

SIDEWALK LABS GREY TO GREEN ON BROWN STORMWATER MANAGEMENT 04.04.2019 SIDEWALK LABS

CBN 2019 Conference Grey to Green on Brown



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SIDEWALK LABS GREY TO GREEN STORMWATER MANAGEMENT 04.04.2019 SIDEWALK LABS

Getting around with fewer emissions

1 

Increased transit and active transportation rides

Clean energy and smart energy management

2  Thermal Grid

3  Advanced Power Grid

4 Building Construction meeting Toronto Green Standards - Tier 3

5  Building Equipment Schedulers

Creating greener buildings with new materials and methods

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Sustainable Construction and Materials

Collecting and managing waste and water more effectively

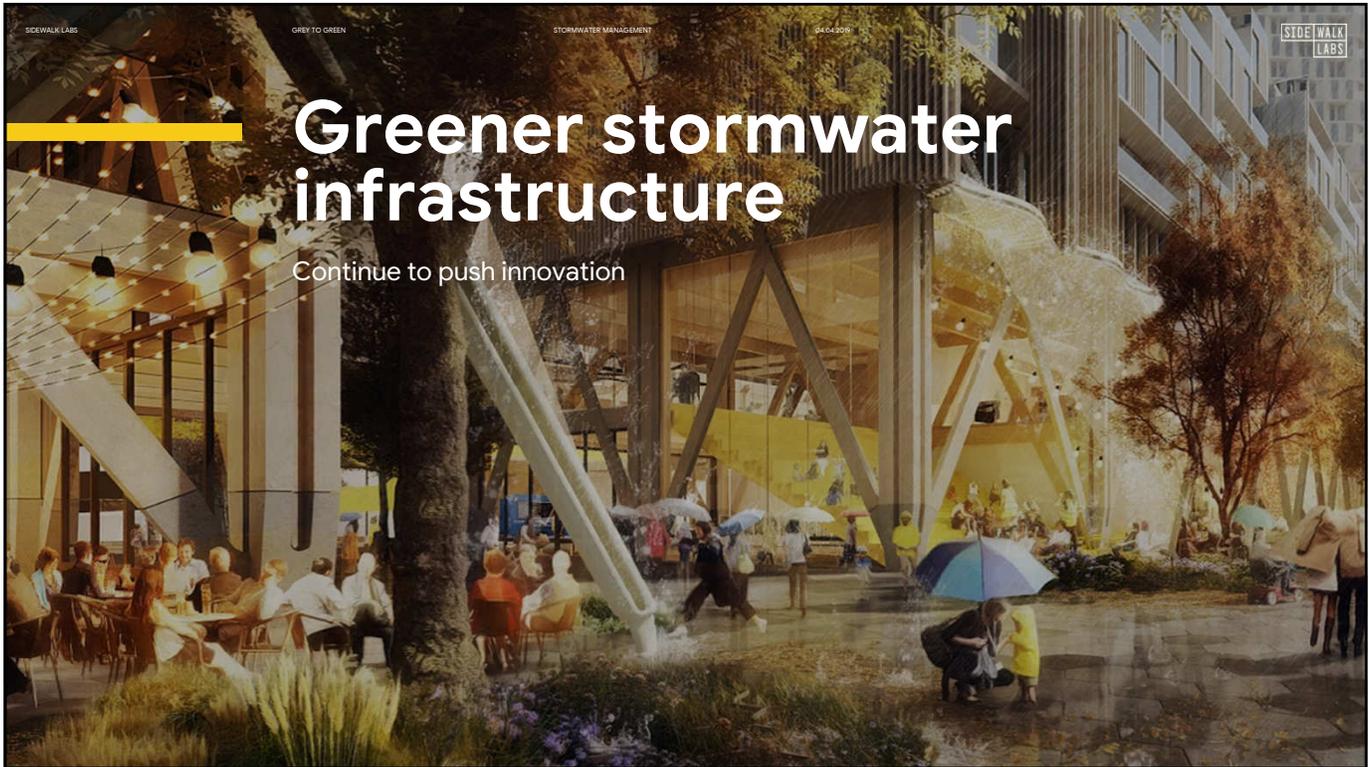
7  Smart Waste Management

8  Active Water Management

>85% GHG Reduction
**Operational Only

Sidewalk Labs will invest in a series of innovations that drastically reduce greenhouse gas (GHG) emissions below levels in comparable projects, enable smarter management of resources, and reduce the cost of future upgrade and maintenance.

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Current Landscape:

Issues

<p>1</p> <p>Poor Water Quality & Degradation of Aquatic Environments</p> <ul style="list-style-type: none"> • Lack of stormwater BMPs (especially Green Infrastructure) • Spills and Point source pollution • CSOs (Combined Sewer Overflow) 	<p>2</p> <p>Stormwater Infrastructure Failures</p> <ul style="list-style-type: none"> • Aging Infrastructure • Lack of funding • New development exceeds old design criteria 	<p>3</p> <p>Urban Flooding & Resilience</p> <ul style="list-style-type: none"> • Increased storm frequency and intensity • Increase in impermeable surfaces • Infrastructure failures 	<p>4</p> <p>Municipal Capacity Issues</p> <ul style="list-style-type: none"> • Change in infiltration rates due to soil quality or groundwater table • Change in land use • Parcel by Parcel requirements
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Slide 5

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Is this damage value in Toronto alone?

Assigned to Emily Kildow

Mark Luckhardt, 5/30/19



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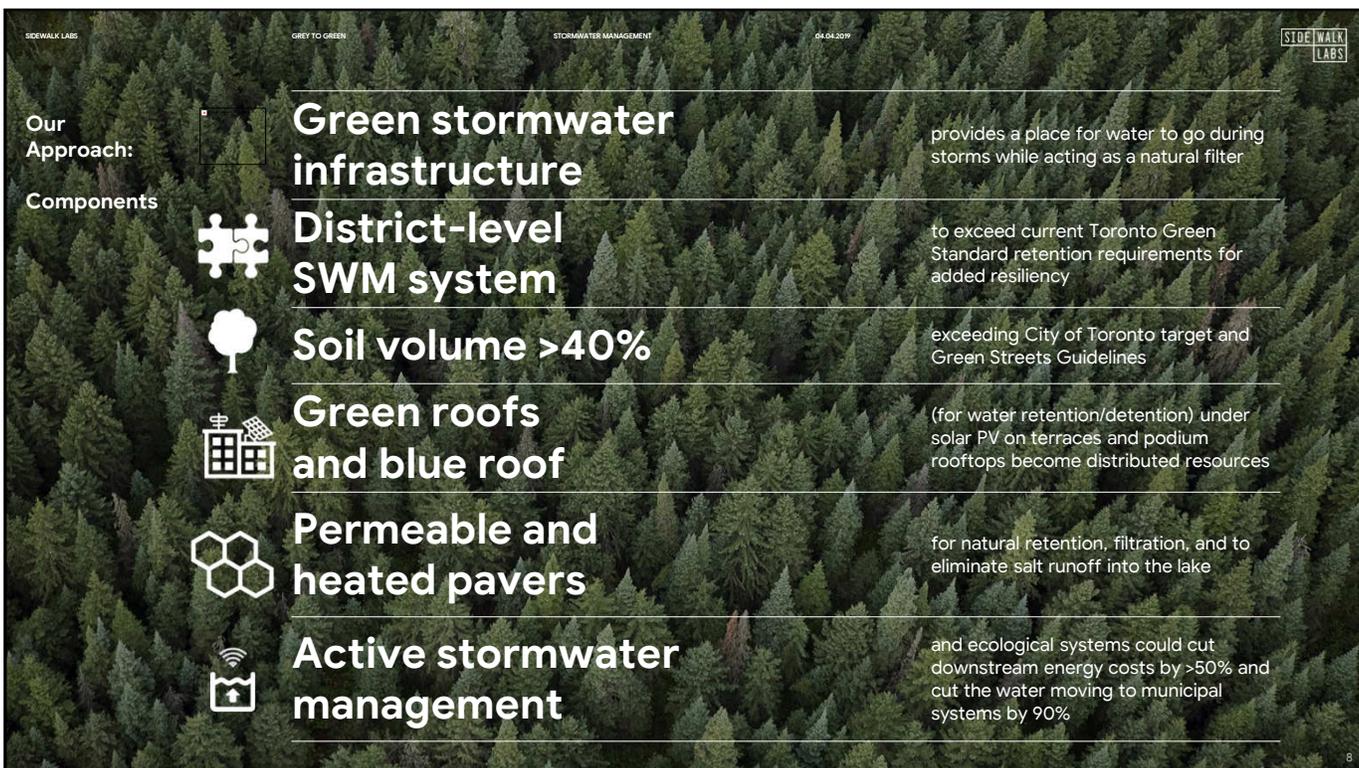
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Our Approach

**We will design
with nature**
instead of
thinking we can
entirely control it

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Our Approach:

Components



Green stormwater infrastructure

provides a place for water to go during storms while acting as a natural filter



District-level SWM system

to exceed current Toronto Green Standard retention requirements for added resiliency



Soil volume >40%

exceeding City of Toronto target and Green Streets Guidelines



Green roofs and blue roof

(for water retention/detention) under solar PV on terraces and podium rooftops become distributed resources



Permeable and heated pavers

for natural retention, filtration, and to eliminate salt runoff into the lake

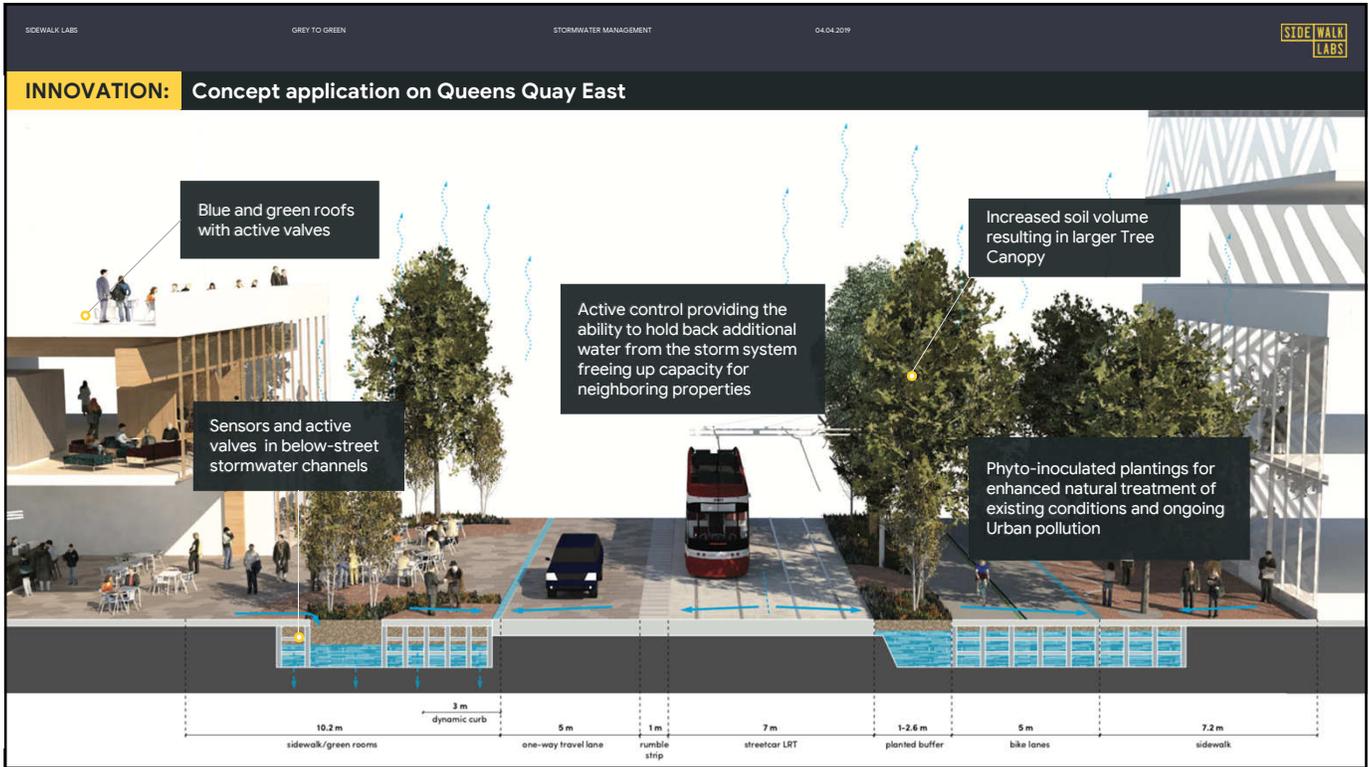


Active stormwater management

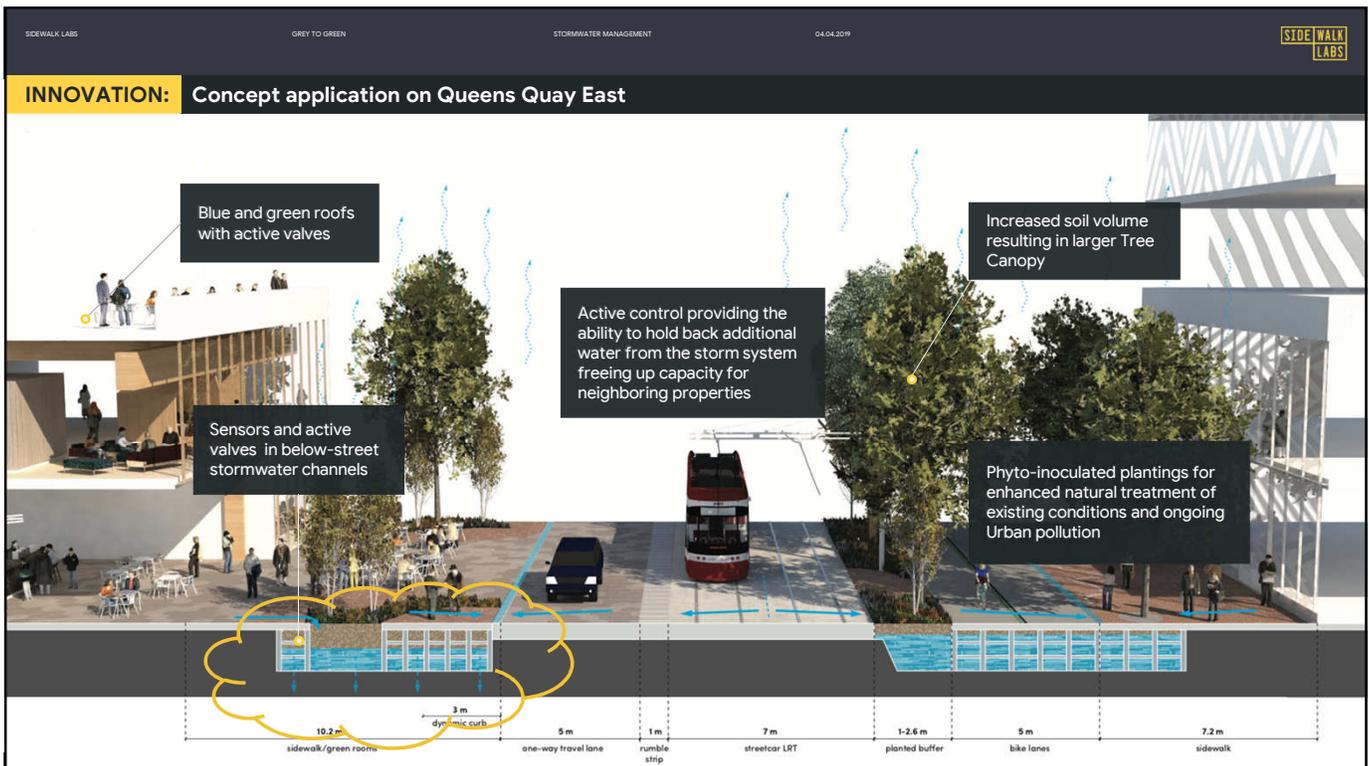
and ecological systems could cut downstream energy costs by >50% and cut the water moving to municipal systems by 90%

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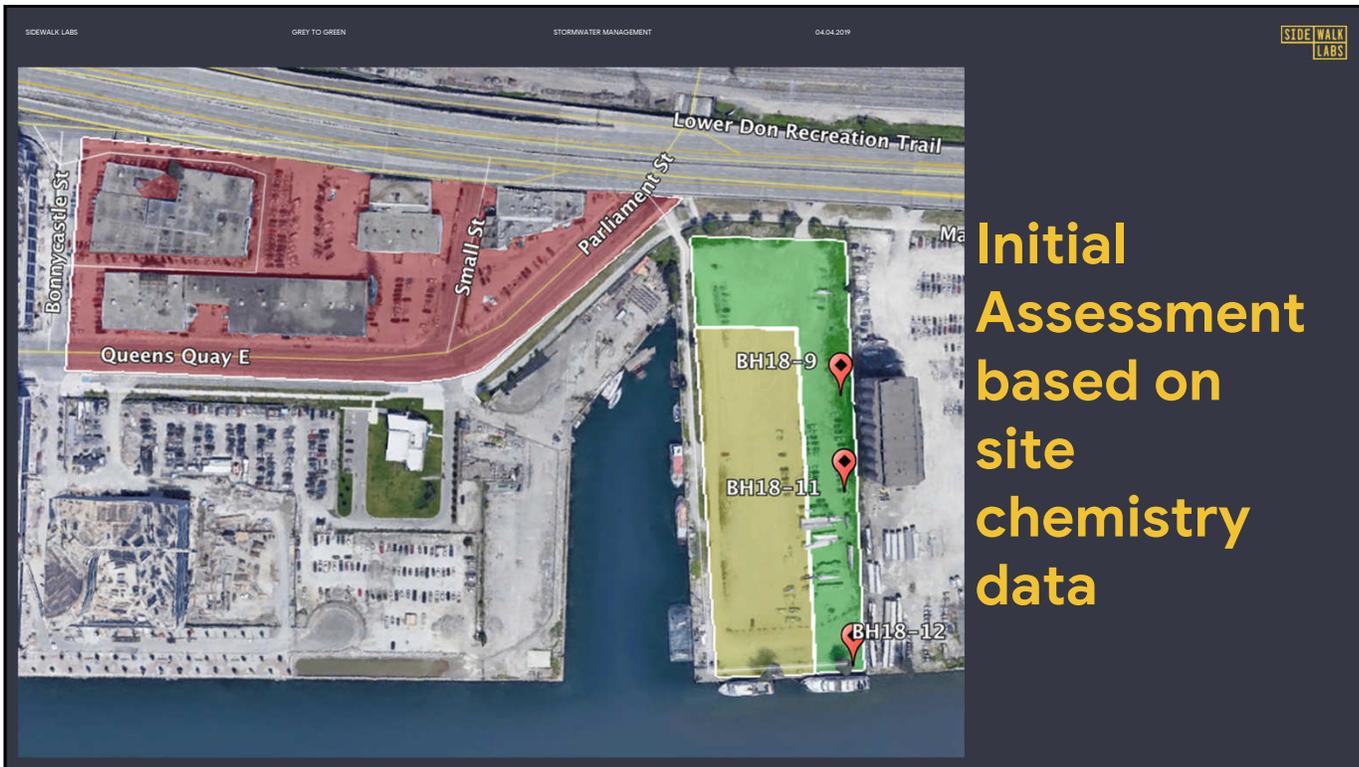
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Design Features Allowing Infiltration

- Quayside Boundary
- Bio-Retention Type1** - mixed open planters and paving on soil cells - promotes infiltration
- Bio-Retention Type2** - planters on podium - no infiltration - connected to type 1 where possible for infiltration
- Bio-Retention Type3** - street trees in soil cell - infiltration only possible on small street
- 30-50% Green Roof
- 80% Blue Roof
- Open Runnel
- Covered Runnel (Accessible)
- Planted Stormwater Channel
- Direction of Overland Flow
- Subsurface Connection
- ⋯ Opportunity for Below Grade Infiltration

Landscape Design with soil conditions considered

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INNOVATION: Natural water quality filtration exploration

Soil & Groundwater Remediation (Passive)

Inoculated Phytoremediation

Pump & Treat Greenhouse Rhizofiltration

Floating Island Rhizofiltration

GROUNDWATER

✱ Organic pollutant
● Degraded organic

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Thank you.