Appendix R

Aquatic and Bat Habitat Surveys for McCraney Creek (2018)

Memo

To: Corporation of the Town of Oakville
1225 Trafalgar Road
Oakville, ON L6H 0H3

From: Daryl Rideout (Amec Foster Wheeler)

CC: Steve Chips (Amec Foster Wheeler)
David Sinke (Amec Foster Wheeler)
Neal Smith (Amec Foster Wheeler)

Ref: Amec Foster Wheeler TPB166047

Date: January 24, 2018

Re: **Aquatic and Bat Habitat Surveys for Proposed Channel Realignment of McCraney Creek North of Lakeshore Road to Rebecca Street.**

1.0 INTRODUCTION

To meet existing and future needs, the Town of Oakville is proposing roadway and intersection improvements for approximately 6.2 kilometers (km) of Lakeshore Road West from Mississaga Street to Dorval Drive (Attachment 1; Figure 1). Amec Foster Wheeler Environment & Infrastructure, a Division of Amec Foster Wheeler Americas Limited (Amec Foster Wheeler) was retained by the Town of Oakville to undertake the required Schedule 'C' Municipal Class Environmental Assessment (EA) for the proposed improvements to Lakeshore Road West. The proposed work includes; intersection improvements, provision of pedestrian and cycle facilities, urban design streetscape improvements, and the provision of other transit-related infrastructure.

Within the study area, Lakeshore Road West crosses four (4) permanent watercourses including McCraney Creek, which is located approximately 1.37 km west of Dorval Drive at the easternmost end of the Lakeshore Road West study area. During the preliminary design process for Lakeshore Road West road improvements, alternatives for replacement of the McCraney Creek structure were assessed and included an alternative to skew the replacement structure and/or realign the stream to accommodate a more direct flow path into the structure and reduce erosion in the immediate vicinity of the structure.

Correspondence with the Ministry of Natural Resources and Forestry (MNRF) was conducted during the EA background review, in which the MNRF indicated several aquatic and terrestrial species at risk (SAR) which have the potential to exist on site. Two bat species, Little Brown Myotis (*Myotis lucifugus*) and Northern Myotis (*Myotis septentrionalis*), both provincially listed as 'Endangered' under the *Endangered Species Act*, 2007 (ESA), were identified as having the potential to utilize treed habitat on site. The woodlot at McCraney Creek and Lakeshore Road has been identified as a Fresh-Moist Lowland Deciduous Forest, with common tree species including

Norway Maple, ashes and willows. Vegetation removals will be required to accommodate a potential structure skew and/or stream realignment upstream of the crossing. As such, an assessment of potential bat habitat (i.e. maternity roost areas) was conducted within the woodland north of the McCraney Creek crossing to determine the extent of impacts which may result from the proposed crossing skew and/or watercourse realignment.

This memorandum provides a summary of the aquatic and potential bat habitat existing conditions reported within the study area associated with the proposed creek realignment footprint, which may be up to 200 m in length upstream of Lakeshore Road towards Rebecca Street. The memo also identifies opportunities for aquatic habitat enhancement and vegetation improvement within the woodlot

2.0 METHODOLOGY

Amec Foster Wheeler biologists revisited the crossing of McCraney Creek at Lakeshore Road West on December 18th, 2017, to conduct surveys within the enlarged study area (Attachment 1, Figure 2 and 3) associated with the proposed creek realignment.

2.1 Aquatic Field Surveys

McCraney Creek was assessed for opportunities for fish habitat enhancement (i.e. fish passage barriers, areas exhibiting bank instability). The watercourse was assessed from approximately 50m upstream of Rebecca Street to Lakeshore Road West. Detailed mapping of areas requiring enhancement/rehabilitation was performed and key areas were geographically referenced using a handheld GPS. The GPS coordinates recorded marked the approximate areas of erosion as well as the approximate location of fish passage barriers found within the reach. The GPS coordinates were also used to map the approximate location of the watercourse within the woodlot. As the GPS coordinates are approximate, they should not be used for construction purposes. Photographic records are provided in a photographic log (Attachment 2).

2.2 Terrestrial Field Surveys

The woodlot was thoroughly surveyed by visual inspection for trees with cavities, cracks, knotholes and loose bark that may be suitable for a bat maternity roost. These trees may provide maternity roost habitat for Little Brown Myotis and Northern Myotis. All trees with a Diameter at Breast Height (DBH) of 10 centimetres (cm) or greater were identified, georeferenced, and any other pertinent information was noted.

Maple and Oak trees provide potential maternity roost sites for Tri-colored Bat (*Perimyotis subflavus*), which typically roost in clusters of dead leaves. Although not identified by MNRF for this site, this species occurs throughout Southern Ontario. As such, the presence of maple and oak trees with or without dead leaf clusters was also noted.

It should be noted that the late seasonality of the study reduced the ability to assess the presence of dead leaf clusters, as the dead leaf clusters are dynamic habitat feature which are temporary,

occurring seasonally. The identification of preferred tree species within the woodlot provides an indication of whether potential habitat is present on site.

3.0 RESULTS

3.1 Aquatic Habitat

A depiction of the key features and habitat mapping for the site are provided in (Attachment 1; Figure 2). Upstream of Lakeshore Road West, McCraney Creek maintains a relatively uniform wetted width of approximately 6 m as it meanders through the woodlot. Flows are slow and is mainly comprised of flats with a few small sets of riffles where rocky substrate is present in shallower areas.

Immediately downstream of Rebecca Street, there is a vertical drop where the poured concrete slab foundation of the crossing meets the natural stream substrate. Flows at the outlet of the crossing structure are concentrated on the easternmost side of the crossing where they flow over this structure, as a large accumulation of woody debris and leaves blocks the majority of the channel at the westernmost side of the crossing outlet. The vertical drop from the poured cement slab to the natural stream substrate is approximately 0.5 m high on the west and 0.8 m high on the east. This area of concentrated flow exhibits a higher velocity then the surrounding watercourse and laminar flow is present. As such, this feature is a barrier to the upstream movement of small-bodied fish. The effects of this barrier would be exacerbated during periods of high flow.

Immediately downstream of this area past the southwest headwall of the Rebecca Street crossing, erosion is evident along the east bank of the watercourse, spanning a length of approximately 10.3 m. Unstable soil and exposed roots are evident up to a height of approximately 1 m. The west bank was stable in this area. No further erosion was observed on the easternmost bank approaching the Lakeshore Road ROW.

Downstream of this area, erosion became evident on the west bank of the watercourse, with exposed soils and bare roots evident spanning along approximately 31.5 m of channel. The unstable banks were approximately 1m high. As the watercourse approaches the tight bend at Lakeshore Road, the erosion becomes more severe with the greatest amounts of erosion found at the crest of the turn where McCraney Creek transitions its flow from a southerly direction to an easterly direction as it reaches the Lakeshore Road ROW. The bank height, through this area reaches a maximum height of approximately 2.5 m.

At the inlet of the Lakeshore Road crossing, an area of exposed limestone is evident. At the downstream end of the limestone, a poured concrete pad is evident. This was potentially installed for the protection of a conduit or other underground infrastructure. A step/face of concrete is present at the edge of the concrete pad, where the pad stops and meets with the natural channel bed downstream. Laminar flow was evident flowing over the limestone bedrock and concrete pad during surveys previously conducted in June, 2017. During a revisit of the site in September 2017 as well as the December 18th, 2017 surveys, flows were significantly reduced, exposing much of the limestone and resulting in shallow laminar flow. As such, it is believed that this area may pose

a barrier to fish movement. Removal of this feature represents a potential enhancement opportunity.

3.2 Terrestrial Habitat

Four trees with potentially suitable maternity roost sites for Little Brown and Northern Myotis were recorded within the study area, as well as one additional tree in a backyard immediately adjacent to the study area. Cavities noted included: two knotholes in willow species; two woodpecker cavities in a willow and a dead tree of unknown species; and a natural cavity in a rotting dead tree. The rotting dead tree also had loose bark which may provide roosting habitat. The data for potentially suitable roosting trees is summarised in Table 1 and mapped locations provided in Figure 3 (Attachment 1).

Table 1 – Potentially suitable roost trees for Little Brown and Northern Myotis

Tree Number	Tree Species	Diameter at Breast Height (cm)	Height	Habitat Attributes	Decay Status	Easting	Northing	Notes
22	Willow species	55	Canopy height	Knot Hole (5 m high)	Declining live tree	606091	4808924	Small knothole
23	Willow species	41	Just below canopy	Knot Hole (3 m high)	Very recently dead, no canopy, bark intact, branches intact	606081	4808926	Small knothole
24	Unknown dead tree	unknown	Just below canopy	Cavity (6 m high), Loose Bark	Recently dead, bark peeling, only large branches intact	606063	4808943	In backyard on private property, lots of loose bark
25	Willow species	61	Canopy height	Cavity (8 m high)	Healthy Live Tree	606024	4808902	Woodpecker nest hole. Several other large trunks without visible cavities
26	Unknown dead tree	22	Well below canopy	Cavity (3 m high)	Recently dead, bark peeling, only large branches intact	606040	4808894	Likely a woodpecker feeding cavity

Potentially suitable trees for Tri-colored Bat found included fourteen Norway Maple (*Acer platanoides*) and one Manitoba Maple (*Acer negundo*). No dead leaf clusters were observed on any of these trees. This data is summarised in Table 2 and mapped in Figure 3 (Attachment 1).

Table 2 – Potentially suitable roost trees for Tri-colored Bat

Tree Number	Tree Species	Tree Status	Diameter at Breast Height (cm)	Tree Location	Easting	Northing
1	Norway Maple	Live	22	Forest Edge	606063	4808896
2	Norway Maple	Live	24	Forest Edge	606059	4808907
3	Norway Maple	Live	35	Forest Edge	606059	4808907
4	Norway Maple	Live	33	Forest Edge	606054	4808900
5	Norway Maple	Live	26	Forest Edge	606054	4808900
6	Norway Maple	Live	21	Forest Edge	606054	4808900
7	Norway Maple	Live	22	Forest Edge	606054	4808900
8	Manitoba Maple	Live	31	Forest Edge	606075	4808895
9	Norway Maple	Live	20	Forest Edge	606030	4808888
10	Norway Maple	Live	40	Forest Edge	606048	4808912
11	Norway Maple	Live	49	Forest Edge	606049	4808924
12	Norway Maple	Live	35	Forest Edge	606058	4808919
13	Norway Maple	Live	23	Forest Edge	606058	4808919
14	Norway Maple	Live	21	Forest Edge	606066	4808934
15	Norway Maple	Live	15	Forest Edge	606065	4808935
16	Norway Maple	Live	18	Forest Edge	606064	4808925
17	Norway Maple	Live	20	Forest Edge	606068	4808924
18	Norway Maple	Live	36	Forest Edge	606077	4808920
19	Norway Maple	Live	22	Forest Edge	606080	4808926
20	Norway Maple	Live	23	Forest Edge	606081	4808926
21	Norway Maple	Live	39	Forest Edge	606081	4808926

4.0 ENHANCEMENT OPPORTUNITIES

4.1 Aquatic Habitat

Enhancement measures which could be utilized to improve aquatic habitat as a component of the crossing replacement/extension works and stream realignment include:

- Select a new replacement structure that will improve fish passage:
    - Consider flow velocities and select the structure, grading, etc. that will ensure the crossing structure is passable by fish species known to inhabit the watercourse which include smaller-bodied species which may move through the watercourse seasonally based on stream temperatures and are capable of low/moderate swim speeds (i.e. Longnose Dace 0.65 meters per second (m/sec) and White Sucker 0.45-0.60 m/sec). Rainbow Trout, a sensitive cool/coldwater species has also been found within the watercourse and is likely migrating through the study area to reach upstream breeding grounds. This species can move up to 5.70 m/sec (Peake, S.J, 2008).
    - Naturalize the substrate within the ROW. Consider modifying the limestone bedrock and poured concrete slab substrate at the upstream end of the ROW to improve fish passage within the ROW by creating a low flow channel.
- Incorporate natural channel design for the channel realignment to improve bank stability, and create flow morphology diversity;
- Following the completion of the construction activities, vegetate margins under the structure where light penetration is sufficient for growth;
- Enhance riparian vegetation in areas adjacent to and upstream of the crossing through restoration and revegetation following the completion of the construction activities to increase: shading to the watercourse; maintain cooler water temperatures and increase bank stability / provide scour protection;
- Enhance stormwater drains at Lakeshore Road which outlet to McCraney Creek to ensure the flows are thermally regulated and of good quality; and
- Protect natural channel areas and habitats which provide refuge and potential spawning habitat.

4.2 Terrestrial Habitat

Enhancement measures which could be utilized to improve bat habitat as a component of the stream realignment include:

- Selection of native species for vegetation restoration including selection of native trees able to outcompete invasive trees and shrubs present such as Norway Maple. Recommended trees may include Black Maple (*Acer nigrum*) and Red Maple (*Acer rubrum*);

- Provide forest management to monitor the site to encourage the growth of native tree species and maintain existing large trees, as well as potentially controlling invasive species such as Norway Maple and Multiflora Rose;

- Install bat roosting boxes to provide additional roosting habitat for SAR bats.

5.0 CLOSURE

This document is intended for the exclusive use of Amec Foster Wheeler and Town of Oakville representatives only for the purpose of Project compliance with contract specifications and regulatory requirements, and for the definition of any recommended SAR mitigation/management procedures. The findings, interpretations and recommendations as outlined herein are based on the expertise of Amec Foster Wheeler and their representative specialists based on the observations and information available at the time of document preparation and on the assumptions and interpretation of the Project contract and any other regulatory compliance requirements.

Sincerely,

Amec Foster Wheeler Environment & Infrastructure,
a Division of Amec Foster Wheeler Americas Limited

DRAFT

Daryl Rideout, B.Sc.
Environmental Biologist and Species at Risk Specialist

6.0 REFERENCES

Peake, S.J. 2008. Swimming performance and behaviour of fish species endemic to Newfoundland and Labrador: A literature review for the purpose of establishing design and water velocity criteria for fishways and culverts. Can. Manuscr. Rep. Fish. Aquat. Sci. 2843: v + 52p.

ATTACHMENT 1

Figure 1 – Project Location

Figure 2 – Aquatic Study Area and Areas Requiring Restoration

Figure 3 – Potentially Suitable Bat Maternity Roost Trees

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LEGEND

- Approximate Study Area
- Watercourse
- Wetland
- Waterbody

NOTES:
- Background imagery from Google Earth.
- Topographic features extracted from LIO, MNRF.
* Scale when printed 8.5 x 11 in. letter size

0 0.6 1.2 1.8 2.4 3 Kilometres

Datum & Projection: NAD 1983 UTM Zone 17N

OAKVILLE

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TOWN OF OAKVILLE
LAKESHORE ROAD WEST IMPROVEMENTS

Project Location

PROJECT N°: TPB166147 | **FIGURE 1**

SCALE: 1:40,000 | DATE: September 2017

605960 605980 606000 606020 606040 606060 606080 606100 606120 606140

4808940 4808920 4808900 4808880 4808860

APPROXIMATE BANKFULL WIDTH
MCCRANEY CREEK
Eroded Area
BARRIERS TO FISH PASSAGE
REBECCA ST
Eroded Area
MCCRANEY CREEK
APPROXIMATE BANKFULL WIDTH
BARRIERS TO FISH PASSAGE
LAKESHORE RD W
Eroded Area
MCCRANEY CREEK
4TH LINE

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LEGEND

- McCraney Creek Bankfull (approximate)
- Fish Barrier
- Erosion Areas [1]
- Flow Direction
- Contours 1 m Interval

0 20 40 60 80 100 Metres

OVERVIEW

500 Meters

NOTES:
[1] Approximate location of Erosion areas (accuracy of ~ 3m)

Datum & Projection: NAD 1983 UTM Zone 17N

OAKVILLE

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TOWN OF OAKVILLE
LAKESHORE ROAD WEST IMPROVEMENTS

Aquatic Areas and Erosion Areas

PROJECT Nº: TPB166147 | **FIGURE 2**

SCALE: 1:500 | DATE: December 2017

605960 605980 606000 606020 606040 606060 606080 606100 606120 606140

4808940 4808920 4808900 4808880 4808860

MCCRANEY CREEK

REBECCA ST

LAKESHORE RD W

4TH LINE

LEGEND

Trees - Potential Tri-coloured Bat Habitat (labelled with ID)

- Manitoba Maple
- Norway Maple

Trees - Potential Maternity Roost Tree for Little Brown Myotis and Northern Myotis (labelled with ID)

- Willow species
- Unknown species (dead)

- McCraney Creek
- Flow Direction

OVERVIEW

500 Meters

0 20 40 60 80 100 Metres

NOTES:

Datum & Projection: NAD 1983 UTM Zone 17N

OAKVILLE

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TOWN OF OAKVILLE
LAKESHORE ROAD WEST IMPROVEMENTS

Bat Habitat Features

PROJECT Nº: TPB166147 | **FIGURE 3**

SCALE: 1:500 | DATE: December 2017

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ATTACHMENT 2

AQUATIC HABITAT PHOTOGRAPHIC LOG

Photo 1: *Within Rebecca Street ROW facing downstream. Note large area of debris at west downstream end of crossing forcing flows to move over cement ledge on east.*

Photo 2: *Cement slab present at downstream end of Rebecca Street crossing is a barrier to small-bodied fish.*

Photo 3: *Photo of stable west bank at Rebecca Street.*

Photo 4: *Photo of stable east bank at Rebecca Street.*

Photo 5: *Erosion evident at east bank immediately downstream of Rebecca Street retaining wall. Area spans approximately 10.3 m in length. Height of erosion averages at 1 meter.*

Photo 6: *Erosion evident at east bank immediately downstream of Rebecca Street retaining wall.*

Photo 7: *Downstream banks stabilize before erosion area present on west bank.*

Photo 8: *Erosion evident on west bank for approximately 31.5 meters prior to reaching retaining wall for Lakeshore Road.*

Photo 9: *Erosion evident at west bank on approach to Lakeshore Road ROW.*

Photo 10: *Close up or exposed roots present on west bank.*

Photo 11: *Bank nearest the retaining wall structure experiencing significant erosion. Erosion of bank reaches approximately 2.5 meters in height at its highest point.*

Photo 12: *Emergency works were completed in the summer of 2017 to repair the severely eroded bank present directly west of the Lakeshore Road crossing.*

Photo 13: *Upstream end of Lakeshore Road crossing. Note some erosion is also evident at northeast bank, where exposed sandy soils are present.*

Photo 14: *Standing within Lakeshore Road ROW facing upstream. Note large area of limestone present to right (east) of structure inlet. Cement slab located at left may pose a potential barrier to smaller-bodied fish during periods of high flow.*

ATTACHMENT 3

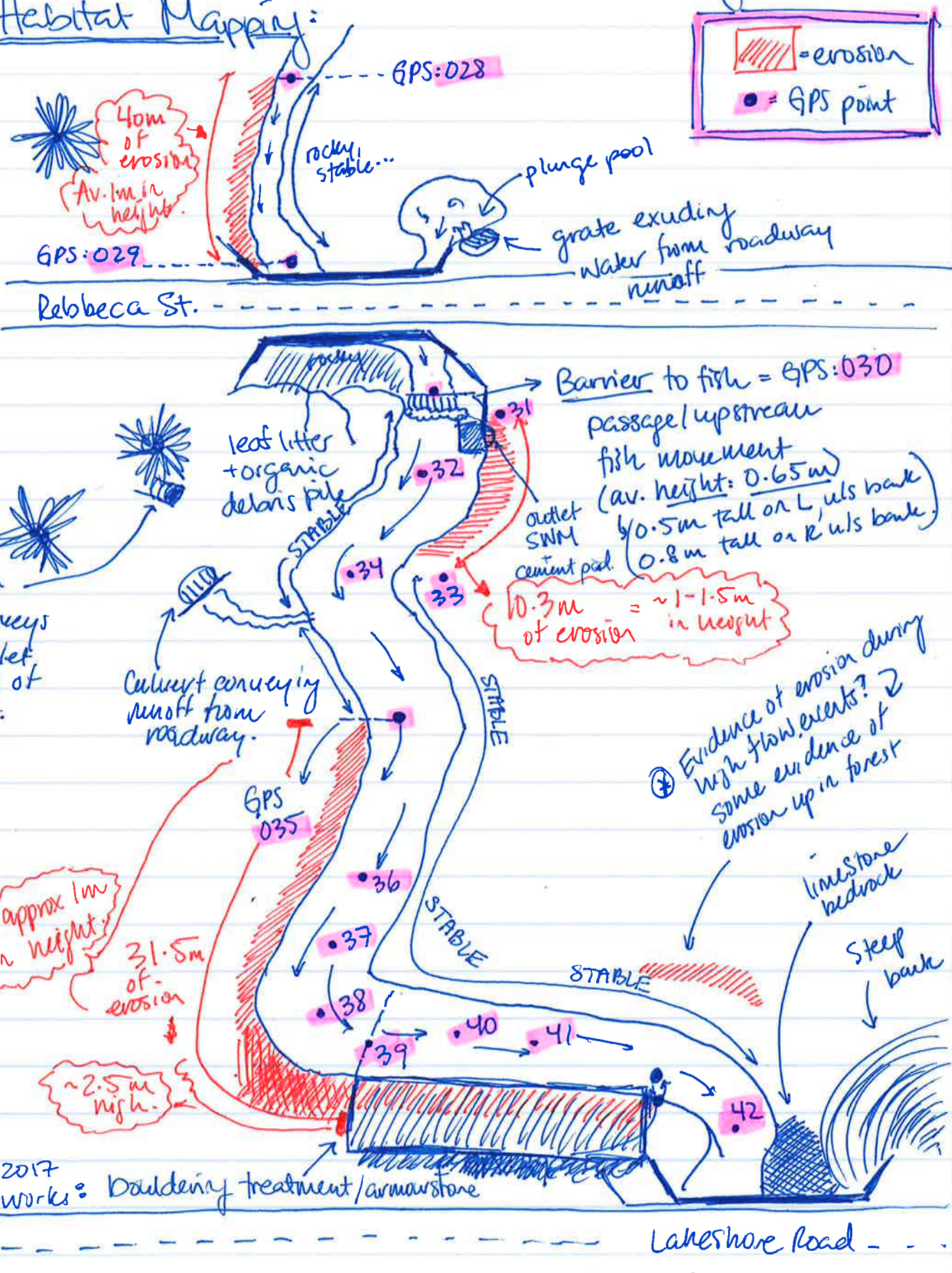
FIELD NOTES

Dec 18, 2017

Lakeshore Road Project:

McCraney Creek - Aquatic Habitat Survey:

Habitat Mapping:



Suitable Maternity Roost Trees for Little Brown Myotis/Northern Myotis

Include all live and dead standing trees ≥10cm dbh with loose or naturally exfoliating bark, cavities, hollows or cracks.

Project Name:

Survey Date(s): Dec 18, 2017

Site Name: Lakeshore Rd.

Observers(s): RO/M

ELC Ecosite: Norway Maple Lowland Forest

Snag Density (snags/ha):

	Tree #	Tree Species ID	dbh (cm)	Height Class[1]	Snag attributes (check all that apply)	Easting	Northing	Notes Cavity Height
22	288	Salix	55	2	☒ cavity[2] ☐ loose bark ☐ crack ☒ knot hole ☐ other snag within 10m? ☒ Decay Class 1-3?[3] 2	0606091	4808924	5 m, knot hole, small
23	289	Salix	41	3	☒ cavity ☐ loose bark ☐ crack ☒ knot hole ☐ other snag within 10m? ☒ Decay Class 1-3? 2	0606081	4808926	3 m, knot hole, small
24	290	Dead	7	3	☒ cavity ☒ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ Decay Class 1-3?	0606063	4808943	on private property, backyard lots of l. bark
25	291	Salix	61	2	☐ cavity ☐ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ Decay Class 1-3?	0606024	4808902	w-p cavity, 8 m high several trunks
26	292	dead	22	4	☐ cavity ☐ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ Decay Class 1-3?	0606040	4808814	w-p cavity/feeding hole? 3 m high
					☐ cavity ☐ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ Decay Class 1-3?			
					☐ cavity ☐ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ Decay Class 1-3?			
					☐ cavity ☐ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ Decay Class 1-3?			
					☐ cavity ☐ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ Decay Class 1-3?			
					☐ cavity ☐ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ Decay Class 1-3?			
					☐ cavity ☐ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ Decay Class 1-3?			
					☐ cavity ☐ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ Decay Class 1-3?			

[1] **Height Class**: 1 = Dominant (above canopy); 2 = Co-dominant (canopy height); 3 = Intermediate (just below canopy); 4 = suppressed (well below canopy)

[2] The approx. height of the cavity should be noted.

[3] **Decay Class**: 1 = Healthy, live tree; 2 = Declining live tree, part of canopy lost; 3 = Very recently dead, bark intact, branches intact.

Suitable Maternity Roost Trees for Tri-colored Bat

Include all oak trees ≥10cm dbh (if present). If oaks are absent, include maples ≥10cm dbh IF dead/dying leaf clusters are present; and maples >25cm dbh if no dead/dying leaf clusters are present.

Project Name: Lakeshore R2. Survey Date(s): Dec 18 2017

Site Name: Observer(s): RDm

ELC Ecosite: Norway Maple Lowland Forest Wintertime survey

	Tree#	Tree Species ID	Tree Status (live/dead)	Dbh (cm)	Tree Structural & Locational Attributes (check all that apply)	Easting	Northing	Notes
1	293	ACERPLA	L	22	☐ dead/dying leaf cluster ☐ cavity ☐ open area/forest gap ☒ forest edge ☐ interior ☐ preferred tree species within 10m?	0606063	4808896	
2 3	294	ACERPLA	L	24 35	☐ dead/dying leaf cluster ☐ cavity ☐ open area/forest gap ☒ forest edge ☐ interior ☐ preferred tree species within 10m?	0606059	4808907	2 trees
4 5 6 7	295	ACERPLA	L	33 26 21 22	☐ dead/dying leaf cluster ☐ cavity ☐ open area/forest gap ☒ forest edge ☐ interior ☐ preferred tree species within 10m?	0606054	4808900	4 trees
8	296	ACERNEG	L	31	☐ dead/dying leaf cluster ☐ cavity ☐ open area/forest gap ☒ forest edge ☐ interior ☐ preferred tree species within 10m?	0606075	4808895	
9	297	ACERPLA	L	20	☐ dead/dying leaf cluster ☐ cavity ☐ open area/forest gap ☒ forest edge ☐ interior ☐ preferred tree species within 10m?	0606030	4808888	
10	298	ACERPLA	L	40	☐ dead/dying leaf cluster ☐ cavity ☐ open area/forest gap ☐ forest edge ☐ interior ☐ preferred tree species within 10m?	0606048	4808912	
11	299	ACERPLA	L	44	☐ dead/dying leaf cluster ☐ cavity ☐ open area/forest gap ☐ forest edge ☐ interior ☐ preferred tree species within 10m?	0606049	4808924	
12 13	300	ACERPLA	L	35 23	☐ dead/dying leaf cluster ☐ cavity ☐ open area/forest gap ☐ forest edge ☐ interior ☐ preferred tree species within 10m?	0606058	4808919	2 trees

Suitable Maternity Roost Trees for Tri-colored Bat

Include all oak trees ≥10cm dbh (if present). If oaks are absent, include maples ≥10cm dbh IF dead/dying leaf clusters are present; and maples >25cm dbh if no dead/dying leaf clusters are present.

Project Name:

Survey Date(s): Dec 18/2017

Site Name: Lakeshore Rd.

Observer(s): RDM

ELC Ecosite: Norway Maple Lowland Forest

Winterime Survey

	Tree#	Tree Species ID	Tree Status (live/dead)	Dbh (cm)	Tree Structural & Locational Attributes (check all that apply)	Easting	Northing	Notes
14	302	ACERPLA	L	21 ~~15~~	☐ dead/dying leaf cluster ☐ cavity ☐ open area/forest gap ☒ forest edge ☐ interior ☐ preferred tree species within 10m?	0606086	4808934	
15	301	ACERPLA	L	15	☐ dead/dying leaf cluster ☐ cavity ☐ open area/forest gap ☒ forest edge ☐ interior ☐ preferred tree species within 10m?	0606065	4808935	
16	303	ACERPLA	L	18	☐ dead/dying leaf cluster ☐ cavity ☐ open area/forest gap ☒ forest edge ☐ interior ☐ preferred tree species within 10m?	0606064	4808925	
17	304	ACERPLA	L	20	☐ dead/dying leaf cluster ☐ cavity ☐ open area/forest gap ☒ forest edge ☐ interior ☐ preferred tree species within 10m?	0606068	4808924	
18	305	ACRPLA	L	36	☐ dead/dying leaf cluster ☐ cavity ☐ open area/forest gap ☒ forest edge ☐ interior ☐ preferred tree species within 10m?	0606077	4808920	
19 20	306	ACERPLA	L	22 23	☐ dead/dying leaf cluster ☐ cavity ☐ open area/forest gap ☒ forest edge ☐ interior ☐ preferred tree species within 10m?	0606080	4808926	2 trees
21	307	ACERPLA	L	39	☐ dead/dying leaf cluster ☐ cavity ☐ open area/forest gap ☒ forest edge ☐ interior ☐ preferred tree species within 10m?	0606081	4808926	
					☐ dead/dying leaf cluster ☐ cavity ☐ open area/forest gap ☐ forest edge ☐ interior ☐ preferred tree species within 10m?			