



CAFES Ottawa

Community Associations for
Environmental Sustainability

Infrastructure Master Plan: Climate Lens & Stormwater Tree Trenches

Joint Planning and Housing &
Environment and Climate Change Committee Meeting

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Community Associations for
Environmental Sustainability

CAFES Ottawa - About Us



- Community Associations for Environmental Sustainability (CAFES) was founded in 2010 and is a network of local and neighbourhood environmental leaders and community builders
- Our members include representatives from urban, sub-urban and rural communities.
- The network includes over 250 individual and organizational representatives from across all wards and over 50 neighbourhoods.

Climate Change and Increased Rainfall



- Ottawa experiencing heavy rainfall and flooding - this is projected to increase with climate change
- Ottawa's storm sewers and ditches are not equipped
- Overland drainage is exceeding capacity of roadway
- Polluted runoff erodes and contaminates waterways



Cleanup begins as heavy rain floods many areas across Ottawa



IMP: Stormwater Management Strategy

- The shift to On-Site Stormwater Management has strong rationale in context of intensification but will require big 'systems changes' to achieve and implement
- Stormwater Management Strategy - mostly Grey Infrastructure - no mention of trees, urban forest
- Strategy does mention Low Impact Development - but not clear
- Nature Based Solutions and Green Rainwater Infrastructure (GRI) have lower upfront costs and are effective at:
 - Absorbing rainwater
 - Reducing the burden on drains
 - Cleaning run-off - filters out metals, chemicals, salt
 - Contributes to 40% tree canopy target
 - Contributes to climate resiliency



Cost Effectiveness



- GRI = lower upfront and renewal costs compared to grey infrastructure
- GRI leads to savings in health care [29], disaster recovery [30], climate adaptation [31], energy use in buildings [32]
- GRI 3-6 times more cost effective in managing rainwater per \$1000 invested than grey infrastructure [27]

Case Study: New York

- NYC Green Infrastructure Plan: Proposed the combined use of green/grey solutions
- Grey Infrastructure (tunnels, tanks, drain expansions) = \$3.9 billion
- Green Infrastructure (green roofs, bioswales, rain gardens, permeable surfaces) = \$2.4 billion

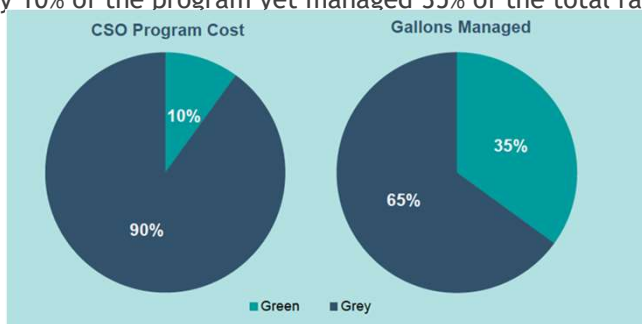


Cost Effectiveness



Case Study: Portland

- Portland is a leader for integrated green-grey approaches and an early adopter of GRI to manage combined sewer overflow (CSO) and water quality.
- 1991-2022 “Green Streets” program - 90% grey infrastructure ; 10% green
- Green Infrastructure (green roofs, trees, green street features, GRI in parking lots) = only 10% of the program yet managed 35% of the total rainwater



Stormwater Tree Trenches

- Trees planted in soil cells or structural soil WITH catchment basins and inlets for stormwater attenuation
- Vancouver: “You have to communicate to your people that this is an engineering stormwater solution, not landscaping.
- Toronto: Complete specifications

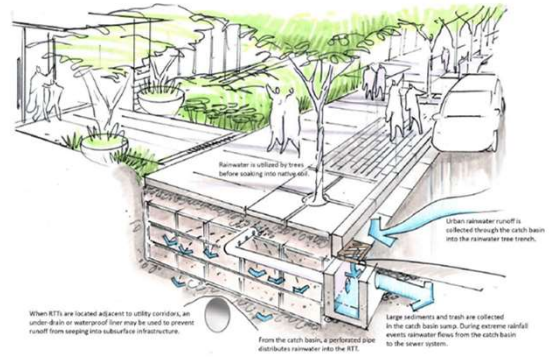


FIGURE 18: RAINWATER TREE TRENCH



Engineering & Construction
Services Division
Standard Specifications for
Road Works

TS 850

January 2023

Construction Specification for
Continuous Soil Trench with Trees for New Construction



Stormwater Tree Trenches

- Vancouver’s **Rain City Strategy** has set a target to capture and treat 90% of Vancouver’s annual rainfall by using **green rainwater infrastructure**
- Vancouver has 7 Rainwater Tree Trenches so far
 - Research shows:
 - 72% of total volume during heavy rainstorm is captured
 - Reduced flow of water going into drains by 60%
 - Roots and soil removed:
 - 57-100% of heavy metals
 - 68% of suspended solids
 - 74% of phosphorus

Case study:
Rainwater tree trenches at Quebec Street
and 1st Avenue, Vancouver

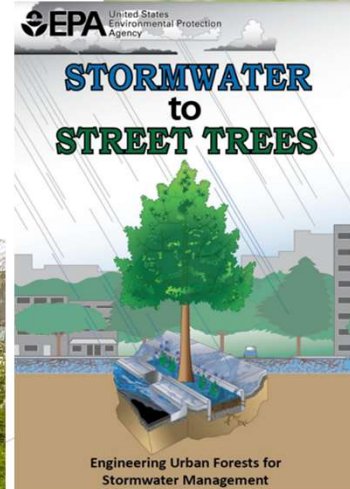


Need Integration

- Better connections between forestry, tree planting strategy, climate resiliency, infrastructure and stormwater.



MONTREAL NEWS
 Montreal to construct more parks, 'sponge' roads to withstand rain



Ottawa Status

- 2014 Low Impact Development pilot on Sunnyside and Stewart
- 2010's Silva Cells used in street reconstructions e.g. Gladstone - Councillor Diane Holmes
- 2024 Rain Ready Program approved - Bioretention and Landscaping
- 2024 (Planned) Stormwater Tree cell pilot - Glebe and Bank Two trees (no other examples Ottawa wide)
- 2024-25 Zoning by-law
 - adequate soil volumes for trees
 - set backs for trees
 - measurement of permeable space
 - on-site stormwater requirements by-law



Recommendations

- Learn WHY City of Ottawa has no stormwater tree trenches to date
- **Street Reconstructions and Stormwater Retrofit Program**
 - Identify barriers
 - Move from interdepartmental:
 - conflict avoidance
 - to alignment
 - to cooperation
- **Zoning By-Law and On-site SWM**
 - Develop guides and tools to support the development industry for dual use of space for urban trees and stormwater management (engineered solutions underneath).



PS. Climate Lens on IMP

- Cement and concrete are very carbon intensive. This sector is estimated to account for 7% of all global carbon emissions.
- IMP is a \$2Bn infrastructure plan - potential to lock in very significant embodied carbon
- Opportunity for green procurement and “green cement”

Recommendation

- In the scoping of studies to support development and implementation of the IMP, include a study on feasibility of lowering carbon footprint through procurement tools.
- Learn from Federal Government greening of procurement successes





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Thank you

Contact us at info@cafesottawa.ca
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