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Bats, Bats, and More Bats!

Stream Restoration and SWM Pond Rehabilitation Works under a
Species-at-Risk Overall Benefit Permit

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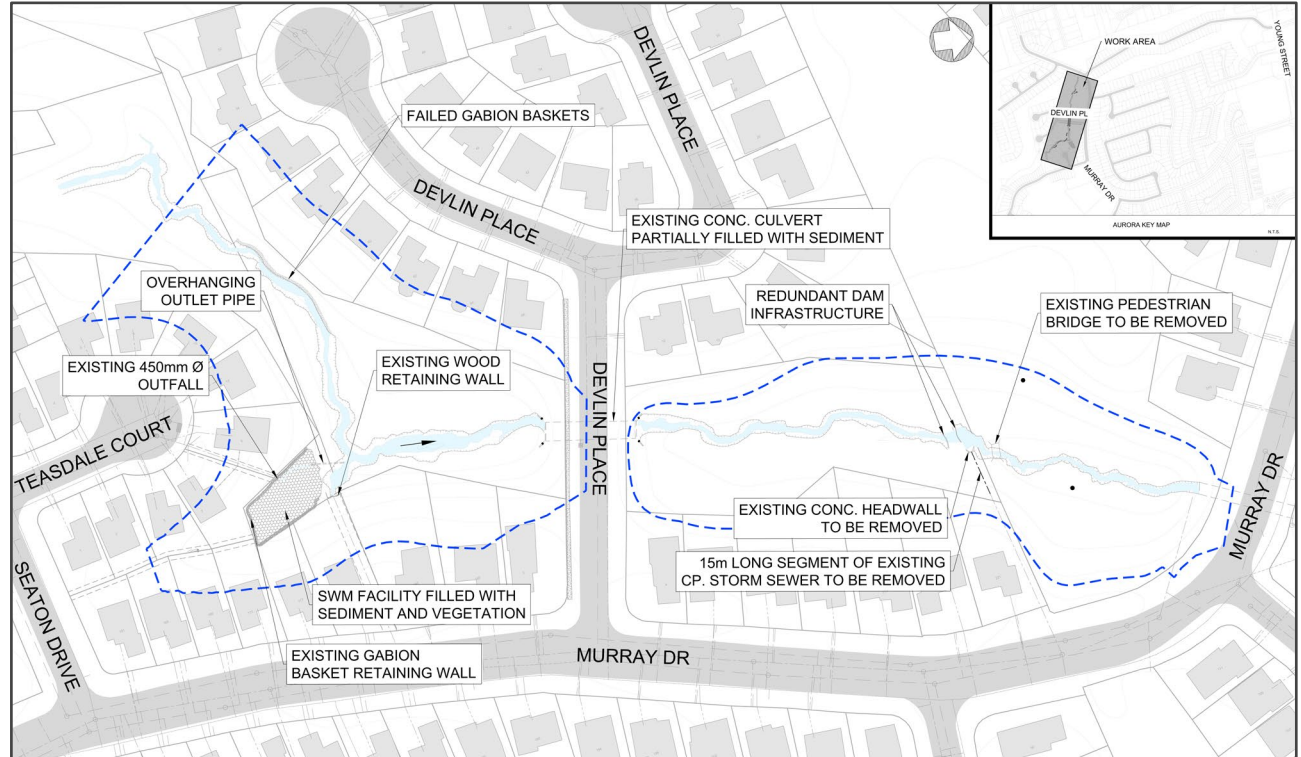
CONSTRUCTION MITIGATION REQUIREMENTS

05

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Project Location

- Project area is located on an upper tributary of Tannery Creek within the Town of Aurora
- Highly constrained urban setting, bordered by residential development on all sides





Slumping Failure Of Gabion Baskets



Accumulation of Sediment in Culvert



Sediment Laden Pond



Hanging Pond Outlet Culvert

Project Overview & Background

- Numerous degraded and failed erosion control structures
- Accumulation of sediment within culvert, restricting flow conveyance
- Highly degraded stormwater management pond filled with sediment and vegetation
- Hanging corrugated metal pipe pond outlet culvert



Project Objectives

- Complete a design that follows the recommendations from the Town's **SMMP** and **TCFRS** within the project area
- Resolve risks to public infrastructure, private property, and local ecology
- Improve storm water quality and conveyance within the project limits
- Provide an **overall benefit** to Species at Risk (SAR) bat habitats in the project area



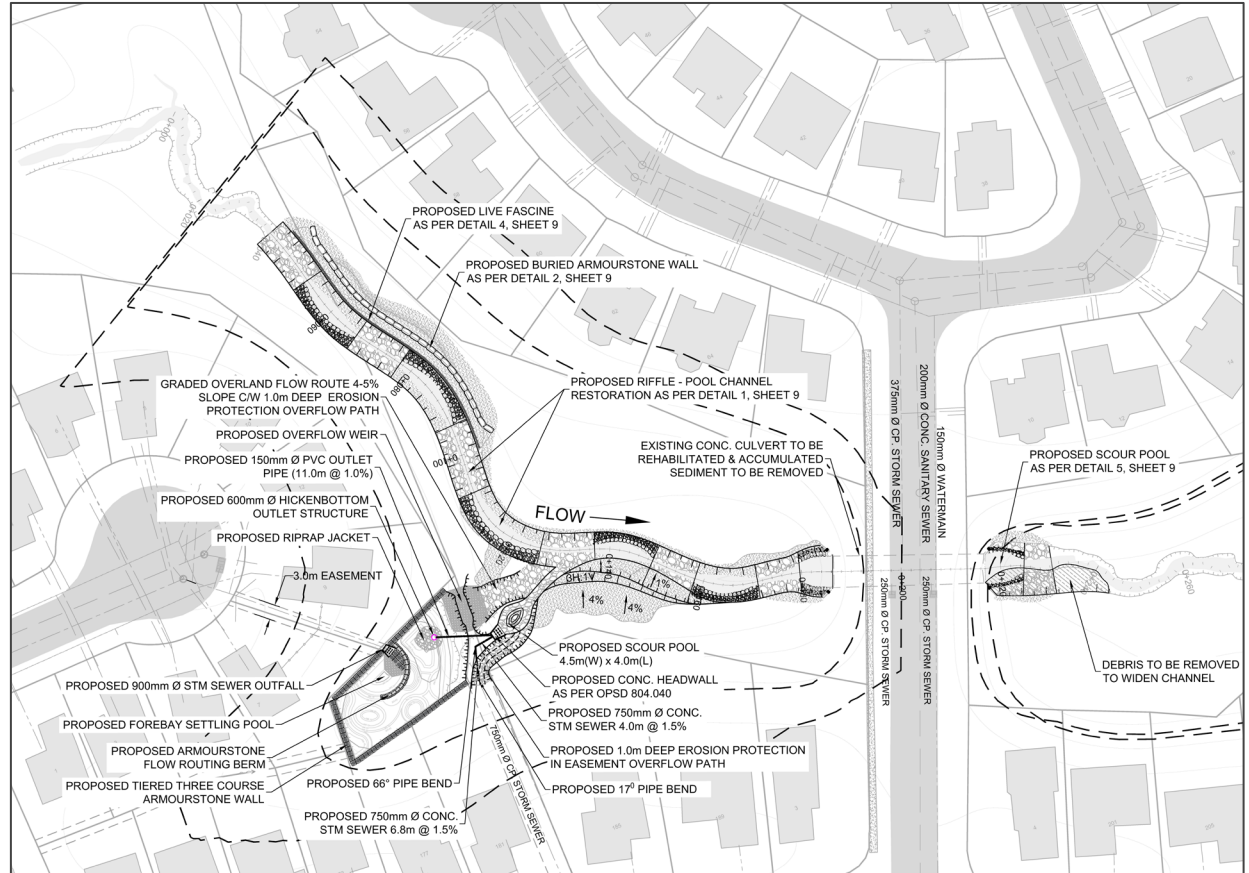
Mature Vegetation in Close Proximity to Creek



Flow Restriction Posed by Failed Gabion Baskets

Proposed Design

- 200 metres of naturalized channel design to re-establish riffle pool morphology
- Removal of sediment within culvert to improve flow conveyance
- Rehabilitation of stormwater management pond through removal of sediment and deteriorated infrastructure



Species at Risk Permitting

- Field inventories identified a significant number of trees within the study area that have SAR bat habitat potential
- Removal of thirteen (**x13**) potentially suitable roost trees required, and impacts to two (**x2**) additional trees
- Using Anabat Swift detectors, an acoustic monitoring survey was carried out indicating the presence of:
 1. **Little Brown Myotis**
 2. **Northern Long-eared Myotis**
 3. **Tri-colored Bat**
- All three species are classified as Endangered under the Endangered Species Act



**Acoustic Monitoring Set-Up Location
Near Channel**



**Acoustic Monitoring Set-Up Location
within Existing Pond**

Acoustic Monitoring Station Locations



- Legend**
- Study Area
 - Estimated Area of Impact
 - Bat Acoustic Station
 - Suitable Myotis Habitat
 - Suitable Perimyotis Habitat
 - Invented Trees
 - Eastern White Cedar Hedges

- ELC**
- Anthropogenic (ANTH)
 - Fresh - Moist White Cedar Coniferous Forest (FOC4-1)
 - Fresh - Moist Willow Lowland Deciduous Forest (FOD7-3)
 - Forb Mineral Meadow Marsh (MAM2-10)
 - Goldenrod Forb Meadow (MEFM1-1 [CUM1])
 - Willow Mineral Deciduous Swamp (SWDM4-1 [SWD4])

Figure 1
Species at Risk Bat Habitat Assessment

Date: August 2021
Author: KB
Project: UTM_2016_176
Project: 9612



Source: Esri, DeLorme, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Species at Risk

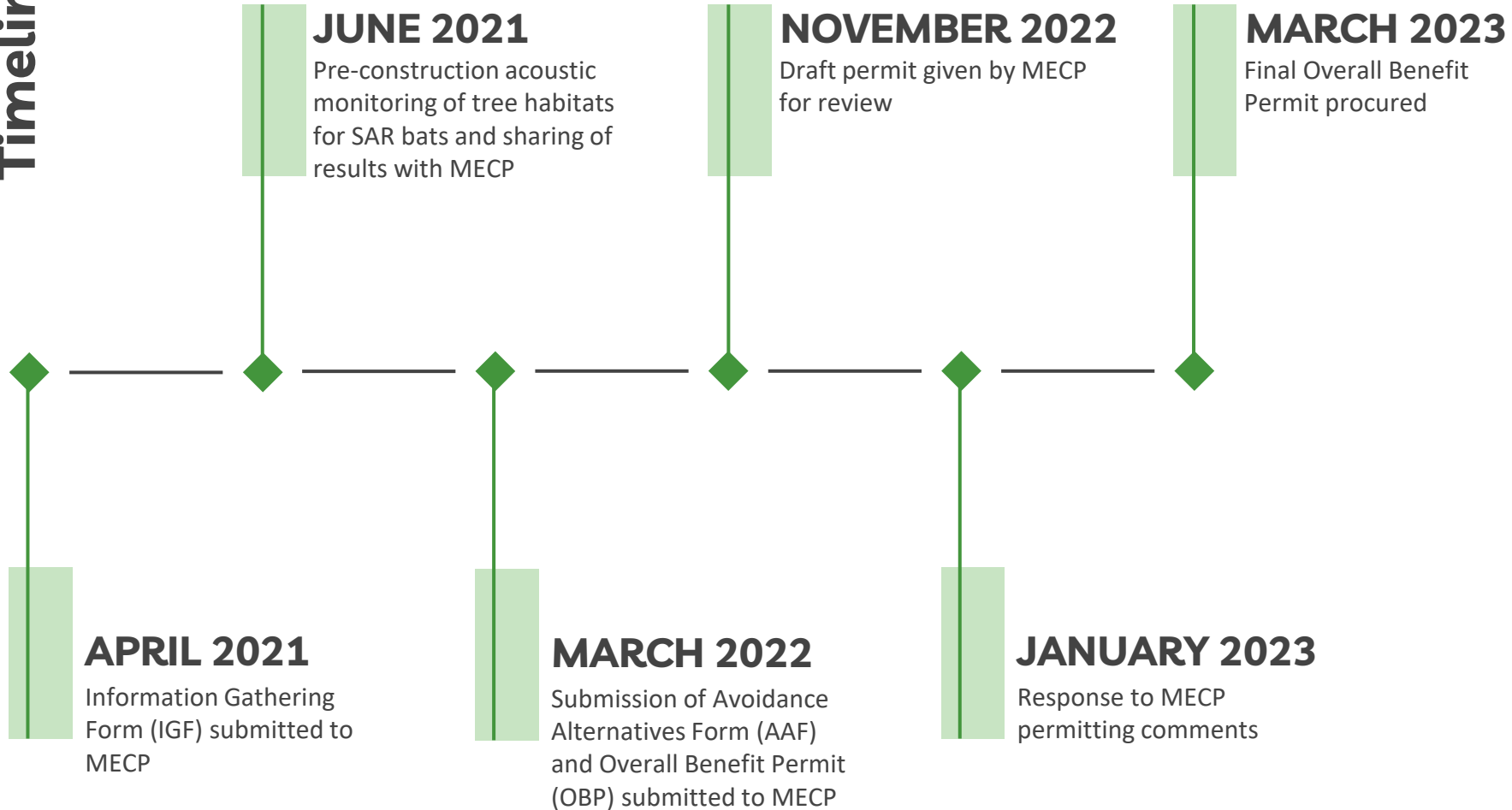
Bats

- Typically habitat in darker areas adjacent to sources of water along rivers, channels, wetlands
- Trees and greenery are essential for bats to support foraging insects in the foliage
 - They roost in taller trees such as Maple or Oak and in species with naturally exfoliating or peeling bark such as Shagbark Hickory and Paper Birch
- Also found in urban and suburban areas
 - Bats are commonly situated near stormwater conduits



Little Brown Myotis (left)
Northern Long-eared Myotis (center)
Tri-colored Bat (right)

Permitting Timeline



Species at Risk Permitting

- As part of the approved Overall Benefit Permit:
- Thirteen (**x13**) potentially suitable roost trees will be removed
- A minimum of **216** suitable habitat trees will be planted at a replacement ratio greater than **16:1**
- Four (**x4**) Rocket Boxes installed
- Four (**x4**) BrandenBark Posts installed
- Four (**x4**) Artificial Leaf Clusters installed



Typical Planting Native Trees



Typical Planting Native Shrubs and
Wildflowers

Construction Mitigation Requirements

- Tree removals can only occur between **October 1st** and **March 31th**
- All persons working on site are subject to mandatory awareness training regarding the identification and reporting of SAR bats
- If a SAR bat is found onsite during construction, it will be protected, documented to the MECP and if necessary a Wildlife Custodian will capture, assess, rehabilitate and release offsite
- The most effective avoidance of impacts is to complete construction outside of the active season (**April 1st** – **September 30th**)



Typical Bat Capture



Typical Bat Assessment and Rehabilitation

Post-Construction Monitoring Requirements

For the **five (x5)** years following construction, the permit holder must perform:

- **Annual** maintenance / replacement of each bat box prior to the start of the active bat season
- **Two (x2)** inspections **per year**, including collection and laboratory testing of guano from below each bat box to confirm bat genus
- **Annual** inspection of tree and shrub health with a minimum survivorship of 80%
- **Annual** monitoring reports summarizing the findings of the monitoring activities



Typical Bat Rocket Box



Separate Chambers within Typical Bat Rocket Box

Questions?

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