SC)
7. Snapping Turtle (SC)
8. Wood Thrush (SC)

Also, there are observations of the following species (endangered/threatened/special concern) in the general area (5 km) of the proposed activities:

1. Blanding's Turtle (THR)
2. Bobolink (THR)
3. Butternut (END)
4. Canada warbler (SC)
5. Cerulean Warbler (THR)
6. Chimney Swift (THR)
7. Cucumber Tree (END)
8. Eastern Hog-nosed Snake (THR)
9. Eastern Prairie Fringed Orchid (END)
10. Eastern Ribbonsnake (SC)
11. Eastern Wood-pewee (SC)
12. Lake Sturgeon (Great Lakes – Upper St. Lawrence River Population) (THR) →

changed to (E)

13. Little Brown Myotis (END)
14. Loggerhead Shrike (END)
15. Northern Brook Lamprey (SC)
16. Red-headed Woodpecker (SC)
17. Short-eared Owl (SC)

Although no other threatened or endangered species or their habitat have been documented in the area of the proposed projects, these features may be present and this list should not be considered complete.

Overall it appears that only Lake Sturgeon have changed their designation. All other species are correctly classified.

Stantec

Meeting Notes

Ministry of Natural Resources and Forestry (MNRF)
Ministry of Environment, Conservation and Parks (MECP)

Highway 401 Planning Study from Cobourg to Colborne
Preliminary Design & Class Environmental Assessment
GWP 4060-11-00 and Nagle Road Interchange Study GWP 4059-17-00

Assignment Number 4015-E-0033, / Stantec File 165001090 & 165001106

Date/Time:	November 12, 2019 / 10:30 AM	
Place:	Conference Call	
Next Meeting:	TBD	
Attendees:	Muhammad Waseem	MTO Project Manager
	Erin Pipe	MTO Environmental Planner
	Elizabeth Spang	Ministry of Natural Resources and Forestry
	Catherine Warren	Ministry of Natural Resources and Forestry
	Colin Higgins	Ministry of Natural Resources and Forestry
	Monique Charette	Ministry of Environment, Conservation and Parks
	Gregg Cooke	Stantec Project Manager
	Nevena Gazibara	Stantec Environmental Team Lead
	Debra Giesbrecht	Stantec Terrestrial Ecologist
Distribution:	Project Team	

Item: **Action:**

1. All attendees were introduced.

2. Gregg Cooke provided a presentation that included an overview of the study purpose and scope of projects and the environmental assessment processes being completed and consultation programs. A copy of the presentation is attached to the meeting notes.

3. The scope of the two current studies includes:

   - Rehabilitation and replacement of bridges and structural culverts
   - Interchange modifications at Lyle Street and Percy Street
   - Commuter parking lot expansions and relocations
   - Establishing footprints of Highway 401 for future six and eight lanes
   - A new interchange near Nagle Road and rehabilitation or replacement of the existing Nagle Road bridge to accommodate the new interchange and future Highway 401 widening

4. Gregg Cooke provided an overview of the preliminary design alternatives that were presented at the first Public Information Centre. The first PIC was held on September 18, 2019.

5. Nevena Gazibara provided an overview of the environmental investigations completed to-date, and in particular the terrestrial and aquatic existing conditions investigations, results, and reports.

Item: **Action:**

a. It was noted that the existing conditions report were completed in 2018 and shared with the MNRF and MECP.

b. The terrestrial fieldwork program for the project and reports was completed in the summer of 2017, in advance of the formal commencement of the project. The field investigations included identifying significant wildlife habitats, completing ecological land classifications based on observations, observations of wildlife, birds and nests. The study area was determined to be 120 m from the ROW and fieldwork was conducted from the Highway 401 ROW.

c. The fisheries fieldwork program was completed in the spring and summer of 2017 and included fish habitat and ecological conditions identification and fish inventories for all watercourses within the study area.

d. The project team identified a Provincially Significant Wetland (Cranberry Lake) within the study area, phragmites within the ROW, individual Barn Swallows flying around the study area (but no nests), Eastern Pheobe nests at Shelter Valley Creek, possible turtle wintering areas and amphibian breeding habitats and animal movement corridors.

e. The fisheries investigations identified 17 watercourses with potential to provide fish habitat with most watercourses classified as permanent coldwater thermal regime watercourses with sensitive species present. One Species at Risk (American Eel) was recorded in background information in Shelter Valley Creek. As the study continues and a preferred plan is identified at Shelter Valley Creek the potential impacts to this SAR will be identified and the need for an ESA permit will be identified through consultation with the MECP.

6. Stantec noted that they have received MNRF's comments on the existing conditions reports and will update the items identified in the Impact Assessment reports, scheduled to be completed once preferred plans are selected. MECP noted that they will provide their comments on the reports within the next month.

7. MNRF and MECP asked why targeted species surveys were not completed as part of the fieldwork. Stantec noted that targeted species surveys were not included in this Planning and Preliminary Design stage and scope of work. These detailed surveys are typically completed during Detail Design, once the recommended plan is finalized and construction details are known.

8. MNRF noted that there is no information regarding deer wintering areas within the terrestrial existing conditions report. MNRF noted that they will provide that information to Stantec to include in the Impact Assessment Report.

9. MNRF noted that there are opportunities and potential for eco-passages at the Unnamed Creek crossing that is 1.4 km West of the Cranberry Lake PSW (21-469) and the Graft Creek culvert, near Craig Road, and possibly near Shelter Valley Creek.

10. Stantec discussed wildlife collision data provided by the MTO within the corridor and noted that there are not any significant patterns observed but that there are clusters of accidents near Lyle Street, Percy

Item:	Action:

Street and Shelter Valley Road. MNRF and MECP requested that the wildlife collision data be shared with them. *Following the meeting, Stantec provided the wildlife collision data with MNRF and MECP.*

11. Stantec and MTO noted that within the study area there are six structural culverts that have been identified for rehabilitation or replacement as part of this study and design alternatives have been developed (as shown on the PIC displays). At this early design stage there may be opportunities to identify culverts that could be used as eco-passages for wildlife if wildlife habitat and movement corridors are identified and topographical conditions are suitable for eco-passages. Stantec noted that they have designed upsized culverts on other projects to create eco-passages but that the success of the eco-passage depends on the length of the culvert, light availability, and ability to create and install funnel fencing adjacent to the culvert.

12. As an example, there are two culverts at Shelter Valley Creek (one road culvert and one watercourse culverts. One of the alternatives that Stantec has developed and is shown on the PIC displays is a new bridge to replace the two existing culverts. This may provide an opportunity for an eco-passage, when compared to the other design alternatives at Shelter Valley Creek. MNRF noted that the new bridge alternative is probably a better option for wildlife- less restricted area. MNRF and MECP requested copies of the PIC displays. *Following the meeting, Stantec provided the PIC displays to MNRF and MECP.*

13. MNRF noted that they will review the wildlife collision data provided and share deer wintering areas that will assist Stantec with identifying potential opportunities to use the structural culverts included in this study as eco-passages. — MNRF

14. A future meeting will be scheduled with the MNRF and MECP once preferred plans have been identified and to confirm if there are opportunities for culvert eco-passages within the study area.

The meeting adjourned at 11:50 AM

The foregoing is considered to be a true and accurate record of all items discussed. If any discrepancies or inconsistencies are noted, please contact the writer immediately.

Stantec Consulting Ltd.

on behalf of

Nevena Gazibara, B.Sc., MREM, ENV SP
Environmental Planner
Stantec Consulting Ltd.
Phone: 905-381-3249
nevena.gazibara@stantec.com

From:	Spang, Elizabeth (MNRF)
To:	Gazibara, Nevena
Cc:	Warren, Catherine (MNRF)
Subject:	RE: GWP 4060-11-00 Highway 401 Planning Study from Cobourg to Colborne- Terrestrial and Aquatic Existing Conditions Reports
Date:	Thursday, October 31, 2019 1:36:48 PM

Good afternoon Nevena:

Thank you very much for circulating the Fisheries and Terrestrial Existing Conditions Reports to MNRF for review and comment. I apologize sincerely for the delay in getting comments to you. We are looking forward to discussing this project further with your team and appreciate you reaching out. MNRF understands that the project entails future widening of the highway from 4 to up to 8 lanes along with rehabilitation of structures, interchange modifications, and commuter parking lot improvements. MNRF previously provided background information to the project team on August 8, 2018 (general background data including fisheries data for all watercrossings), and on Dec 12, 2018. MNRF's comments on the existing conditions reports at this time can be found below.

Fish and Fish Habitat Existing Conditions Report – Hwy 401 Planning Study from Cobourg to Colborne, prepared by Stantec, dated Nov 9, 2018

In general, the report was well done. MNRF has the following comments to provide:

- Permanent vs Intermittent streams: MNRF considers any water feature present for 9 months or more to be permanent. Some creeks were identified by MNRF as permanent, but during Stantec's field visits in September they were found to be dry and labeled as intermittent. Without further, multiple year investigations, it is inconclusive whether these streams are in fact permanent or intermittent. MNRF defaults to a permanent designation.

- MNRF ARA data identified some streams as containing Chum Salmon. This is highly unlikely. Chinook and Coho salmon are the only pacific salmon known to currently occur in Lake Ontario and it's tributaries. Atlantic salmon may also be present and are identified in Shelter Valley Creek. We have confirmed that the ARA data reporting Chum Salmon is incorrect; the catch of Coho salmon in Colborne Creek in 2006 was improperly entered as Chum salmon. We will be correcting this in our data layers.

- The timing window for NO in-water work that MNRF provided in 2018 for all water crossings was Oct 1 – June 30. It appears that Table 3-1 references the opposite dates (July 1 – Sept 30) when in-water work IS permitted. MNRF would appreciate confirmation that our understanding is correct and that the correct timing window will be applied.

- As you know, since the report was authored, the responsibility for species at risk

in Ontario has been shifted to the Ministry of Environment, Conservation and Parks (MECP). MECP should be consulted for advice regarding any aquatic species at risk that may be affected by the project.

Terrestrial Ecosystems Existing Conditions Report – Hwy 401 Planning Study from Cobourg to Colborne, prepared by Stantec, dated Nov 5, 2018

In general, the report provides a good start to inventorying the existing features in the study area; However, there are significant gaps in identifying natural heritage features that have not yet been evaluated. The EA process should address the infrastructure policies (section 3.2) of the *2019 A Place to Grow: Growth Plan for the Greater Golden Horseshoe* (the "Growth Plan"). MNRF has the following specific comments to provide:

- MNRF appreciates the background work done to map ELC vegetation communities along the entire corridor and conduct preliminary investigations for significant wildlife habitat following MNRF's Ecoregion Criteria Schedules. MNRF agrees with the conclusion statement that 'Further investigations of these candidate features (turtle wintering areas, amphibian breeding habitat, animal movement corridors and Snapping turtle habitat) are recommended during detailed design.' MNRF recommends adding habitat for special concern species (see further comment below), turtle nesting area investigations, as well as additional large culvert inspections for nesting birds. Surveys should be done at the appropriate time of year using established methodologies.

- Table 3.2 lists potential habitat for several special concern species within the study area such as breeding habitat for several SC birds. Habitat for special concern species should also be considered significant wildlife habitat. The August field surveys were not conducted at the appropriate time of year to capture breeding birds. MNRF recommends further field investigations during detail design to confirm whether these species are present to identify appropriate mitigation measures.

- MNRF strongly recommends considering enhancing opportunities for wildlife movement across the widened highway corridor by including ecopassages in the design. Turtles and amphibians in particular are very sensitive to population impacts from road mortality. Candidate areas could include larger valley features that already include watercrossings of some kind that could be enhanced to provide safe passage for a variety of wildlife. A potential best bet opportunity for an ecopassage (reptile/amphibian, perhaps other larger animals too) is suggested at the unnamed creek crossing 1.4 km W of Cranberry (Little) Lake Wetland PSW. There are other potential opportunities at the water crossing/valley near Craig Road (Fig 4) that provides a direct connection from a nearby Oak Ridges Moraine Natural Linkage Area to the north to the Growth

Plan NHS north and south of the highway, or possibly at Shelter Valley Creek connecting down to Grafton Swamp PSW at Lake Ontario. MNRF would welcome further discussion with MTO/Stantec about ecopassages. MNRF can provide BMPs for wildlife fencing and ecopassage design for reptiles and amphibians. If MTO has any information to share (e.g. areas with higher vehicle-wildlife conflicts, field assessments of water/valley crossings with good potential), it would be appreciated.

- There are Stratum 2 deer wintering areas within the study area that were not referenced in the report. Deer wintering areas are mapped by MNRF and should be considered significant wildlife habitat as well. Mitigation options for significant wildlife habitat types can be found in the SWH Mitigation Support Tool, found here: https://www.ontario.ca/page/natural-heritage-planning-resources-municipal-planning.

- **Growth Plan:** On May 2, 2019, the Province issued a revised Provincial Plan document called '*A Place to Grow: Growth Plan for the Greater Golden Horseshoe' (2019).* This Plan replaced the Growth Plan for the Greater Golden Horseshoe, 2017 as of May 16, 2019. The entire study area is located within the Growth Plan and most of of the study area is located within the Growth Plan Natural Heritage System (NHS). The Infrastructure policies of the Growth Plan state that an environmental assessment should demonstrate "*that any impacts on key natural heritage features in the Natural Heritage System for the Growth Plan, key hydrologic features and key hydrologic areas have been avoided, or if avoidance is not possible, minimized and to the extent feasible mitigated*." (S. 3.2.5). The Growth Plan can be accessed here: https://www.ontario.ca/document/place-grow-growth-plan-greater-golden-horseshoe. Please see the Growth Plan definitions for a list of key natural heritage features and key hydrologic features. Please note that not all key natural heritage features or key hydrologic features have been mapped in advance and field verifications may be required to map some of these features.

- The report does not investigate whether any of the wooded areas within the study area have potential to be significant woodlands. Significant woodlands are key natural heritage features within the Growth Plan NHS (in addition to being a significant natural heritage feature in the PPS). MNRF is of the opinion that there are woodlands in the study area that have potential to be significant. MNRF recommends that the 2010 Natural Heritage Reference Manual criteria be used to determine woodland significance in Northumberland County. Given that Northumberland County has approximately 36% forest cover, a minimum size of 50 ha is recommended. This size must be identified based on contiguous woodland polygons (excluding gaps less than 20 m wide), regardless of whether they extend outside of the study area (i.e. woodland size must not be cut off at

the study area boundary for the purposes of measuring their overall size). It should be noted that the County of Northumberland is currently developing their own significant woodlands criteria and policies, but they are not yet in place. The municipality is ultimately the approval authority to determine woodland significance for municipal planning purposes. Municipal criteria may exceed the minimum standard set by the Province (e.g. by choosing a smaller threshold to capture more woodlands). For the purposes of the EA, MNRF recommends, at a minimum, a basic analysis of woodlands based on size in order to determine potential significant woodlands and any required measures that are required to avoid, or if avoidance is not possible, minimize and mitigate impacts to the extent possible in accordance with the Growth Plan and the PPS.

- The report does not address unevaluated wetlands, many of which exist in the study area according to the ELC mapping provided. The Growth Plan identifies all wetlands, regardless of significance, as key hydrologic features, which are protected throughout the Growth Plan area (except within settlement areas designated in a municipal official plan). MNRF recommends that the criteria in the 2005 “Technical Definitions and Criteria for Key Natural Heritage Features in the Natural Heritage System of the Protected Countryside Area” (found here: http://www.mah.gov.on.ca/Page10197.aspx) be used to identify wetlands subject to the Growth Plan. Essentially all wetlands are protected unless there is rationale that small wetlands less than 0.5 ha in size do not provide certain functions (see criteria for details). ELC is an acceptable method to map wetlands subject to the Growth Plan wetland policies. MNRF recommends that any wetlands identified in the ELC mapping be considered key hydrologic features (and additionally key natural heritage features if located within the Growth Plan NHS) and be avoided, or if avoidance is not possible, impacts are minimized and mitigated to the extent possible in accordance with the Growth Plan.

- As you know, since the report was authored, the responsibility for species at risk in Ontario has been shifted to the Ministry of Environment, Conservation and Parks (MECP). MECP should be consulted for advice regarding any species at risk that may be affected by the project.

- MNRF manages two acquired crown land areas that are immediately adjacent to the highway within the study area. One is located near Payne Road on south side of the Hwy in Lot 5, Con 1, Hamilton. The second area is two distinct parcels on either side of Vernonville Rd, north side of Hwy in Lots 10 & 11, Con 1, Haldimand. MNRF requests to be contacted for discussion if any impacts from the project are expected on these two Crown land areas.

Thank you for the opportunity to comment. I will be out of the office on maternity leave

starting November 18, 2019. Let me know if a teleconference can be scheduled before that time. During my absence, inquires regarding this project can be directed to my planner colleague, Catherine Warren, cc'd. Please reference the MNRF file numbers **18-HAMI-NOR-EAE-2677 and PB2018-0448** in any future correspondence.

Kind regards,

Liz Spang, M.Pl

District Planner
Peterborough District
Ontario Ministry of Natural Resources and Forestry
300 Water Street, 1st Floor South
Peterborough, ON K9J 8M5
Tel: (705) 755-3360
Fax: (705) 755-3125
Email: Elizabeth.Spang@ontario.ca

From: Gazibara, Nevena <Nevena.Gazibara@stantec.com>
Sent: October 9, 2019 9:20 AM
To: Spang, Elizabeth (MNRF) <Elizabeth.Spang@ontario.ca>; Charette, Monique (MECP) <monique.charette@ontario.ca>
Cc: Waseem, Muhammad (MTO) <Muhammad.Waseem@ontario.ca>; Pipe, Erin (MTO) <Erin.Pipe@ontario.ca>; Cooke, Gregg <gregg.cooke@stantec.com>; Belliveau, Tim <tim.belliveau@stantec.com>
Subject: RE: GWP 4060-11-00 Highway 401 Planning Study from Cobourg to Colborne- Terrestrial and Aquatic Existing Conditions Reports

Good morning Elizabeth and Monique,

I'm following up to see if you two have had time to review the existing conditions reports for the above-mentioned study and whether the project team can schedule a joint conference call/meeting with you to discuss the project, existing natural heritage features, and sensitive areas and constraints, to consider as the project moves forward and preliminary design alternatives are refined and evaluated.

Please let me know your interest and availability in a meeting with the project team.

Kind regards,
Nevena Gazibara B.Sc., MREM, ENV SP
Environmental Planner

Direct: 905 381-3249
Fax: 905 385-3534
nevena.gazibara@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Spang, Elizabeth (MNRF) <Elizabeth.Spang@ontario.ca>
Sent: Thursday, May 16, 2019 10:45 AM
To: Gazibara, Nevena <Nevena.Gazibara@stantec.com>
Cc: Waseem, Muhammad (MTO) <Muhammad.Waseem@ontario.ca>; Pipe, Erin (MTO) <Erin.Pipe@ontario.ca>; Cooke, Gregg <gregg.cooke@stantec.com>; Belliveau, Tim <tim.belliveau@stantec.com>
Subject: RE: GWP 4060-11-00 Highway 401 Planning Study from Cobourg to Colborne- Terrestrial and Aquatic Existing Conditions Reports

Hello Nevena:

I've successfully downloaded the reports. Thanks for reaching out and for sharing them with us. I'll be in touch when we've had an opportunity to review.
As mentioned on the phone, the contact for species at risk reviews/inquiries is now the Ministry of Environment, Conservation and Parks at SARontario@ontario.ca.

Cheers,

Liz Spang, M.Pl

District Planner
Peterborough District
Ontario Ministry of Natural Resources and Forestry
300 Water Street, 1st Floor South
Peterborough, ON K9J 8M5
Tel: (705) 755-3360
Fax: (705) 755-3125
Email: Elizabeth.Spang@ontario.ca

From: Gazibara, Nevena <Nevena.Gazibara@stantec.com>
Sent: May 10, 2019 4:14 PM
To: Spang, Elizabeth (MNRF) <Elizabeth.Spang@ontario.ca>
Cc: Waseem, Muhammad (MTO) <Muhammad.Waseem@ontario.ca>; Pipe, Erin (MTO) <Erin.Pipe@ontario.ca>; Cooke, Gregg <gregg.cooke@stantec.com>; Belliveau, Tim <tim.belliveau@stantec.com>
Subject: GWP 4060-11-00 Highway 401 Planning Study from Cobourg to Colborne- Terrestrial and Aquatic Existing Conditions Reports

Good afternoon Elizabeth,

As per our telephone discussion the other day, please find a temporary FTP site with the terrestrial and aquatic existing conditions reports for the above-mentioned project for your reference.

Login Information

Browser link: https://tmpsftp.stantec.com
FTP Client Hostname: tmpsftp.stantec.com **Port:** 22 (can be used within an FTP client to view and transfer files and folders; e.g., FileZilla)
Login name: s0524135614
Password: 2654096
Disk Quota: 2GB
Expiry Date: 5/24/2019

Please let me know if you have any issues accessing the files.

Once you have had a chance to review the reports we can discuss a potential meeting with you and the project team.

Kind regards,

Nevena Gazibara B.Sc., MREM, ENV SP
Environmental Planner

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Stantec Consulting Ltd.
200-835 Paramount Drive, Stoney Creek ON L8J 0B4

April 9, 2020
File: 165001090

Ms. Catherin Warren
District Planner
Ministry of Natural Resources and Forestry- Peterborough District
300 Water Street, 1st Fl
Peterborough ON K9J 3C7

Dear Ms. Warren,

Reference: Highway 401 Planning Study from Cobourg to Colborne, Ontario (GWP 4060-11-00)
Highway 401 Nagle Road Interchange Study (GWP 4059-17-00) - Response to Comments Received on Natural Environment Existing Conditions Reports

Dear Ms. Warren,

Thank you for taking the time to review the Terrestrial and Fisheries Existing Conditions Reports and provide comments on behalf of the MNRF in relation to the above-mentioned project. In addition, thank you for participating in the conference call with the project team and with the Ministry of Environment, Conservation and Parks (MECP) held on November 12, 2019.

With respect to your comments and suggestions regarding the Fish and Fish Habitat Existing Conditions report, please note that the project team will incorporate these changes into the Fish and Fish Habitat Impact Assessment Report, which will be completed once a preferred plan is selected for the project. It is anticipated that this report will be completed in June 2020. As part of these changes, we will: revise the intermittent watercourses to reflect that they are permanent; revise the Colborne Creek fish species from Coho salmon to Chum salmon; and, confirm the in-water timing restrictions.

Your comments and suggestions regarding the Terrestrial Ecosystems Existing Conditions report have also been noted. Similarly, the project team will incorporate these changes into the Terrestrial Ecosystems Impact Assessment Report, which will be completed once a preferred plan is selected for the project. With respect to your comments regarding targeted species surveys, our team will provide recommendations for additional investigations in the Impact Assessment Report; however, as noted during the November 2019 conference call, these investigations are typically completed during the Detail Design stage, once refinements are made to the recommended plan. We will also include information and delineation of significant woodlands in the assessment report.

It is understood that there was a discussion regarding deer wintering areas during the November 2019 conference call. It would be appreciated if the information and mapping related to these areas could be provided to inform the Impact Assessment Report for this project.

As part of our evaluation of design alternatives, the project team will seek to select alternatives that avoid or minimize impacts to unevaluated wetlands, where possible. These features will be included in the natural environment evaluation criteria as part of the evaluation of alternatives.

Reference: **Preliminary Design and Class Environmental Assessment**
Highway 401 Planning Study from Cobourg to Colborne, GWP 4060-11-00
Response to Comments Received on Natural Environment Existing Conditions Reports

Once the project team selects the preferred plan and confirms property impacts, we will contact you if any impacts are anticipated to the MNRF-managed properties within the study area.

With respect to your comments related to the Growth Plan (2019- A Place to Grow: Growth Plan for the Greater Golden Horseshoe), please note that this project is being completed under the MTO Class Environmental Assessment (EA) for *Provincial Transportation Facilities*, which is an approved process under the Environmental *Assessment Act*. MTO's Class EA document defines the groups of undertakings and associated EA processes which MTO must follow. The MTO Environmental Reference for Highway Design, which was developed in consultation with provincial and federal agencies, provides the standards and requirements for environmental investigations completed as part of the MTO Class EA process. As such, key hydrologic features are identified as part of the Class EA process, and impacts to these areas avoided or mitigated, to the extent possible.

The project team has noted your recommendations and information regarding potential eco-passages within the study area. This information will be considered, and incorporated into the design of the preferred plan, where possible. The project team will contact you and the MECP once a preferred plan has been selected to discuss potential opportunities for eco-passages within the study area.

Thank you again for taking the time to provide comments on behalf of the MNRF. Should you have any additional comments, questions and/or concerns, please do not hesitate to contact the undersigned.

Regards,

Stantec Consulting Ltd.

Diana Addley
Senior Environmental Planner
Phone: (905) 415-6401
Email: Diana.Addley@stantec.com

c. M. Waseem, E. Pipe – Ministry of Transportation
G. Cooke, T. Belliveau – Stantec Consulting Ltd.

From: Addley, Diana
To: Robinson, Jennifer
Subject: FW: Highway 401 Planning Study from Cobourg to Colborne-MECP Comments
Date: Friday, February 7, 2020 2:15:20 PM

Hi Jenn,

Could you please file this comment and update the TRACER document to reflect the comments below?

We can chat about the TRACER when you are free.

Thank you,

Diana Addley
Senior Environmental Planner

Direct: 905 415-6401
Mobile: 647 588-7112
Diana.Addley@stantec.com

Stantec
150 - 1555 Wentworth Street
Whitby ON L1N 9T6

From: Pipe, Erin (MTO) <Erin.Pipe@ontario.ca>
Sent: Friday, February 7, 2020 8:10 AM
To: Addley, Diana <Diana.Addley@stantec.com>
Cc: Cooke, Gregg <gregg.cooke@stantec.com>; Belliveau, Tim <tim.belliveau@stantec.com>; Waseem, Muhammad (MTO) <Muhammad.Waseem@ontario.ca>
Subject: FW: Highway 401 Planning Study from Cobourg to Colborne-MECP Comments

Hi Diana;

Please find below comments from Monique Charette of MECP's SAR Branch. Monique was provided the fisheries and terrestrial existing conditions reports prior to the teleconference Nevena organized which also included MNRF (Catherine Warren and Colin Higgins).

Erin

From: Charette, Monique (MECP) <monique.charette@ontario.ca>
Sent: February-06-20 4:28 PM
To: Pipe, Erin (MTO) <Erin.Pipe@ontario.ca>
Subject: Highway 401 Planning Study from Cobourg to Colborne-MECP Comments

Good afternoon Erin,

My apologies for not responding sooner. I have reviewed the Terrestrial Ecosystems Existing Conditions Report, Fish and Fish Habitat Existing Conditions Report, the mainline and Nagle exhibits and wildlife collision information. I've provided comments on only some of the species at risk listed in the reports however all species at risk and/or species at risk habitat should be considered in the detailed design stage.

Blanding's turtle

We recommend that targeted surveys for Blanding's Turtles be conducted since suitable wetland features are present within the Study Area. Blanding's Turtles also use terrestrial habitat for nesting, thermoregulation and movement. Potential nesting habitat which could include meadows, rocky outcrops, agricultural fields and trails should be considered when evaluating potential impacts on the species.

Blanding's Turtles are also known to travel long distances moving through different habitats especially in spring and fall. Surveys should not be limited to determining whether turtles are using aquatic features or whether there is nesting potential within the Study Area. Surveys should also consider turtle movement as they could be travelling through the Study Area if suitable habitat is found on both sides of the highway. There are several figures in Appendix A that show the existing highway crossing multiple watercourses, some of which are connected to waterbodies. These areas could be potential movement corridors.

In addition to conducting surveys, we recommend that habitat mapping be prepared to show where Category 1, 2 and 3 may be present. The survey results and maps will help inform potential mitigation measures and/or potential overall benefit projects if deemed required. Is there a possibility of adapting existing culverts or new ones to be suitable for Blanding's Turtle passage?

Eastern Whip-poor-will

Although the disturbance from the 401 may prevent the use of the ROW by Eastern Whip-poor-will (EWPW), they may be found in suitable habitat adjacent to the ROW and possibly outside of the Study Area which only includes a 120m area. Activities taking place in the ROW may have an indirect impact on potential adjacent territories. The EWPW has a General Habitat Description under the ESA which includes suitable habitat up to 500m of the nest or centre of approximated defended territory. In Ontario, territory range is thought to be approximately 9Ha. We recommend that a broader area be considered when evaluating potential impacts on this species.

Bobolink and Eastern Meadowlark

Although densities may be lower closer to the 401, if the habitat is suitable and surveys indicate Bobolink and/or Eastern Meadowlark are present, the ESA applies. Birds may generally avoid the ROW as a result of the disturbance associated with the highway, however they may still be in suitable habitat adjacent to the ROW and could be impacted by activities taking place in the ROW. An example of this would be the interchange at Hwy. 401/38 in Kingston where 3 Eastern Meadowlark were observed breeding in close proximity to the highway. Mitigation measures may be required to ensure potential impacts are minimized for these species.

Eastern Small-footed Myotis

The Eastern Small-footed Myotis has been found roosting in a variety of different habitats, both anthropogenic (buildings, bridges) and natural (trees). Although they mainly rely on rock roosts, we recommend that anthropogenic features also be considered when conducting surveys. We also believe that if present, the Eastern Small-footed Myotis could potentially use the rocks surrounding some of the existing culverts (eg. unnamed tributaries 0A and 0B). We recommend that these areas also be considered in future surveys.

Little Brown Myotis, Northern Myotis and Tri-coloured Bat

Although habitat was only found irregularly at the periphery of the ROW and not within the ROW, potential impacts should still be considered especially if tree clearing is to occur in close proximity to suitable habitat. Also, bats often move from one roost site to another within an area. We recommend that potential networks of roosts be considered when conducting surveys.

These bats forage along waterways and forest edges. There are multiple figures in Appendix A that show the highway crossing watercourses that flow through mixed forests, coniferous forests, deciduous forests and coniferous swamps. We recommend that these areas be evaluated as potential movement corridors for bats.

Overall Comment

Surveys are recommended for species that have the potential to be present based on the availability of suitable habitat. Confirming the presence of species at risk and/or their habitat will help inform mitigation measures and potential overall benefits that may be required in the future. Please don't hesitate to contact me if you would like to discuss the type of surveys that may be required or if you have any questions related to my comments.

Sincerely,

Monique Charette
Management Biologist
Ministry of the Environment, Conservation and Parks
Permissions and Compliance Section
Species At Risk Branch
51 Heakes Lane
Kingston ON, K7M 9B1
(613) 583-3162

Stantec Consulting Ltd.
200-835 Paramount Drive, Stoney Creek ON L8J 0B4

April 9, 2020
File: 165001132

Attention: Monique Charette, Management Biologist
Ministry of the Environment, Conservation and Parks
Permissions and Compliance Section
Species At Risk Branch
51 Heakes Lane
Kingston ON, K7M 9B1
Email: monique.charette@ontario.ca

Dear Ms. Charette,

Reference: Response to MECP Comments, Draft Terrestrial Ecosystems Existing Conditions Report
Highway 401 Planning Study from Cobourg to Colborne (GWP 4060-11-00)
Highway 401 Nagle Road Interchange Study (GWP 4059-17-00)

Thank you for taking the time to review and provide comments on behalf of the Ministry of Environment, Conservation and Parks (MECP) in relation to the Terrestrial Ecosystems Existing Conditions (TEEC) report prepared by Stantec and dated November 5, 2018. This letter provides Stantec's response to the comments received via email by Ms. Erin Pipe of the Ontario Ministry of Transportation, (MTO) from the MECP on February 7, 2020, in relation to the TEEC report and associated terrestrial Species at Risk (SAR) considerations in relation to the above-referenced projects.

As part of your response, specific recommendations were noted in relation to eight of the fourteen SAR listed in the TEEC report, including Blanding's Turtle, Eastern Whip-poor-will, Bobolink, Eastern Meadowlark, Little Brown Myotis, Northern Myotis, Tri-coloured Bat and Eastern Small-footed Myotis. It is understood that all SAR and/or SAR habitat should be considered during the detailed design stage of these projects, including the other species listed within the TEEC report (i.e., Chimney Swift, Least Bittern, Bank Swallow, Barn Swallow and Louisiana Waterthrush).

A summary of habitats for the eight SAR described in the TEEC report is provided in Table 1 (attached), as well as the MECP's associated comments and/or recommendations. As noted in the TEEC report, an Impact Assessment report will be prepared once the Preliminary Design has been completed, at which time site-specific mitigation recommendations will be identified to reduce the likelihood of negative impacts to SAR within the Study Area, including but not limited to conducting targeted surveys for SAR during Detail Design.

In accordance with the Class Environmental Assessment for Provincial Transportation Facilities (2000), the Class EA process consists of four main stages: Planning, Preliminary Design; Detail Design; and, Construction. As noted above, this Study consists of the Planning and Preliminary Design stages, and as such focuses on 'roughing out' a design. As noted in Section 2 of the MTO's Environmental Guide for Highway Design (2013), an overall appreciation of environmental constraints can be determined during Preliminary Design based on a collection of background information, until it is supplemented by field investigations that may be completed once the design is sufficiently advanced and a better understanding

Reference: **Response to MECP Comments, Draft Terrestrial Ecosystems Existing Conditions Report Highway 401 Planning Study from Cobourg to Colborne (GWP 4060-11-00) Highway 401 Nagle Road Interchange Study (GWP 4059-17-00)**

of impacts is established. The environmental information gathered during Detail Design is intended to fill in information gaps, update information, and enhance the information level of detail acquired during the previous stages.

Based on the February 2020 response, it is understood that MECP is recommending targeted surveys for SAR where suitable habitat is present in the Study Area at the Preliminary Design stage in order to assess potential impacts and inform the recommended mitigation measures. However, please note that a conservative approach is typically undertaken during the Planning and Preliminary Design stage, which includes the evaluation of alternatives. As such, suitable habitat for SAR is identified based on Ecological Land Classification surveys and wildlife habitat assessments conducted for the Study Area, and a species' presence is assumed. Once a Recommended Plan has been identified, site-specific avoidance and mitigation measures are recommended for each SAR or SAR habitat. Consideration is given to species such as Blanding's Turtle and Eastern Whip-poor-will, whose regulated or general habitat extends beyond the 120 m Study Area boundary.

Thank you again for taking the time to review the TEEC and provide comments on behalf of the MECP. Stantec will provide the Impact Assessment report to MECP upon its completion and welcomes MECP's comments on the proposed avoidance and mitigation measures, including recommendations for targeted surveys for SAR during Detail Design. As part of this project, MTO intends to avoid or reduce potential impacts of the project activities on SAR, to the extent possible.

Should you have any additional questions, comments and/or concerns, please do not hesitate to contact the undersigned

Regards,

Stantec Consulting Ltd.

Diana Addley
Senior Environmental Planner
Direct: 905 415-6401
Email: Diana.Addley@stantec.com

Attach.: Table 1 – SAR Habitat Suitability

c. Erin Pipe, MTO
Muhammad Waseem, MTO
Gregg Cooke, Stantec
Debra Giebrecht, Stantec
Melissa Cameron, Stantec

Table 1 – SAR Habitat Suitability

Species	Habitat Suitability in Study Area (as described in the TEEC Report)	MECP Comment / Recommendation
Blanding's Turtle	Suitable wetland habitat is present in proximity to the ROW.	Targeted surveys to confirm habitat use in wetlands and candidate nesting habitat. Conduct mapping of Category 1, 2 and 3 habitats.
Eastern Whip-poor-will	Suitable open woodland habitat is present in the Study Area; however, disturbance from Highway 401 may limit use.	Consider potential impacts outside the Study Area within 500 m of a nest or defended territory.
Bobolink and Eastern Meadowlark	Grassland features within the Study Area may provide breeding habitat for; however, nesting is unlikely to occur in the ROW due to disturbance from Highway 401.	These species may nest in proximity to Highway 401 where suitable habitat is present. Mitigation measures may be required to minimize impacts.
Little Brown Myotis, Northern Myotis and Tri-coloured Bat	Suitable roost occur irregularly at the periphery of the ROW.	Surveys to confirm roosts and movement by bats among roosts, and evaluation of movement corridors within the Study Area.
Eastern Small-footed Myotis	Suitable habitat is not present in the Study Area.	Rocks around some existing culverts may provide suitable roosting habitat. Targeted surveys are recommended.

Appendix C
Preliminary
General Arrangement Drawings

(for Shelter Valley Creek
and Six Structural Culverts)

NORTH
FOR CONSTRUCTION

21X-0467/C0
(Unnamed Tributary 02)

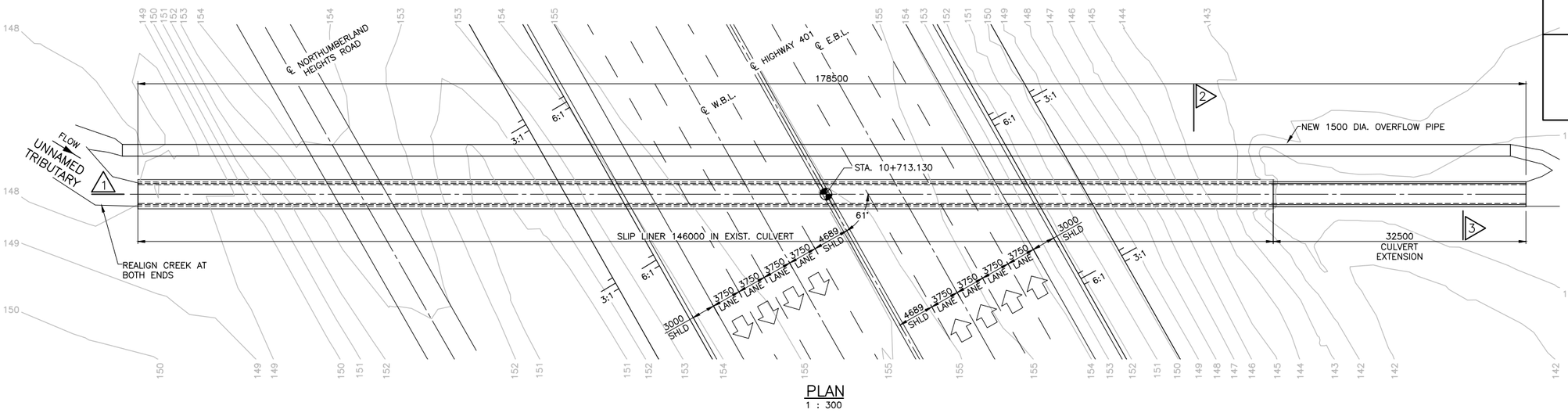
METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

HWY 401
CONT
WP 4060-11-00

UNNAMED CULVERT
REPLACEMENT
PRELIMINARY
GENERAL ARRANGEMENT

SHEET

Stantec



PLAN
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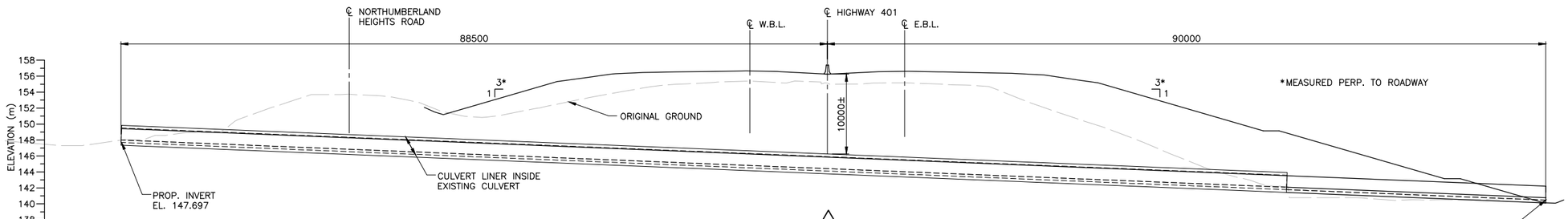

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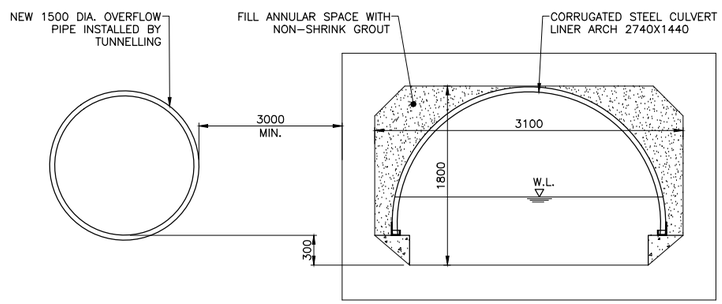

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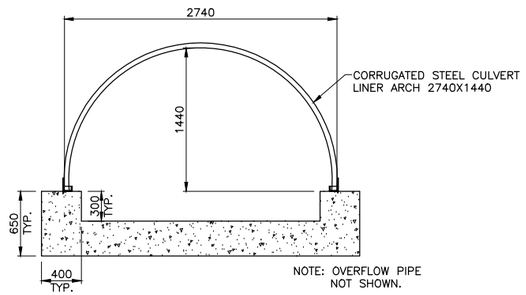


3
1 : 30

GENERAL NOTES

1. CLASS OF CONCRETE:
   30 MPa UNLESS OTHERWISE SPECIFIED
2. CLEAR COVER TO REINFORCING STEEL:
   BOTTOM OF BOTTOM SLAB 100±20
   REMAINDER 60±10
   UNLESS OTHERWISE SPECIFIED
3. REINFORCING STEEL:
   REINFORCING STEEL SHALL BE GRADE 500W UNLESS OTHERWISE SPECIFIED.
   TENSION LAP LENGTHS NOT INDICATED ON THE CONTRACT DRAWINGS SHALL BE CLASS B.
   BAR HOOKS SHALL HAVE STANDARD HOOK DIMENSIONS USING MINIMUM BEND DIAMETERS, WHILE STIRRUPS AND TIES SHALL HAVE MINIMUM HOOK DIMENSIONS. ALL HOOKS SHALL BE IN ACCORDANCE WITH THE STRUCTURAL STANDARD DRAWING SS12-1, UNLESS INDICATED OTHERWISE.
4. CONSTRUCTION
   THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, DETAILS AND ELEVATIONS OF THE EXISTING STRUCTURE THAT ARE RELEVANT TO THE WORK SHOWN ON THE DRAWINGS PRIOR TO COMMENCEMENT OF THE THE WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER AND THE PROPOSED ADJUSTMENT OF THE WORK REQUIRED TO SUIT THE EXISTING STRUCTURE SHALL BE SUBMITTED FOR APPROVAL.
   DEBRIS FROM STRUCTURE REMOVALS SHALL BE PREVENTED FROM ENTERING THE WATERCOURSE.
   THE CONTRACTOR SHALL ISOLATE THE WORK AREA FROM THE WATERCOURSE FLOW AND COMPLETE ALL WORK IN THE DRY.

DRAWING NOT TO BE SCALED
100 mm ON ORIGINAL DRAWING

REVISIONS			
	DATE	BY	DESCRIPTION

DESIGN		CHK	CODE CHBDC-2019	LOAD CL-625-ONT	DATE	AUG 2021
DRAWN	H.L.	CHK M.T.	SITE 21X-0467/C0	STRUCT	SCHEME	DWG. P3

165001090-21-467C-P3.DWG Jul 23 2021

21X-0468/C0
(fisheries assessment required during Detail Design)

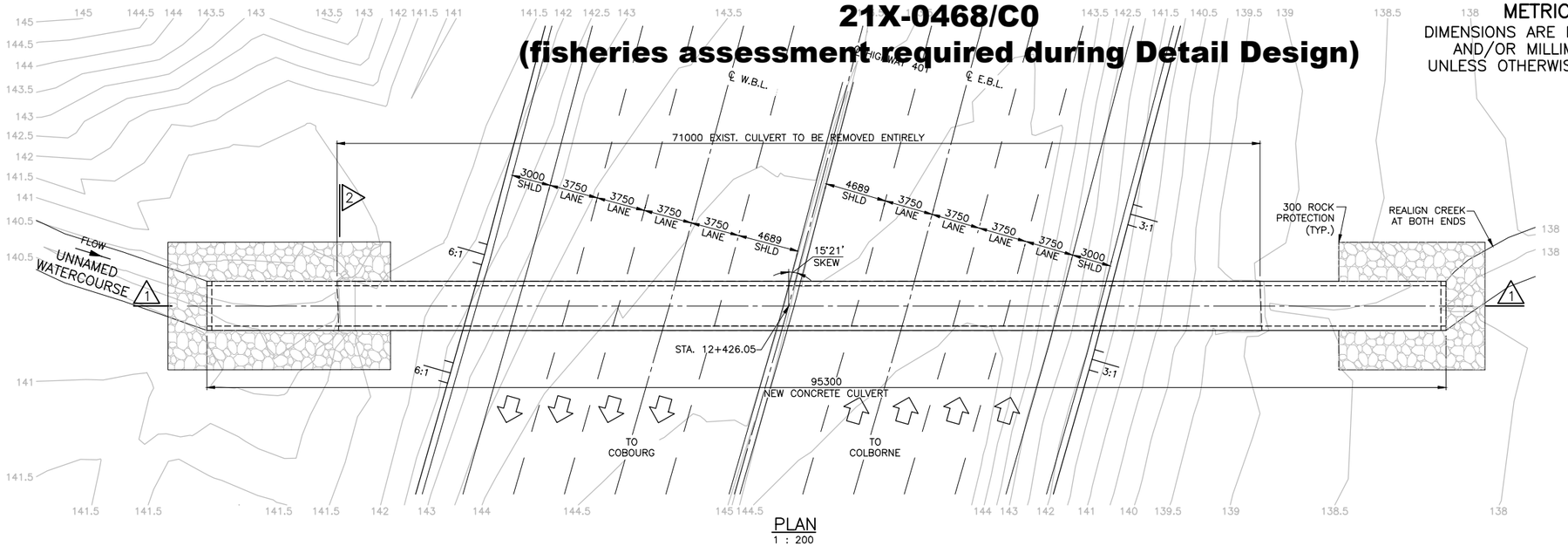
METRIC
DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE SHOWN

HWY 401
CONT
WP 4060-11-00

UNKNOWN WATERCOURSE REPLACEMENT
PRELIMINARY GENERAL ARRANGEMENT

SHEET
.

Stantec



PLAN
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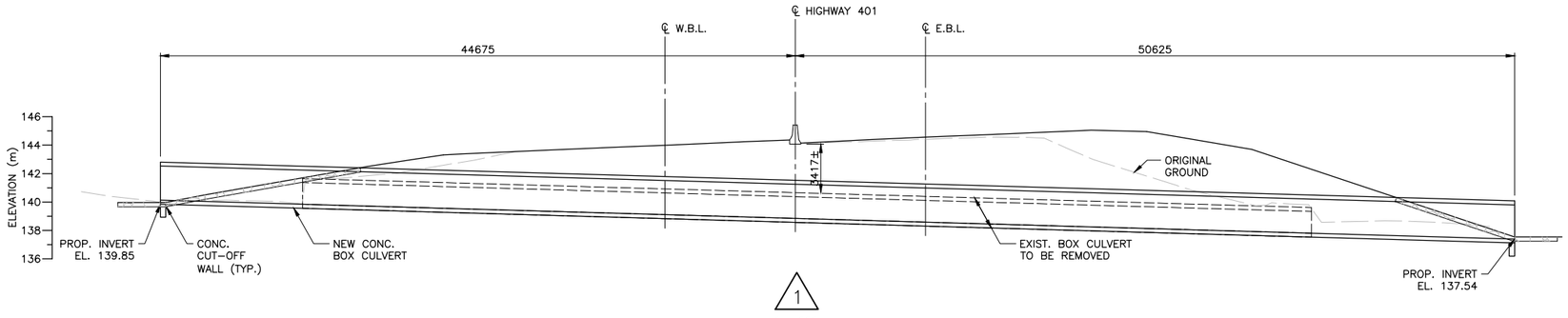

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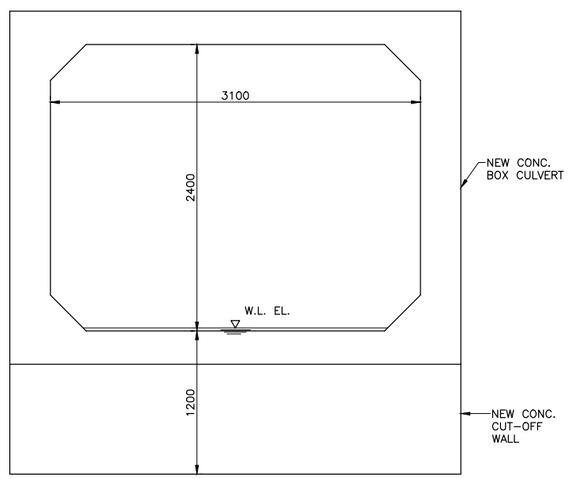


2
1 : 25

GENERAL NOTES

1. CLASS OF CONCRETE:
   30 MPa UNLESS OTHERWISE SPECIFIED
2. CLEAR COVER TO REINFORCING STEEL:
   BOTTOM OF BOTTOM SLAB 100±20
   REMAINDER 60±10
   UNLESS OTHERWISE SPECIFIED
3. REINFORCING STEEL:
   REINFORCING STEEL SHALL BE GRADE 500W UNLESS OTHERWISE SPECIFIED.
   TENSION LAP LENGTHS NOT INDICATED ON THE CONTRACT DRAWINGS SHALL BE CLASS B.
   BAR HOOKS SHALL HAVE STANDARD HOOK DIMENSIONS USING MINIMUM BEND DIAMETERS, WHILE STIRRUPS AND TIES SHALL HAVE MINIMUM HOOK DIMENSIONS. ALL HOOKS SHALL BE IN ACCORDANCE WITH THE STRUCTURAL STANDARD DRAWING SS12-1, UNLESS INDICATED OTHERWISE.
4. CONSTRUCTION
   THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, DETAILS AND ELEVATIONS OF THE EXISTING STRUCTURE THAT ARE RELEVANT TO THE WORK SHOWN ON THE DRAWINGS PRIOR TO COMMENCEMENT OF THE THE WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER AND THE PROPOSED ADJUSTMENT OF THE WORK REQUIRED TO SUIT THE EXISTING STRUCTURE SHALL BE SUBMITTED FOR APPROVAL.
   NO TACK WELDING SHALL BE PERMITTED TO FABRICATE OR ASSEMBLE REINFORCING STEEL CAGES, UNLESS APPROVED BY THE DESIGN ENGINEER.
   DEBRIS FROM STRUCTURE REMOVALS SHALL BE PREVENTED FROM ENTERING THE WATERCOURSE.
   BACKFILL SHALL BE PLACED SIMULTANEOUSLY BEHIND BOTH CONCRETE WALLS KEEPING THE HEIGHT OF THE BACKFILL APPROXIMATELY THE SAME. AT NO TIME SHALL THE DIFFERENCE IN ELEVATION BE GREATER THAN 500m.
   THE CONTRACTOR SHALL ISOLATE THE WORK AREA FROM THE WATERCOURSE FLOW AND COMPLETE ALL WORK IN THE DRY.

DRAWING NOT TO BE SCALED
100 mm ON ORIGINAL DRAWING

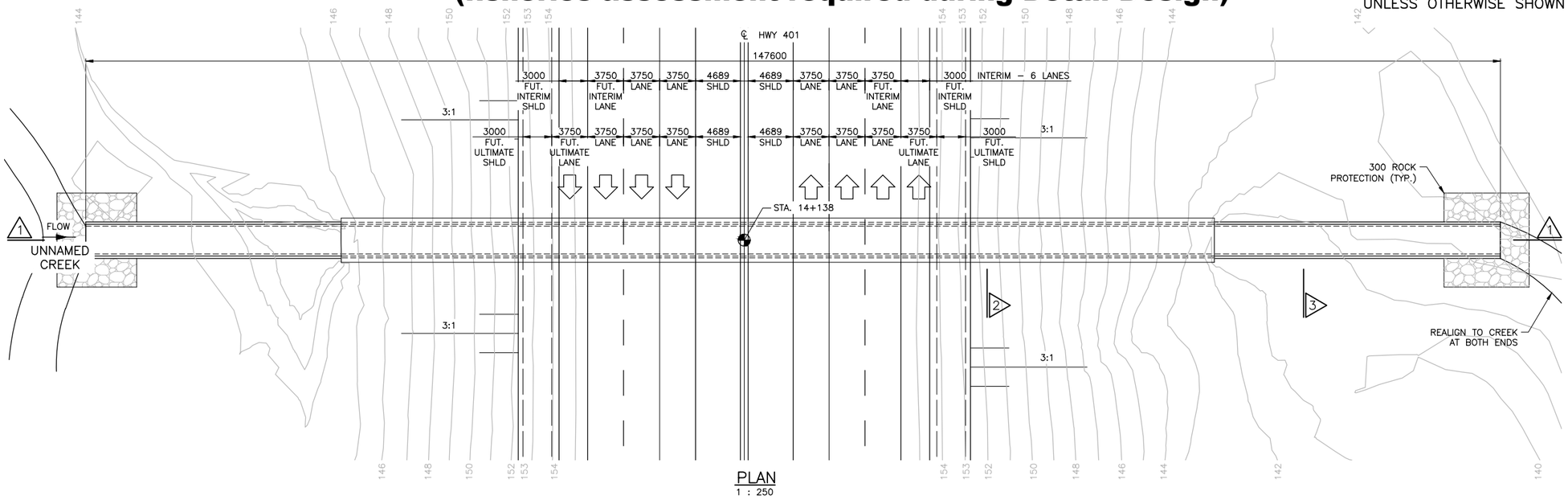
REVISIONS		
DATE	BY	DESCRIPTION

DESIGN	CHK	CODE CHBDC-2019	LOAD CL-625-ONT	DATE	OCT 2021	
DRAWN A.P.	CHK F.S.A.	SITE 21X-0468/C	STRUCT	SCHEME	DWG.	P1

165001090-21-468C-P1.DWG Oct 20 2021

21X-0469/C0
(fisheries assessment required during Detail Design)

METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN



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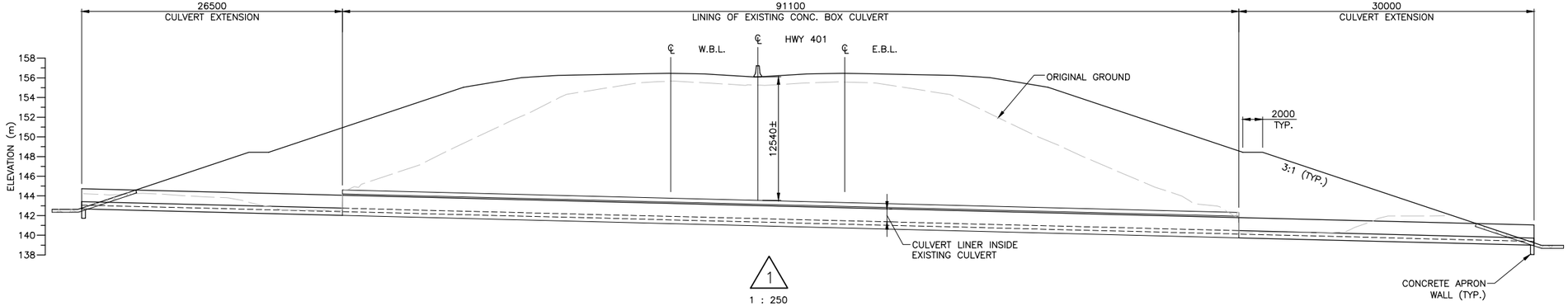

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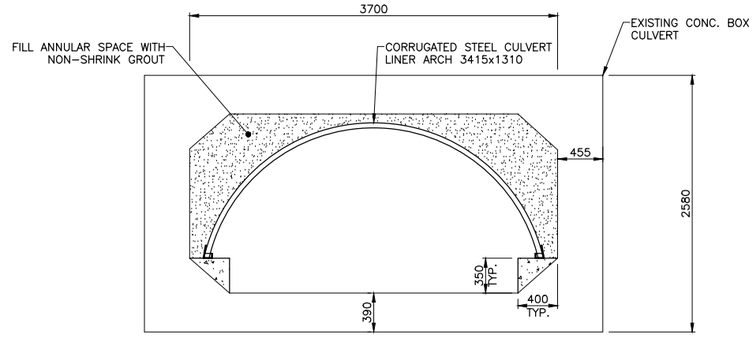
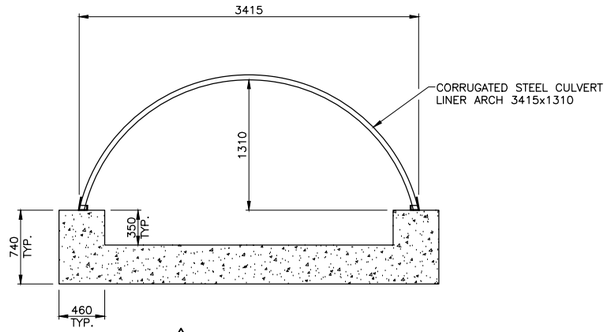


2 LINING
1 : 30



3 EXTENSION
1 : 30

DRAWING NOT TO BE SCALED
100 mm ON ORIGINAL DRAWING

HWY 401
CONT
WP 4060–11–00

UNNAMED CULVERT
REPLACEMENT\REHABILITATION
PRELIMINARY
GENERAL ARRANGEMENT

SHEET
.

Stantec

GENERAL NOTES

1. CLASS OF CONCRETE: 5 MPa NON–SHRINK GROUT
   30 MPa REMAINDER
2. CLEAR COVER TO REINFORCING STEEL
   BOTTOM OF BOTTOM SLAB 100±20
   REMINDER 60±10
3. REINFORCING STEEL:
   REINFORCING STEEL SHALL BE GRADE 500W UNLESS OTHERWISE SPECIFIED.
   TENSION LAP LENGTHS NOT INDICATED ON THE CONTRACT DRAWINGS SHALL BE CLASS B.
   BAR HOOKS SHALL HAVE STANDARD HOOK DIMENSIONS USING MINIMUM BEND DIAMETERS, WHILE STIRRUPS AND TIES SHALL HAVE MINIMUM HOOK DIMENSIONS. ALL HOOKS SHALL BE IN ACCORDANCE WITH THE STRUCTURAL STANDARD DRAWING SS12–1, UNLESS INDICATED OTHERWISE.
4. CULVERT LINER
   THE CULVERT LINER AND EXTENSION SHALL CONSIST OF A CORRUGATED STEEL TUNNEL LINER PLATE ARCH WITH MINIMUM PLATE THICKNESS OF 5mm. THE LINER, BOLTS, AND FOOTING CHANNEL SHALL BE GALVANIZED.
5. CONSTRUCTION
   THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, DETAILS AND ELEVATIONS OF THE EXISTING STRUCTURE THAT ARE RELEVANT TO THE WORK SHOWN ON THE DRAWINGS PRIOR TO COMMENCEMENT OF THE WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE CONTRACT ADMINISTRATOR AND THE PROPOSED ADJUSTMENT OF THE WORK REQUIRED TO MATCH THE EXISTING STRUCTURE SHALL BE SUBMITTED FOR APPROVAL.
   THE CONTRACTOR SHALL ISOLATE WORK AREAS FROM THE WATERCOURSE FLOW AT THE CULVERT AS REQUIRED TO PERFORM ALL WORK IN THE DRY.

LEGEND

– NON–SHRINK GROUT
– NEW CONCRETE
– ROCK PROTECTION

REVISIONS	DATE	BY	DESCRIPTION

DESIGN		CHK	CODE CHBDC–2019	LOAD CL–625–ONT	DATE	AUG 2021
DRAWN B.G.	CHK F.S.A.	SITE 21X–0469/C0	STRUCT	SCHEME	DWG.	P1

165001090–21–469C–P1P2.DWG Jul 23 2021

21X-0270/C0
(Unnamed Tributary 04)

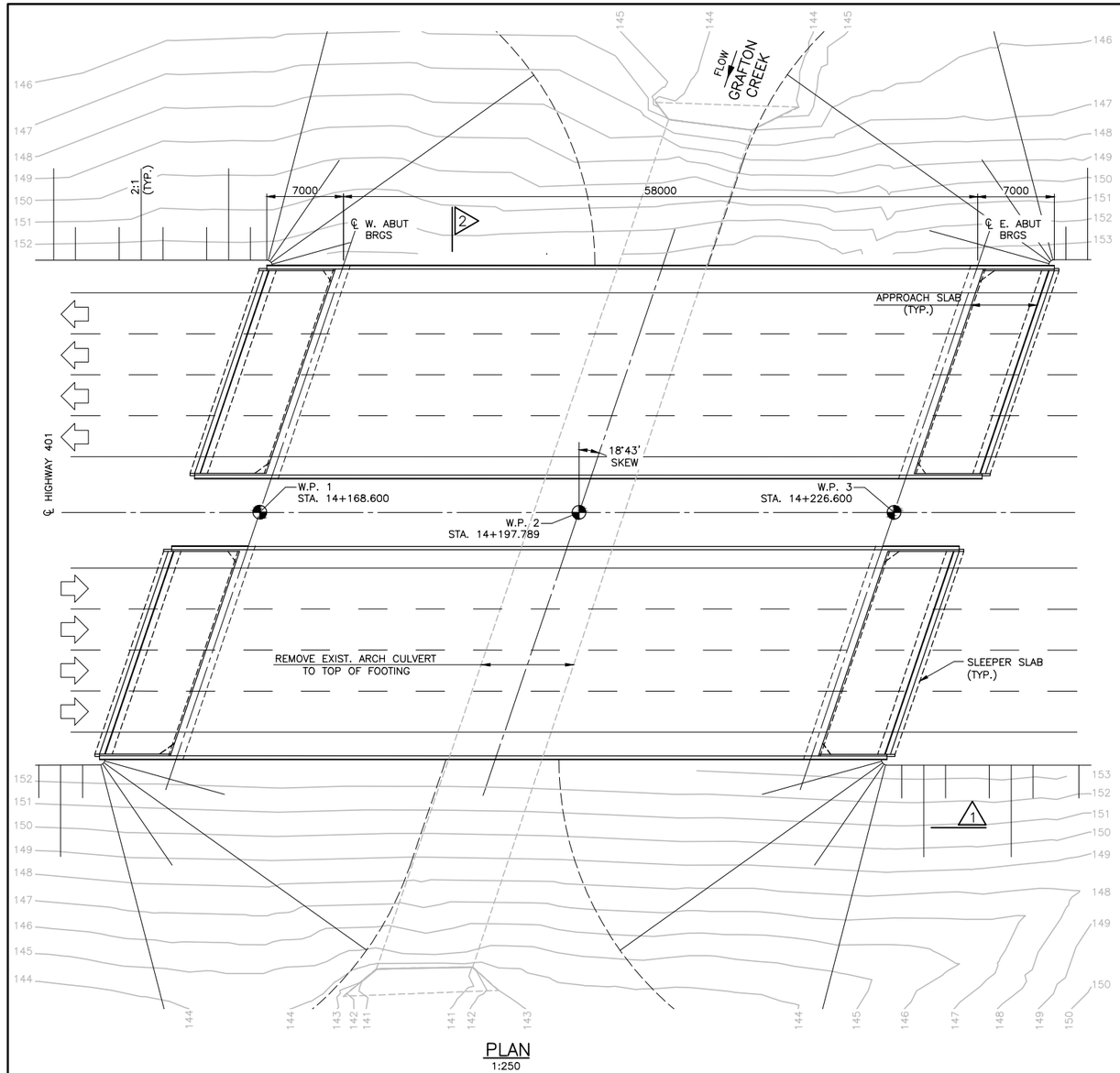
METRIC
DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE SHOWN

HWY 401
CONT
WP 4060-11-00

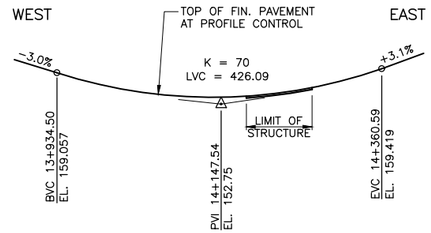
GRAFTON CREEK BRIDGE REPLACEMENT
PRELIMINARY
GENERAL ARRANGEMENT

SHEET
.

Stantec



PLAN
1:250



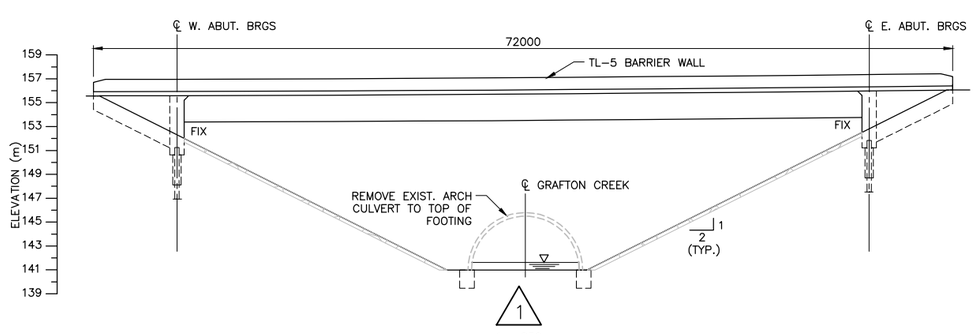
PROFILE OF HIGHWAY 401
N.T.S.

GENERAL NOTES

1. CLASS OF CONCRETE:
   30 MPa UNLESS OTHERWISE NOTED.
2. CLEAR COVER TO REINFORCING STEEL
   DECK TOP 70±20
   BOTTOM 40±10
   REMAINDER 70±20 UNLESS OTHERWISE NOTED.
3. REINFORCING STEEL:
   REINFORCING STEEL SHALL BE GRADE 500W UNLESS OTHERWISE SPECIFIED.
   STAINLESS REINFORCING STEEL SHALL BE TYPE 316LN, OR DUPLEX 2205 AND HAVE A MINIMUM YIELD STRENGTH OF 500 MPa.
   BAR MARKS WITH PREFIX 'S' DENOTE STAINLESS STEEL BARS.
   GLASS FIBRE REINFORCED POLYMER (GFRP) REINFORCING BARS SHALL BE GRADE III. THE NOMINAL DIAMETER, TENSILE MODULUS OF ELASTICITY AND GUARANTEED MINIMUM TENSILE STRENGTH SHALL BE AS SPECIFIED IN THE CONTRACT DOCUMENTS.
   BAR MARKS WITH PREFIX GIII DENOTE GRADE III GLASS FIBRE REINFORCED POLYMER BARS.
   TENSION LAP LENGTHS NOT INDICATED ON THE CONTRACT DRAWINGS SHALL BE CLASS B.
   BAR HOOKS SHALL HAVE STANDARD HOOK DIMENSIONS USING MINIMUM BEND DIAMETERS, WHILE STIRRUPS AND TIES SHALL HAVE MINIMUM HOOK DIMENSIONS. ALL HOOKS SHALL BE IN ACCORDANCE WITH THE STRUCTURAL STANDARD DRAWING SS112-1, UNLESS INDICATED OTHERWISE.
4. CONSTRUCTION
   THE CONTRACTOR SHALL ESTABLISH THE BEARING SEAT ELEVATIONS BY DEDUCTING THE ACTUAL BEARING THICKNESSES FROM THE TOP OF BEARING ELEVATIONS. IF THE ACTUAL BEARING THICKNESSES ARE DIFFERENT FROM THOSE GIVEN WITH THE BEARING DESIGN DATA, THE CONTRACTOR SHALL ADJUST THE REINFORCING STEEL TO SUIT.
   BACKFILL BEHIND ABUTMENTS SHALL NOT BE PLACED UNTIL THE DECK HAS REACHED A STRENGTH OF 25 MPa.
   BACKFILL SHALL BE PLACED SIMULTANEOUSLY BEHIND BOTH CONCRETE ABUTMENTS KEEPING THE HEIGHT OF THE BACKFILL APPROXIMATELY THE SAME. AT NO TIME SHALL THE DIFFERENCE IN ELEVATION BE GREATER THAN 500mm.

LEGEND

W.P. – DENOTES WORKING POINT
T/A – DENOTES TOP OF ASPHALT



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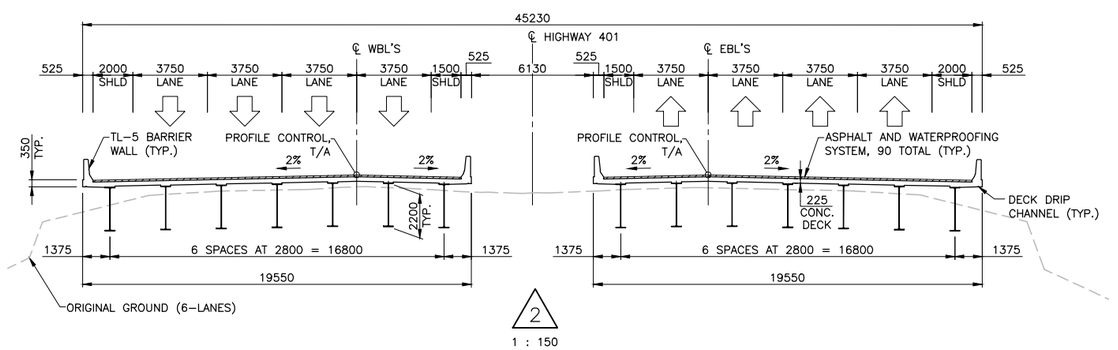

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DRAWING NOT TO BE SCALED
100 mm ON ORIGINAL DRAWING

REVISIONS			
	DATE	BY	DESCRIPTION

DESIGN		CHK	CODE CHBDC-2019	LOAD CL-625-ONT	DATE	AUG 2022
DRAWN	H.L.	CHK F.S.A.	SITE 21X-0270/B0	STRUCT	SCHEME	DWG. P1

165001090-21-270-R1-P1.DWG Aug 12 2022

21X-0470/C0
(Unnamed Tributary 06)

NORTH
FOR CONSTRUCTION

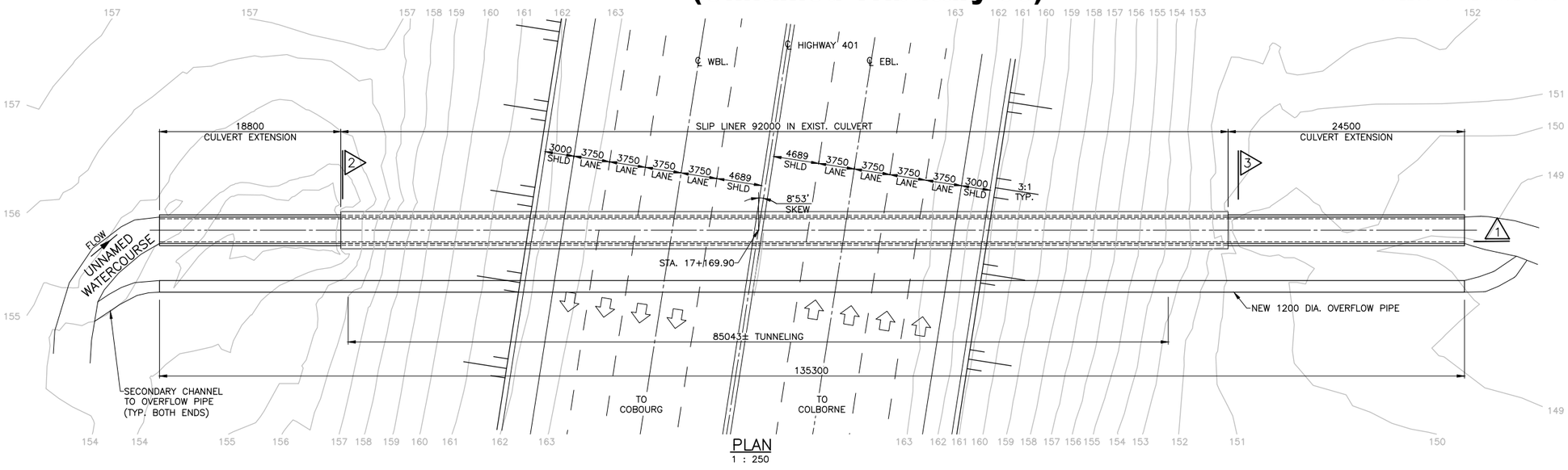
METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

HWY 401
CONT
WP 4060-11-00

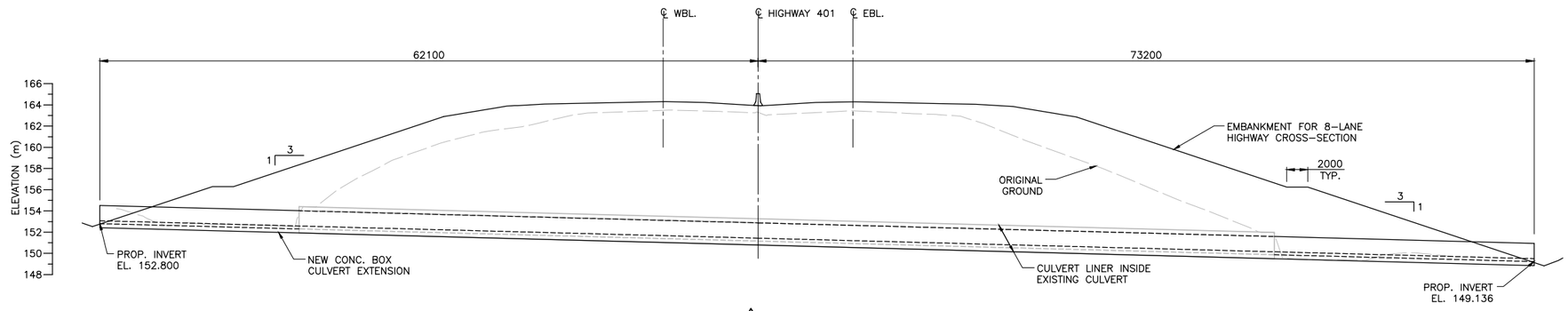
NORTHUMBERLAND CULVERT REPLACEMENT
PRELIMINARY
GENERAL ARRANGEMENT

SHEET

Stantec



PLAN
1 : 250



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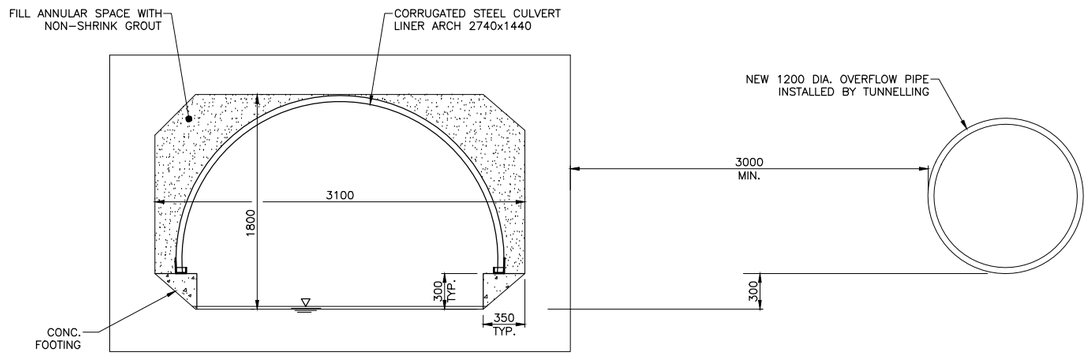
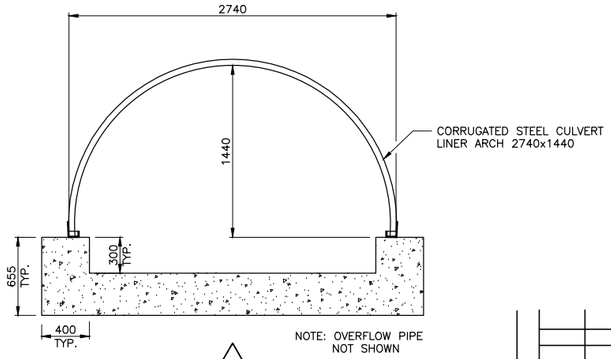


2
1 : 25



NOTE: OVERFLOW PIPE
NOT SHOWN

3
1 : 25

GENERAL NOTES

1. CLASS OF CONCRETE:
   30 MPa UNLESS OTHERWISE SPECIFIED
2. CLEAR COVER TO REINFORCING STEEL:
   BOTTOM OF BOTTOM SLAB 100±20
   REMAINDER 60±10
   UNLESS OTHERWISE SPECIFIED
3. REINFORCING STEEL:
   REINFORCING STEEL SHALL BE GRADE 500W UNLESS OTHERWISE SPECIFIED.
   TENSION LAP LENGTHS NOT INDICATED ON THE CONTRACT DRAWINGS SHALL BE CLASS B.
   BAR HOOKS SHALL HAVE STANDARD HOOK DIMENSIONS USING MINIMUM BEND DIAMETERS, WHILE STIRRUPS AND TIES SHALL HAVE MINIMUM HOOK DIMENSIONS. ALL HOOKS SHALL BE IN ACCORDANCE WITH THE STRUCTURAL STANDARD DRAWING SS12-1, UNLESS INDICATED OTHERWISE.
4. CONSTRUCTION
   THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, DETAILS AND ELEVATIONS OF THE EXISTING STRUCTURE THAT ARE RELEVANT TO THE WORK SHOWN ON THE DRAWINGS PRIOR TO COMMENCEMENT OF THE THE WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER AND THE PROPOSED ADJUSTMENT OF THE WORK REQUIRED TO SUIT THE EXISTING STRUCTURE SHALL BE SUBMITTED FOR APPROVAL.
   DEBRIS FROM STRUCTURE REMOVALS SHALL BE PREVENTED FROM ENTERING THE WATERCOURSE.
   THE CONTRACTOR SHALL ISOLATE THE WORK AREA FROM THE WATERCOURSE FLOW AND COMPLETE ALL WORK IN THE DRY.

DRAWING NOT TO BE SCALED
100 mm ON ORIGINAL DRAWING

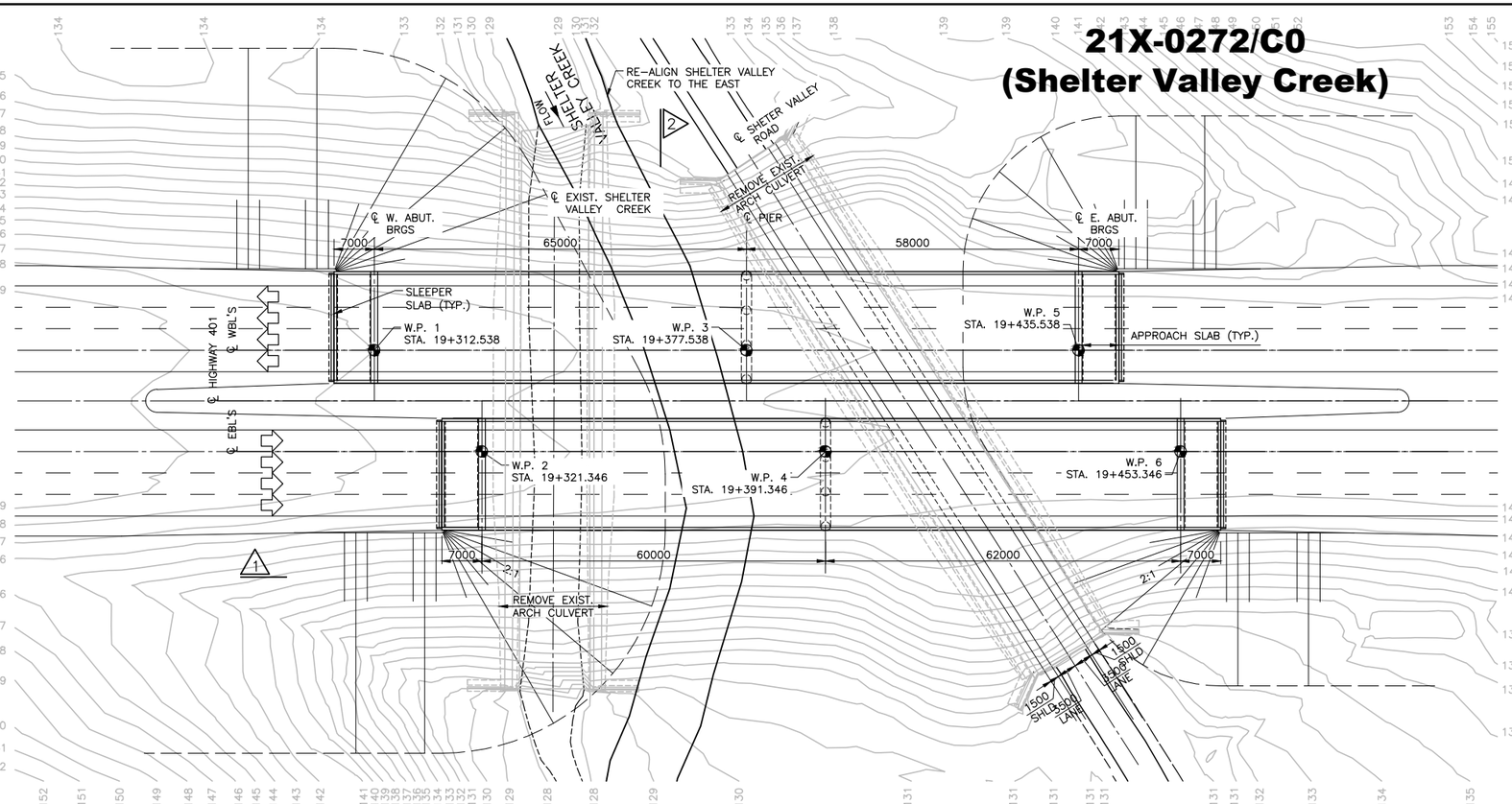
REVISIONS		
DATE	BY	DESCRIPTION

DESIGN	CHK	CODE CHBDC-2019	LOAD CL-625-ONT	DATE	AUG 2021
DRAWN H.L.	CHK F.S.A.	SITE 21X-0470/C	STRUCT	SCHEME	DWG. P3

165001090-21-470C-P1_P2.DWG Jul 23 2021

NORTH
FOR CONSTRUCTION

21X-0272/C0
(Shelter Valley Creek)



PLAN
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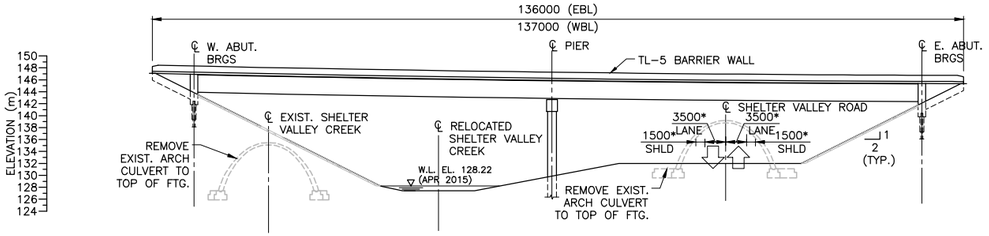
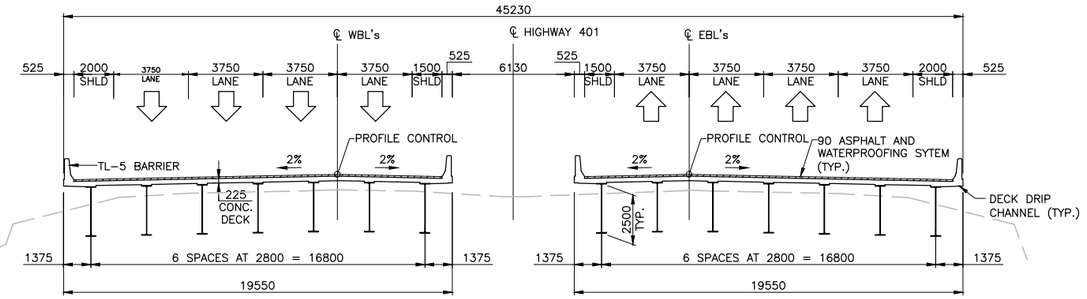


* DIMENSIONS SHOWN ARE MEASURED PERPENDICULAR TO SHELTER VALLEY ROAD

1
1 : 500



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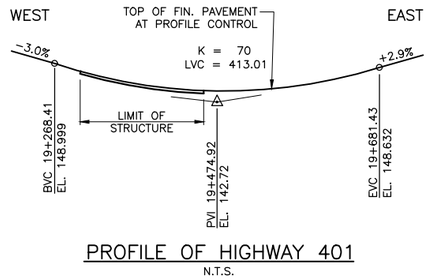


PROFILE OF HIGHWAY 401
N.T.S.

METRIC
DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE SHOWN

HWY 401
CONT
WP 4060-11-00

SHELTER VALLEY BRIDGE REPLACEMENT
PRELIMINARY-ALT7
GENERAL ARRANGEMENT

SHEET
.

Stantec

GENERAL NOTES

1. CLASS OF CONCRETE:
   30 MPa UNLESS OTHERWISE NOTED.
2. CLEAR COVER TO REINFORCING STEEL
   DECK TOP 70±20
   BOTTOM 40±10
   REMAINDER 70±20 UNLESS OTHERWISE NOTED.
3. REINFORCING STEEL:
   REINFORCING STEEL SHALL BE GRADE 500W UNLESS OTHERWISE SPECIFIED.
   STAINLESS REINFORCING STEEL SHALL BE TYPE 316LN, OR DUPLEX 2205 AND HAVE A MINIMUM YIELD STRENGTH OF 500 MPa.
   BAR MARKS WITH PREFIX 'S' DENOTE STAINLESS STEEL BARS.
   GLASS FIBRE REINFORCED POLYMER (GFRP) REINFORCING BARS SHALL BE GRADE III. THE NOMINAL DIAMETER, TENSILE MODULUS OF ELASTICITY AND GUARANTEED MINIMUM TENSILE STRENGTH SHALL BE AS SPECIFIED IN THE CONTRACT DOCUMENTS.
   BAR MARKS WITH PREFIX GIII DENOTE GRADE III GLASS FIBRE REINFORCED POLYMER BARS.
   TENSION LAP LENGTHS NOT INDICATED ON THE CONTRACT DRAWINGS SHALL BE CLASS B.
   BAR HOOKS SHALL HAVE STANDARD HOOK DIMENSIONS USING MINIMUM BEND DIAMETERS, WHILE STIRRUPS AND TIES SHALL HAVE MINIMUM HOOK DIMENSIONS. ALL HOOKS SHALL BE IN ACCORDANCE WITH THE STRUCTURAL STANDARD DRAWING SS112-1, UNLESS INDICATED OTHERWISE.
4. CONSTRUCTION
   THE CONTRACTOR SHALL ESTABLISH THE BEARING SEAT ELEVATIONS BY DEDUCTING THE ACTUAL BEARING THICKNESSES FROM THE TOP OF BEARING ELEVATIONS. IF THE ACTUAL BEARING THICKNESSES ARE DIFFERENT FROM THOSE GIVEN WITH THE BEARING DESIGN DATA, THE CONTRACTOR SHALL ADJUST THE REINFORCING STEEL TO SUIT.
   BACKFILL BEHIND ABUTMENTS SHALL NOT BE PLACED UNTIL THE DECK HAS REACHED A STRENGTH OF 25 MPa.
   BACKFILL SHALL BE PLACED SIMULTANEOUSLY BEHIND BOTH CONCRETE ABUTMENTS KEEPING THE HEIGHT OF THE BACKFILL APPROXIMATELY THE SAME. AT NO TIME SHALL THE DIFFERENCE IN ELEVATION BE GREATER THAN 500mm.

DRAWING NOT TO BE SCALED
100 mm ON ORIGINAL DRAWING

REVISIONS			
	DATE	BY	DESCRIPTION

DESIGN		CHK	CODE CHBDC-2019	LOAD CL-625-ONT	DATE	AUG 2022	
DRAWN	H.L.	CHK F.S.A.	SITE 21X-XXXX/B0	STRUCT	SCHEME	DWG.	P1

1231-272-273-P1-ALT7.DWG Aug 12 2022

21X-0576/C0
(Unnamed Tributary 09)

NORTH
FOR CONSTRUCTION

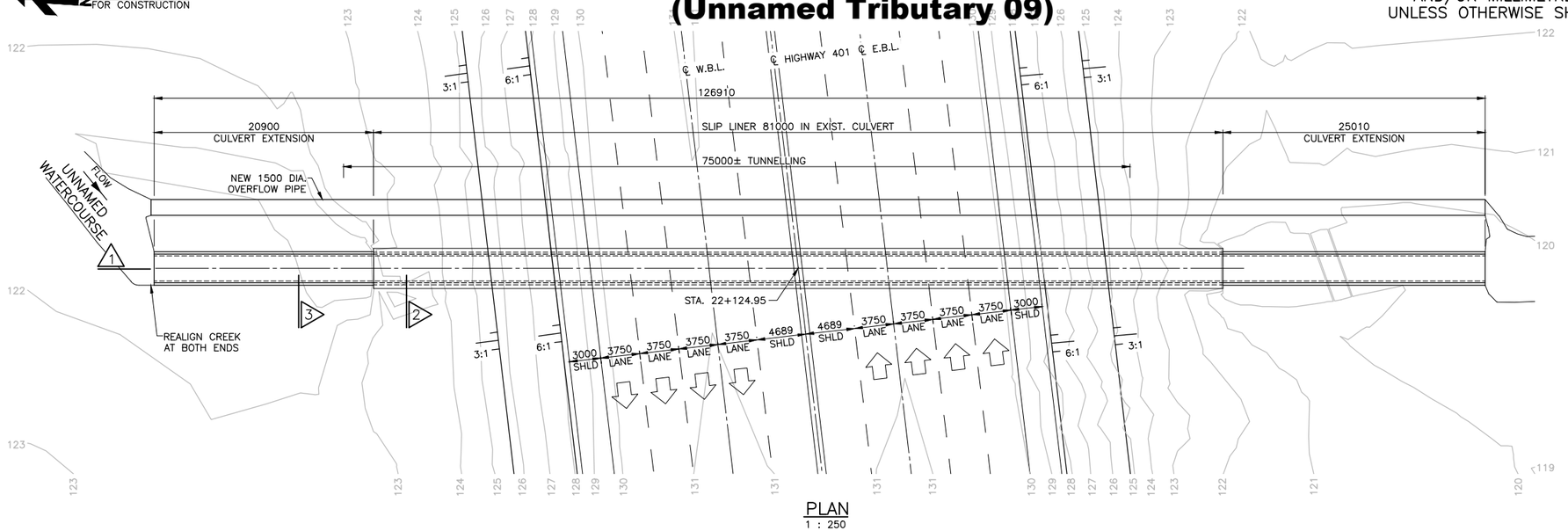
METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

HWY 401
CONT
WP 4060-11-00

BOYCE'S ROAD CULVERT REPLACEMENT
PRELIMINARY
GENERAL ARRANGEMENT

SHEET

Stantec



PLAN
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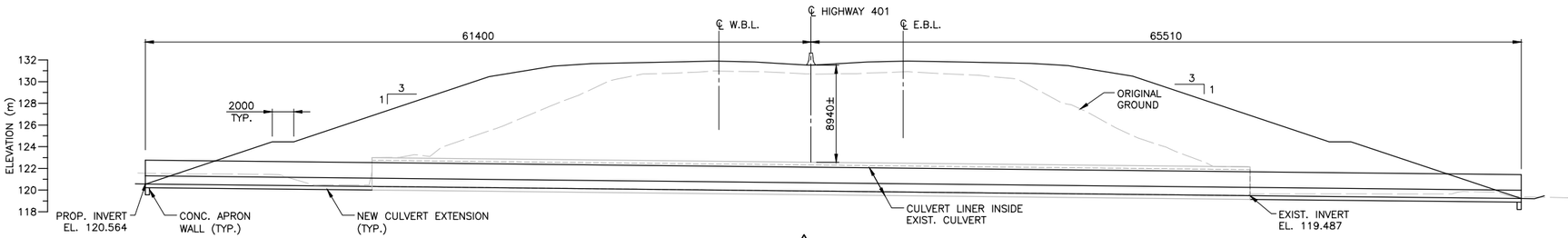

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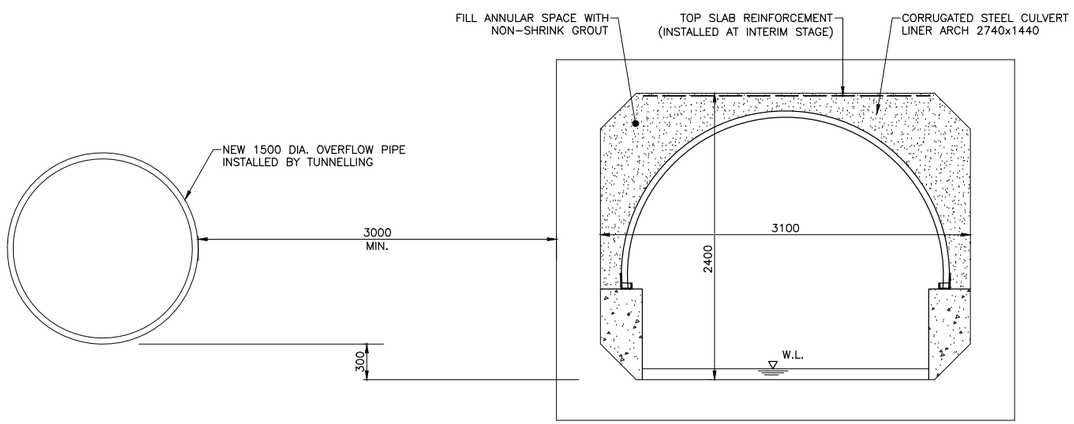

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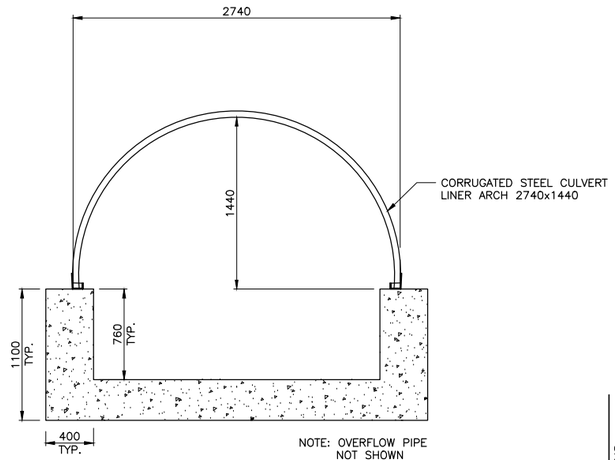

3
1 : 25

DRAWING NOT TO BE SCALED
100 mm ON ORIGINAL DRAWING

GENERAL NOTES

1. CLASS OF CONCRETE:
   30 MPa UNLESS OTHERWISE SPECIFIED
2. CLEAR COVER TO REINFORCING STEEL:
   BOTTOM OF BOTTOM SLAB 100±20
   REMAINDER 60±10
   UNLESS OTHERWISE SPECIFIED
3. REINFORCING STEEL:
   REINFORCING STEEL SHALL BE GRADE 500W UNLESS OTHERWISE SPECIFIED.
   TENSION LAP LENGTHS NOT INDICATED ON THE CONTRACT DRAWINGS SHALL BE CLASS B.
   BAR HOOKS SHALL HAVE STANDARD HOOK DIMENSIONS USING MINIMUM BEND DIAMETERS, WHILE STIRRUPS AND TIES SHALL HAVE MINIMUM HOOK DIMENSIONS. ALL HOOKS SHALL BE IN ACCORDANCE WITH THE STRUCTURAL STANDARD DRAWING SS12-1, UNLESS INDICATED OTHERWISE.
4. CONSTRUCTION
   THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, DETAILS AND ELEVATIONS OF THE EXISTING STRUCTURE THAT ARE RELEVANT TO THE WORK SHOWN ON THE DRAWINGS PRIOR TO COMMENCEMENT OF THE THE WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER AND THE PROPOSED ADJUSTMENT OF THE WORK REQUIRED TO SUIT THE EXISTING STRUCTURE SHALL BE SUBMITTED FOR APPROVAL.
   DEBRIS FROM STRUCTURE REMOVALS SHALL BE PREVENTED FROM ENTERING THE WATERCOURSE.
   THE CONTRACTOR SHALL ISOLATE THE WORK AREA FROM THE WATERCOURSE FLOW AND COMPLETE ALL WORK IN THE DRY.
5. CORRUGATED STEEL CULVERTS SHALL BE MULTI-PLATE OR TUNNEL LINER PLATE, AND BE GALVANIZED.

LEGEND

- NON-SHRINK GROUT
- NEW CONCRETE

REVISIONS		
DATE	BY	DESCRIPTION

DESIGN	CHK	CODE CHBDC-2019	LOAD CL-625-ONT	DATE	AUG 2021	
DRAWN A.P.	CHK F.S.A.	SITE 21X-0576/C0	STRUCT	SCHEME	DWG. P3	

165001090-21-576C-P3.DWG Jul 23 2021