



BURNSIDE

South Innisfil Creek Drain 2018 Improvement

Presentation of Draft Report to the Council

August 8, 2018

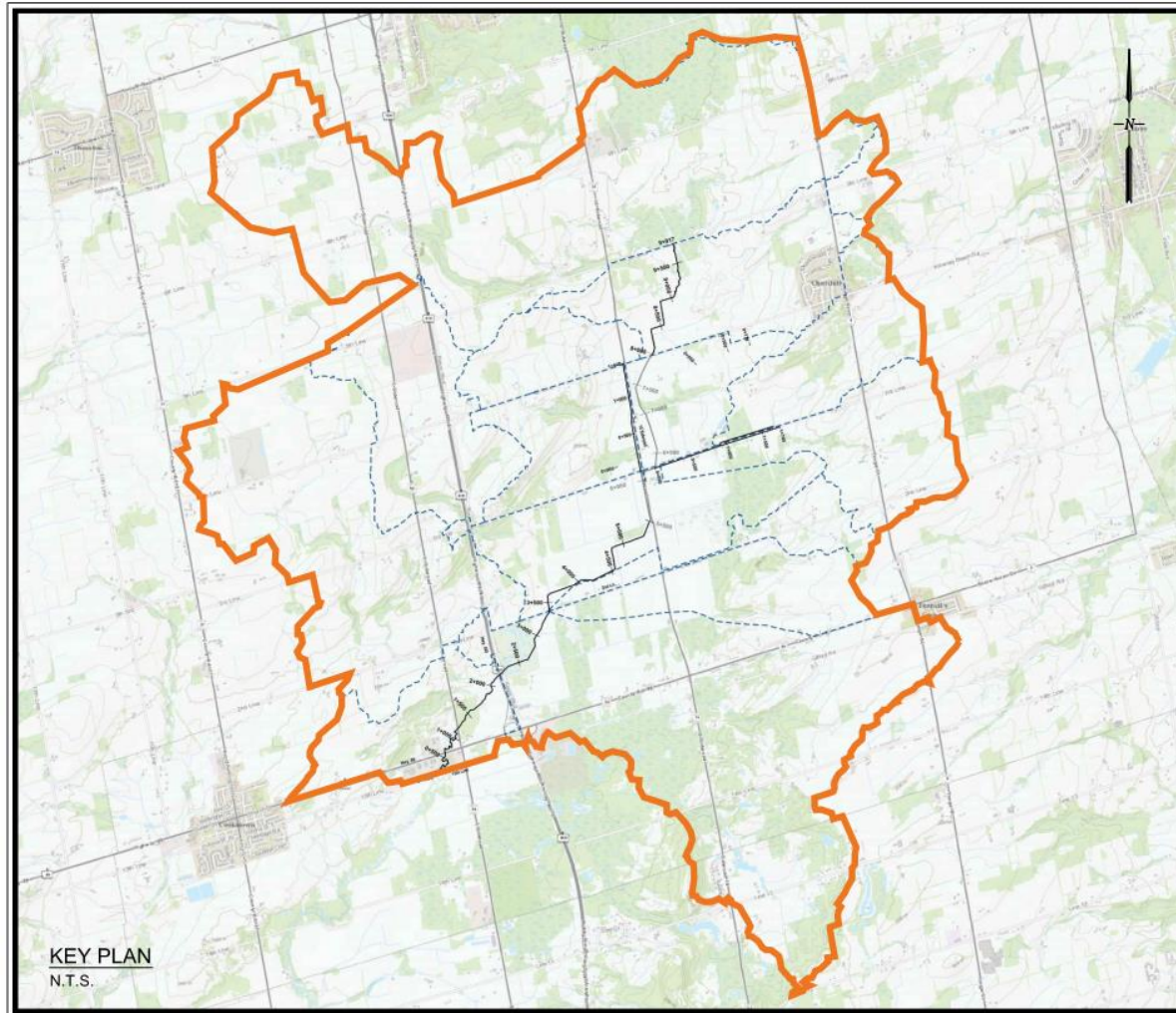
Objectives

- Improvements to drain capacity
- Remove restrictions to the flow
- Replacement of the Hwy. 400 crossings
- Mitigate flooding in Market Garden Area
- Reduce the cost of the proposed work

Objectives of Draft Report

- Present the proposed design and the preliminary cost estimate
- Provide the Council & staff (landowners) with an update on the proposed work, progress and next steps
- Agency approvals need to be received before the “**filing**” of the Final Report (Section 41 of the Act)

South Innisfil Creek Drain



Existing Conditions



Lot 6, Concession 1 - Looking Upstream



Lot 6, Concession 1 - Looking Upstream

Existing Conditions



Lot 9, Concession 2 - Market Garden Looking Upstream



Lot 9, Concession 2 - Market Garden Looking Upstream

Existing Conditions



Main Drain 2nd Line Bridge – Looking Upstream



Lot 9, Concession 2 – Market Garden at 2nd Line

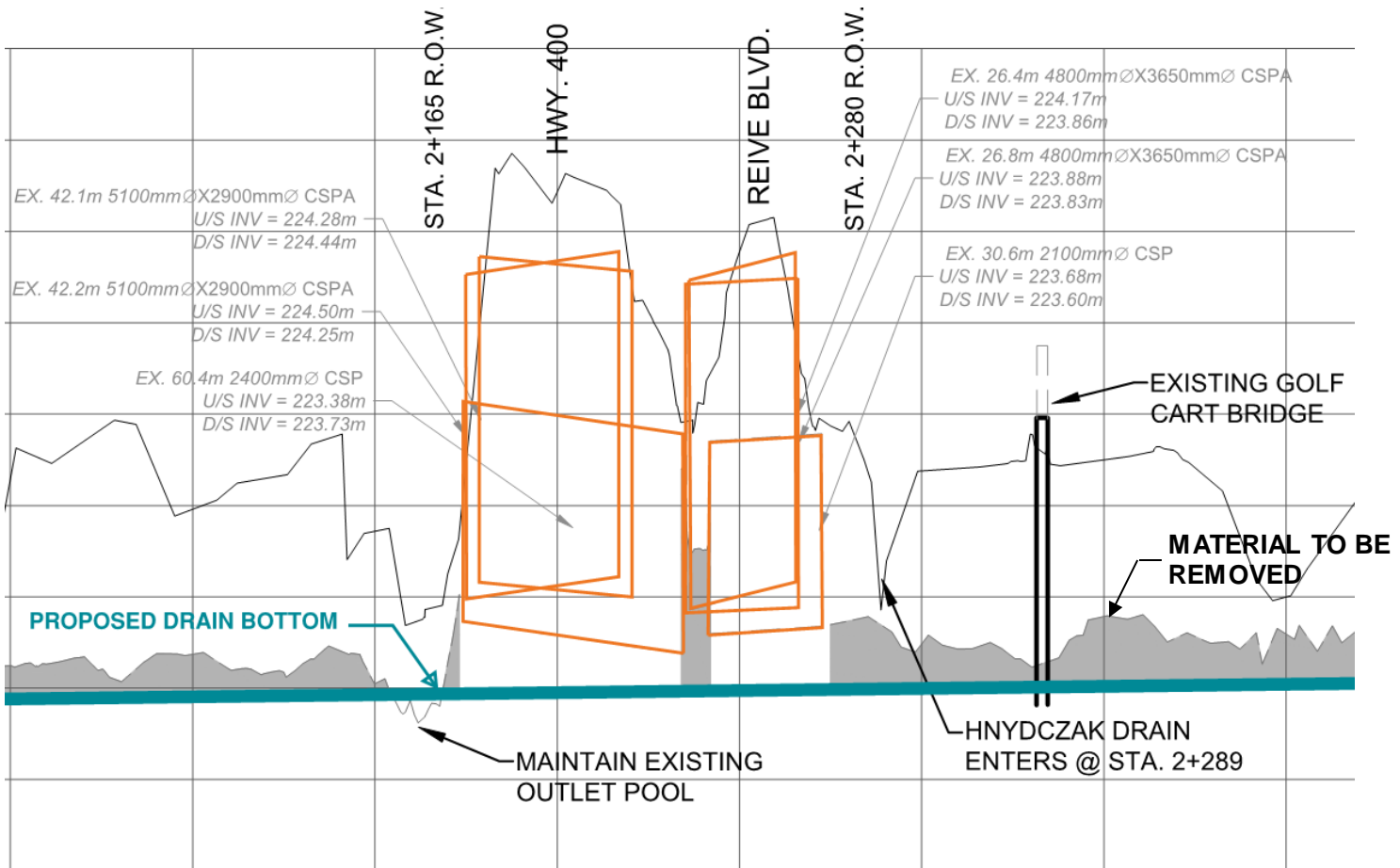
Hydrology and Hydraulics

- Extensive detailed modelling was required to verify the flows
- Significant variance in the flow rates from several sources (Dillon, NVCA/McLaren, AECOM, etc.)
- Result: design flows were based on the 2-Year Standard with some freeboard to accommodate climate change impacts
- The Hydrology Report was submitted to the Town and NVCA on May 17, 2018
- The Hydrology Report was submitted to MTO on May 17, 2018 and again on July 12, 2018
- A draft Hydraulics Report has been completed and will be finalized in August 2018

Consultation Process

- A total of 3 meetings of the Public Liaison Committee have been held to date; the most recently on July 23, 2018
- There was a Public Information Centre on February 23, 2018
- The Burnside Drainage and Aquatics teams walked the drain with the Town's Drainage Superintendent in April 2018
- There have been 2 meetings with NVCA staff; one in February and another in June of 2018
- There have been ongoing discussions and on-site meetings with several landowners and consultants; more are proposed
- There will be follow-up discussions with NVCA and MTO

Hwy. 400 and Reive Blvd.



Hwy. 400 and Reive Blvd.

- The existing culverts are “perched”
- The negative backwater effects during high flow events extend upstream to 3rd Line
- The crossings need to be replaced
- MTO has not yet scheduled the replacement
- There has been extensive communication with MTO and Morrison Hershfield (by the Town and Burnside); no response to date
- The Town has offered to work cooperatively with MTO regarding these crossings



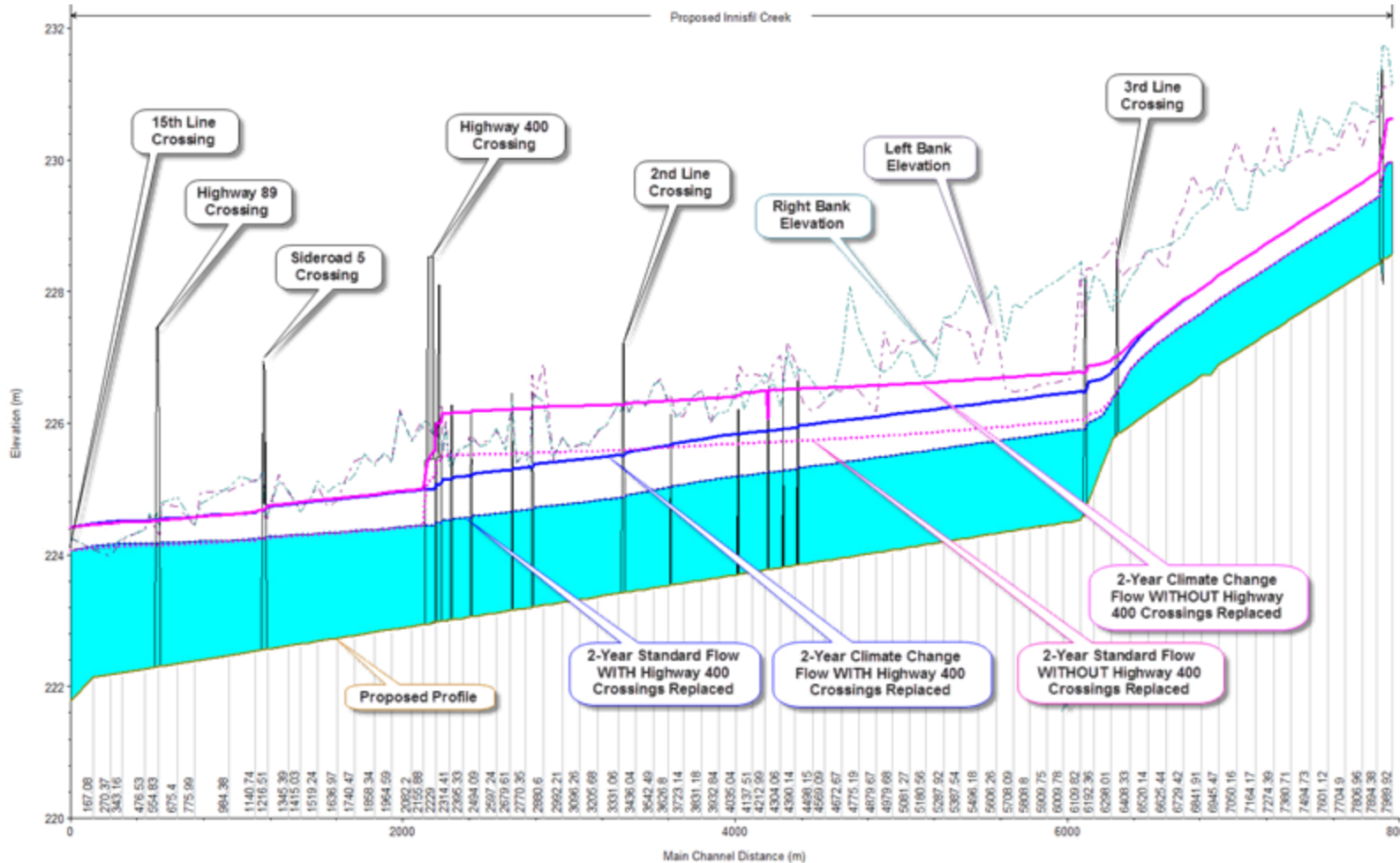
Looking Downstream from Reive Blvd.



Downstream of Hwy. 400 - Looking Upstream

HEC-RAS Hydraulic Model

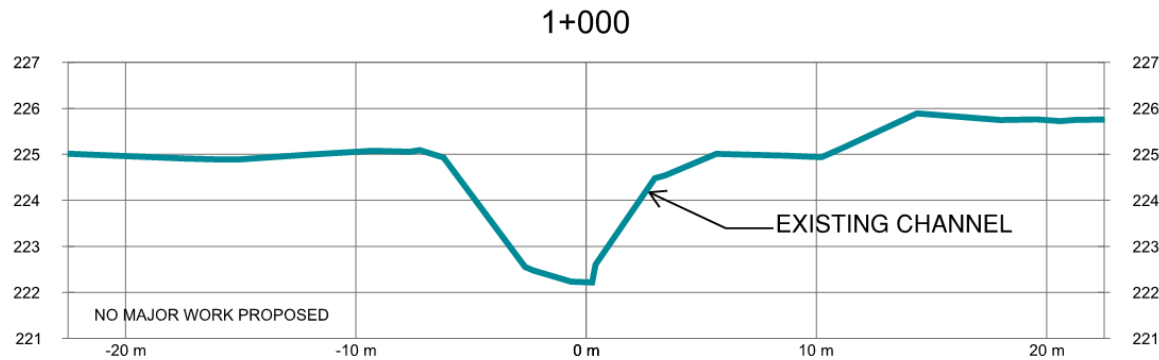
With and without Hwy. 400 crossing replacements



Proposed Improvements

15th Line to 5 Sideroad

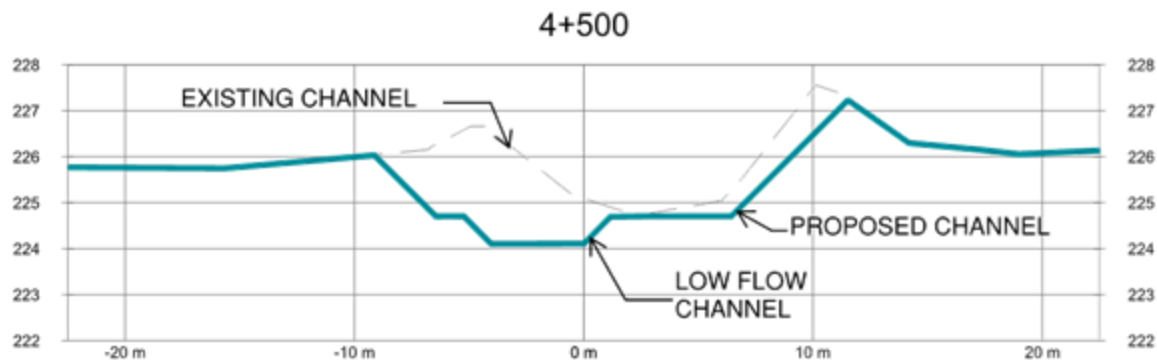
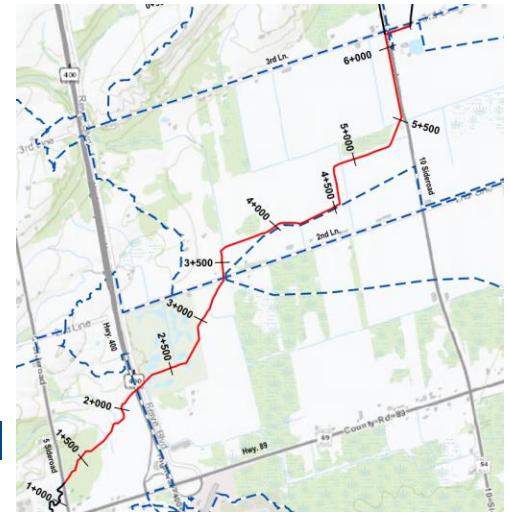
- Minimal work required/proposed
- Remove debris and obstructions to flow
- Enhance fish habitat



Proposed Improvements

5 Sideroad to 3rd Line

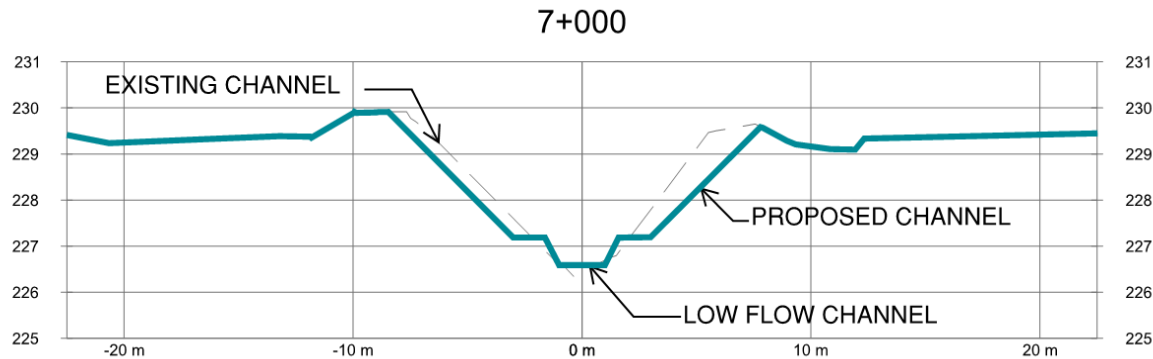
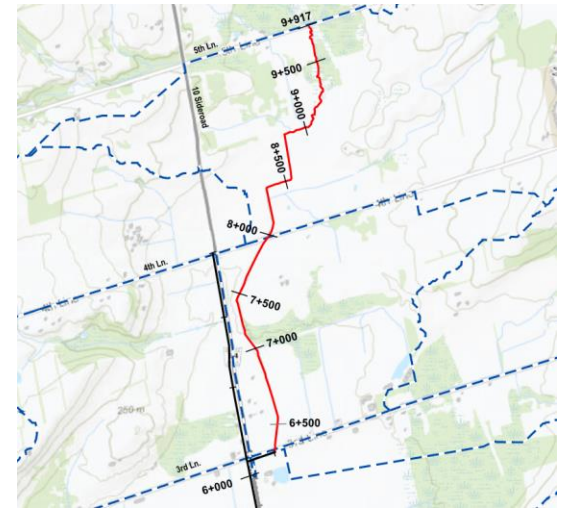
- Drain widening and deepening
- Excavation of a low flow channel below the existing drain bottom invert
- Matching of the gradient D/S of Hwy. 400 as per the D.H. Weir 1956 Report
- Increase the gradient by 20% U/S of Hwy. 400
- Where possible work on one side of the channel
- Berms/dykes not part of the drain



Proposed Improvements

Upstream of 3rd Line

- Minimal work required/proposed
- Remove debris and obstructions to flow
- Pull back one bank to increase capacity
- Work above the existing low flow channel
- Enhance fish habitat



Proposed Improvements

Road Crossings

- Replace the Main Drain culverts through 4th Line (with 1)
- Replace the 10 Sideroad Branch Drain culvert through 3rd Line
- Design as per MTO Directive B-100 (and discussed with Town)



4th Line Crossing – Main Drain



3rd Line Crossing – 10 Sideroad Branch Drain

Proposed Improvements

Branch Drains

1. Hnydczak 'A' Drain;
2. 10 Sideroad Branch Drain;
3. 3rd Line Branch Drain; and
4. 3rd Line Spur Branch Drain.

Proposed Work:

- Establish updated profiles for future maintenance
- Complete a ditch bottom only cleanout and treat spoil
- Recommend culvert sizes for future replacements

Environmental Concerns

Department of Fisheries and Oceans

- A formal “Request for Review” was submitted on July 11, 2018
- It is proposed to construct and/or maintain a low flow channel
- Minimize the work in the sensitive areas
- Improve bank stability through the Market Garden Area (max. 2.0H:1.0V side slopes)
- Enhance fish habitat (riffles, gravel substrate, large woody debris, etc.)



Lot 11 Concession 3

Environmental Concerns

Ministry of Natural Resources and Forestry

- Dillon identified terrestrial species at risk
 - Bobolink and Eastern Meadowlark
 - Butternut Tree
- Mitigation measures may be required; they will be based on discussions between MNRF and Burnside Terrestrial Ecologists

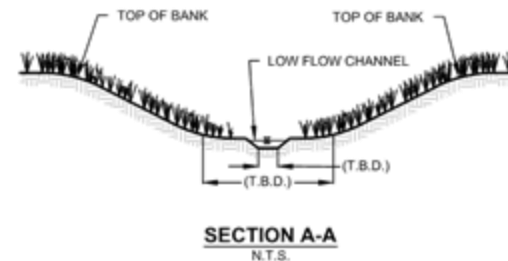
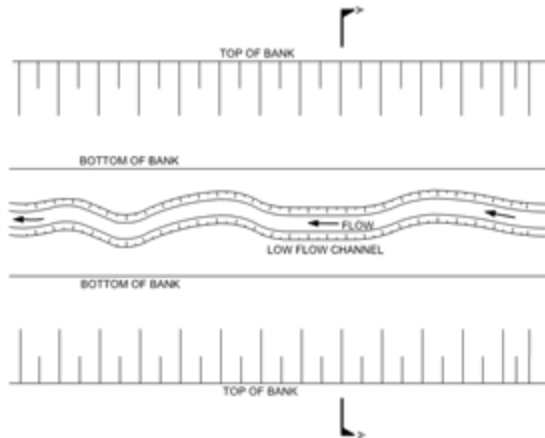


Bobolink

Environmental Concerns

Nottawasaga Valley Conservation Authority

- An NVCA Permit will be required for the proposed work
- The Hydrology Report was submitted on May 17, 2018
- Draft drawings were submitted on June 20, 2018
- Awaiting formal feedback on Hydrology Report; however, NVCA is in general agreement with the conclusions of the report



Low Flow Channel Detail

Preliminary Estimated Costs

Construction

MAIN DRAIN	\$1,654,000
HNYDCZAK 'A' DRAIN	\$24,000
10 SIDEROAD BRANCH DRAIN	\$106,000
3rd LINE BRANCH DRAIN	\$52,000
3rd LINE SPUR BRANCH DRAIN	\$23,000
PROVISIONAL ITEMS	\$205,000
LUMP SUM CONTINGENCY ALLOWANCE	\$200,000
TOTAL CONSTRUCTION	<u>\$2,264,000</u>

INCLUDES:

4TH LINE - MAIN DRAIN CULVERT REPLACEMENT	\$250,000
3RD LINE - 10 SIDEROAD BRANCH CULVERT REPLACEMENT	\$73,000

Preliminary Estimated Costs

Allowances



Total Estimated Allowances:
\$899,000

- Section 29 – Right of Way
- Section 30 – Damages
- Section 33 – Loss of Access

Preliminary Estimated Costs

Summary

TOTAL CONSTRUCTION	\$2,264,000
ALLOWANCES	\$899,000
ENGINEERING	\$650,000
- HYDROLOGY AND HYDRAULICS TEAM	
- AQUATICS TEAM	
- DRAINAGE TEAM	
- ATTENDANCE AT MEETINGS	
- REPORT PRODUCTION	
- MEETING TO CONSIDER	
- TENDERING AND CONTRACT ADMIN.	
- FULL TIME INSPECTION	
- AGENCY CONCERNS	
ADMINISTRATION AND FINANCING & NET H.S.T.	\$188,000
SUBTOTAL	\$4,001,000
DILLON CONSULTING FEES (AS PER TOWN)	\$1,025,000
TOTAL ESTIMATED COST	<u>\$5,026,000</u>

Assessments

- Being completed in accordance with Sections 21-26 and 28 of the Act and will be included in the Final Report c/w details
- Generally carried out following the “Todgham Method” which is a system of determining assessments accepted by the drainage engineering community as being fair and equitable
- Assessments will be apportioned to:
 - the Province,
 - the County,
 - the Town; and
 - private lands.

Next Steps

- Obtain all necessary approvals and permits from the various agencies (DFO, MNRF, NVCA)
- Finalize the assessments
- Receive formal feedback on the Hydrology Report
- Submit the Hydraulics Report and receive formal feedback
- Complete and file the Final Report with the Town in accordance with Section 41 of the Act
- Complete the remaining parts of the process under the Act to allow for the passing of a By-Law and then construction

Questions?

**Please contact Jeremy Nyenhuis, Drainage Superintendent
with any questions or concerns.**

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