WINTER 2019

SHERIDAN COLLEGE STORMWATER RETROFIT

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Problem Statement

- High runoff volumes from development have led to severe erosive conditions in reaches of the West Morrison Creek. This has resulted in the undercutting of banks, loss of tableland and destruction of aquatic habitat. Sheridan College's Trafalgar Campus contributes high volumes of runoff to this watercourse.

- Standing water, poor grading and Invasive Phragmites detract from the aesthetics and function of the drainage channel that traverses Campus.

Constraints

- Capture and treat 28 mm of runoff generated from impervious ground-level surfaces.

- Retain the first 5 mm of every rainfall event.

- Eliminate 100% of Invasive Phragmites within the main drainage channel.

- Main drainage channel must convey the 100-year flow from the site and upstream residential subcatchments with a minimum 0.3 m freeboard.

Criteria

- Maximize infiltration volume and ET throughout the Campus.

- Minimize erosive conditions by reducing the duration, intensity and frequency of overland flow to the West Morrison Creek.

- Maximize aesthetic value throughout the Campus.

- Minimize pollutant load to the main drainage channel and West Morrison Creek.

- Minimize life cycle and environmental costs, environmental impact, and any associated disruption to the functionality of the Campus.

- Minimize standing water and on-site flooding.

- Minimize effect LID's have on the natural water table elevation.

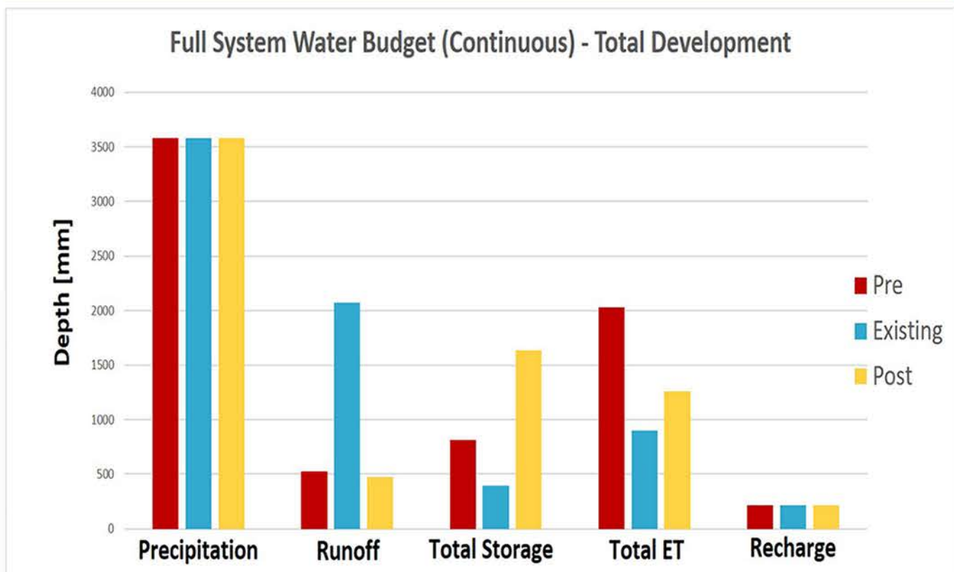
Methodology

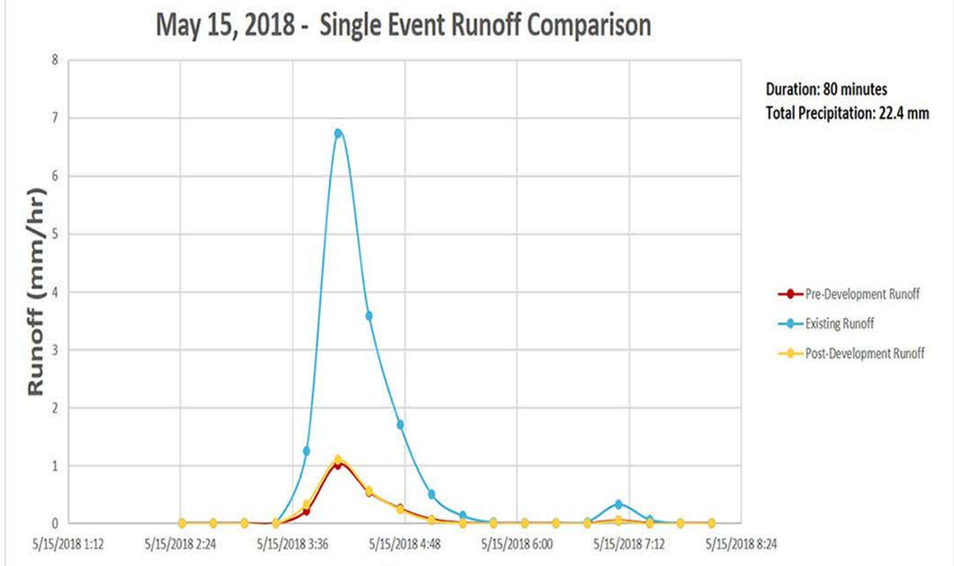
- Site reconnaissance, consulted with Sheridan College and Town of Oakville Development Engineering Department, and obtained necessary data/information.

- PCSWMM modelling to size channel and aid in the design of LID's to minimize runoff and restore water balance.

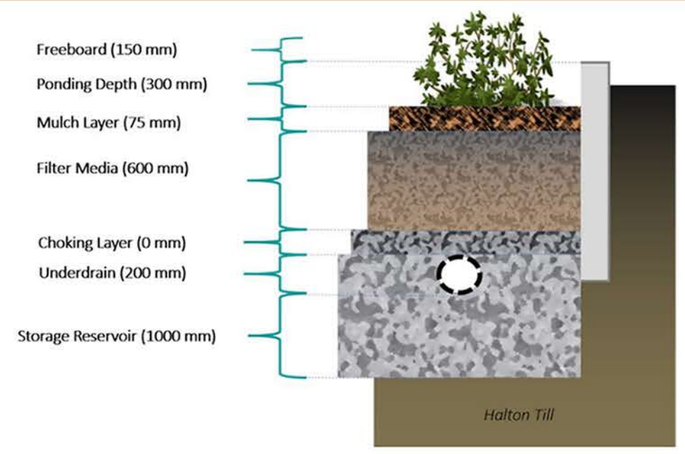
- TRCA LID Treatment Train Tool to assess water quality improvements of design.

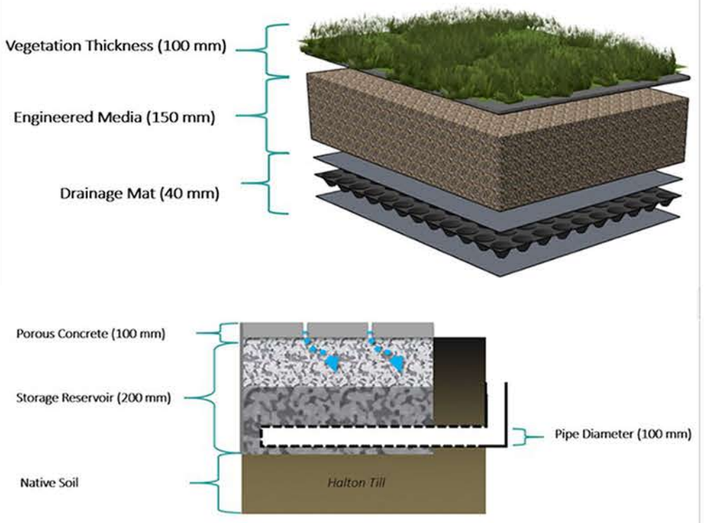
Design Results





LID Schematics





Conclusions

- Successfully reduced the intensity, frequency, and duration of runoff volumes from the Campus.

- Maximized infiltration and ET to mimic natural hydrologic conditions.

- Retrofit of the main drainage channel captures and conveys runoff generated by a 100-year storm event, eliminating standing water and on-site flooding concerns.

- Generated an Invasive Species Management Plan to eliminate 100% of Invasive Phragmites within the main drainage channel.

- Improved overall aesthetics of the Campus.

- LID's achieve a TSS and TP removal efficiency of 83% and 21%, respectively.

- Total capital cost of the retrofit = $8.2 M

- Total O&M cost of $1.36 M over 25 years

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Environmental

Water Resources