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CITIES INITIATIVE
L'ALLIANCE DES VILLES
DES GRANDS LACS ET DU SAINT-LAURENT

HARNESSING NATURE FOR RESILIENCE

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FULL PROGRAM

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Emily Simonson
US Water Alliance

Counc. Sylvain Ouellet
Montreal

Pete Hill
Environmental Policy Innovation Center

Katy Glynn
Engie

Thomas Monter
Engie

John Paul Jewell
Engie

SPEAKERS

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Katy Glynn
Engie

Improving Quality of Life for the Great Lakes & St. Lawrence Cities

Water Infrastructure Modernization | Energy Optimization | Sustainability | Economic Development

ENGIE

GREAT LAKES AND ST. LAWRENCE CITIES INITIATIVE

About ENGIE

Delivering comprehensive, integrated services across the entire energy value chain. A preferred provider to cities, counties, government agencies, universities, school districts, and other social infrastructure organizations.

38 GW
of global renewable energy capacity

190+ MW
microgrid capacity in operation

28 Mt
of CO2eq emissions avoided by ENGIE customer projects

50 Years
of U.S. operations

4,500 Employees
across North America

9,000+ Onsite Energy Projects
generating over $2.8 billion in utility cost savings

- Comprehensive and turnkey
- Over $1.5 billion in cumulative project financing
- Savings guarantees reduce customer risk

County of Kings California · Solano County · Madera County · County of Tulare California · Washtenaw County Michigan · Milpitas · Broward County Florida · West County Wastewater · Metro Water Recovery · Port Authority NY NJ Air Land Rail Sea

Our Outcomes

Improved Quality of Life in Your Community

Modernization of Aging Infrastructure

Renewable Energy Production (Solar / Geothermal / Microgrids)

Local Internships/Apprenticeships/Jobs

Energy Storage & Resilience

Additional Revenue Streams / Biogas

Improving Quality of Life

Leveraging Our Holistic Design-build Approach

Our team provides a single point of accountability:

- Architects + Engineers
- Other Design Consultants
- General Contractors
- Other Trade Contractors
- Specialist Contractors
- Equipment Suppliers

- Value
- Quality
- Speed
- Holistic + All-Inclusive
- Durability + Life-Cycle
- Resiliency + Sustainability
- Decreased Risk + Liability
- Reduced Burden
- Decreased Operating Cost
- Optimized Performance
- Safety + Security
- Control + Flexibility
- State-of-the-Art
- Memorability + Aesthetics

REDUCING RISK & BURDEN ON TAYPAYERS

Risk Comparison of Delivery Methods

Metric	Design-Build vs. Traditional	Design-Build vs. Construction Manager at Risk (CMAR)
Delivery Speed	33.5% faster	23.5% faster
Construction Speed	12% faster	7% faster
Schedule Growth (Missed Deadline)	11.4% less	2.2% less
Unit Cost	6.1% less	4.5% less
Cost Growth (Overrun)	5.2% less	12.6% less
Conclusion:	**We deliver superior results vs. traditional low-bid as shown above**	**We deliver superior results vs. CMAR as shown above**

Color Key:

Scheduling Risk	***Financial Risk***

Source: Construction Industry Institute (CII)/Penn State Research comprising 351 projects from 5000 to 2.5mm square feet

Case Study: City of Milpitas, CA

Modernizing Water, Stormwater and Wastewater Infrastructure

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Emily Simonson
US Water Alliance

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Thomas Monter & John Paul Jewell

Engie

City of Milpitas

Smart City Infrastructure Program - Milpitas, CA

Capital Improvements: $34M

The City of Milpitas is a Silicon Valley community of about 84,000 residents. As part of an ongoing effort to maintain and improve public services, City leadership solicited innovative ways to improve public facilities and infrastructure, reduce operating costs, and positively impact the local environment.

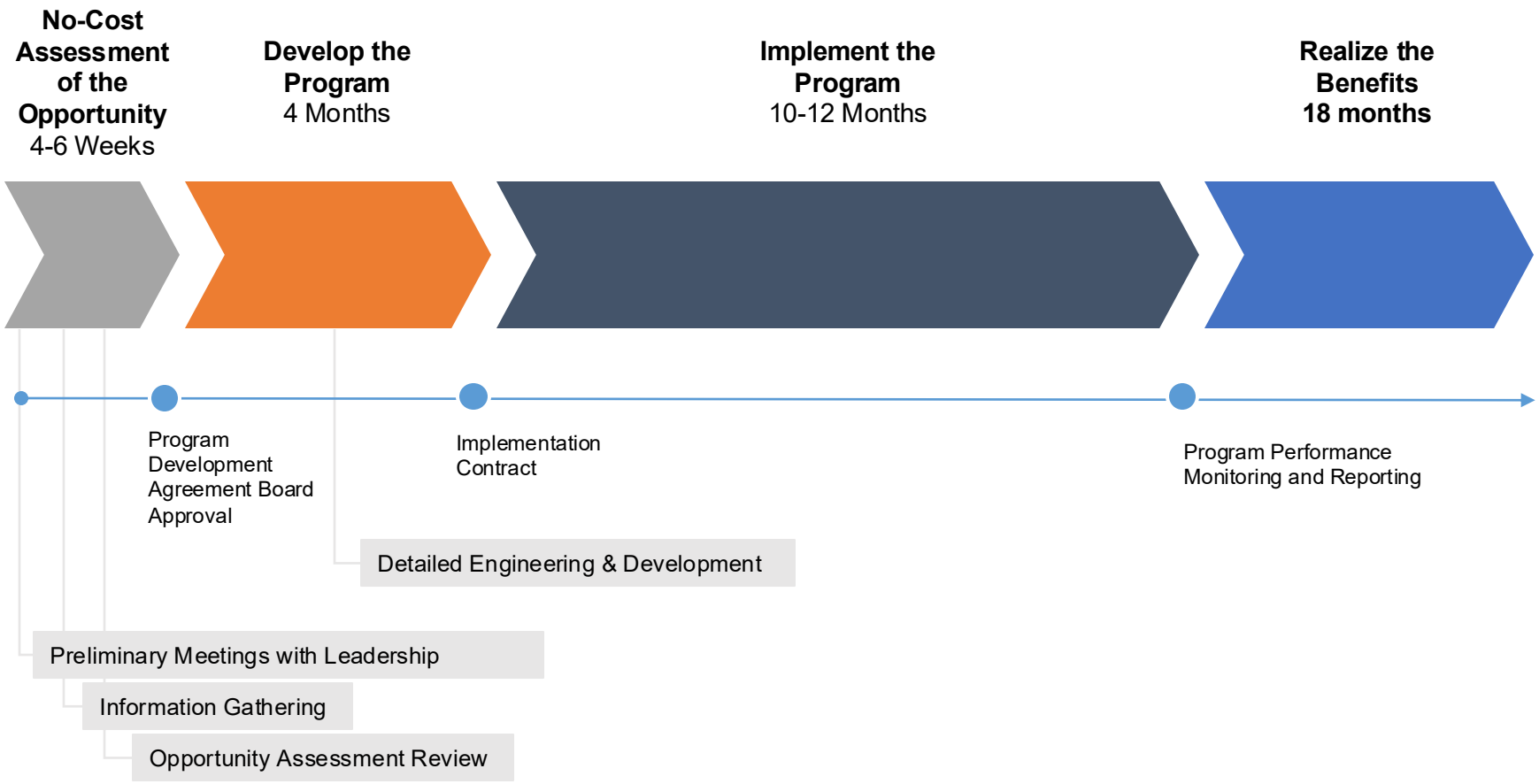
Our Comprehensive Scope

- 200 kW solar PV system; resilient microgrid solution for the city's senior and community centers; electric vehicle charging stations
- SCADA (water, wastewater, and stormwater management automation); touchless efficient water fixtures;15,600 advanced metering infrastructure (AMI) water meters with leak detection
- 2,185 LED streetlight retrofits; 4,453 streetlight controls upgrades with outage detection; City wide LED lighting upgrades in parks, sports fields, City buildings, and community facilities
- Integrated community impact program; O&M and performance guarantees

Benefits

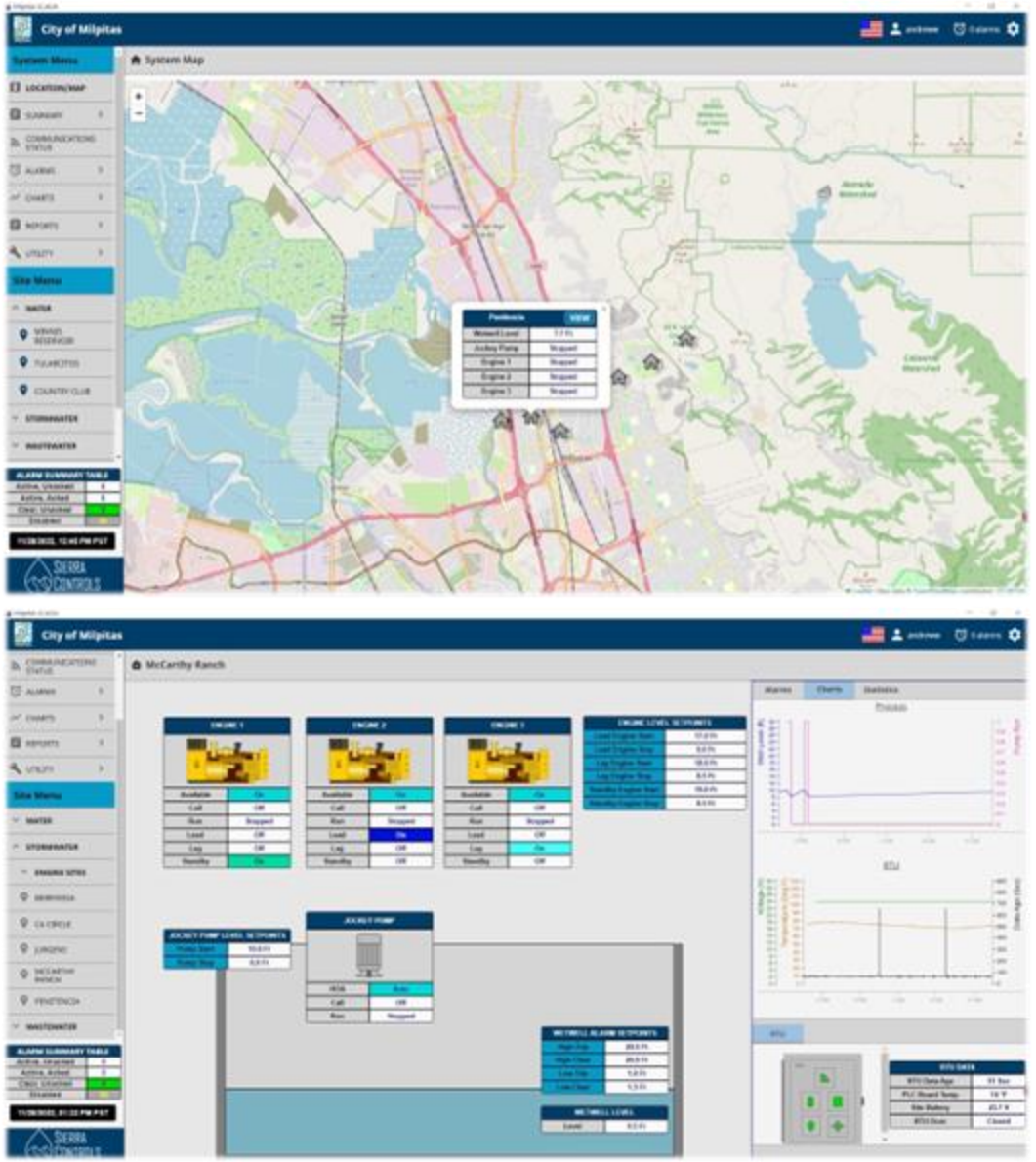
- $30M in net savings over 20-year program
- Improves city services and infrastructure for residents and businesses
- Energy resiliency (back up power) for community centers
- Meets safety, efficiency, + climate action goals
- Provides community workforce + education opportunities
- Optimizes community impact, including O+M and performance guarantees

Project Management Process



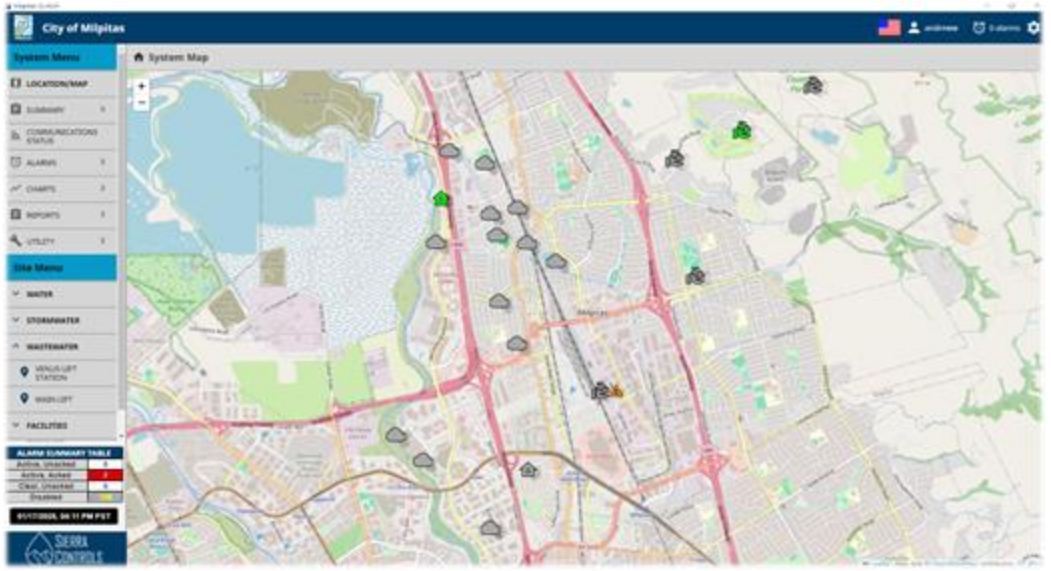
What is SCADA?

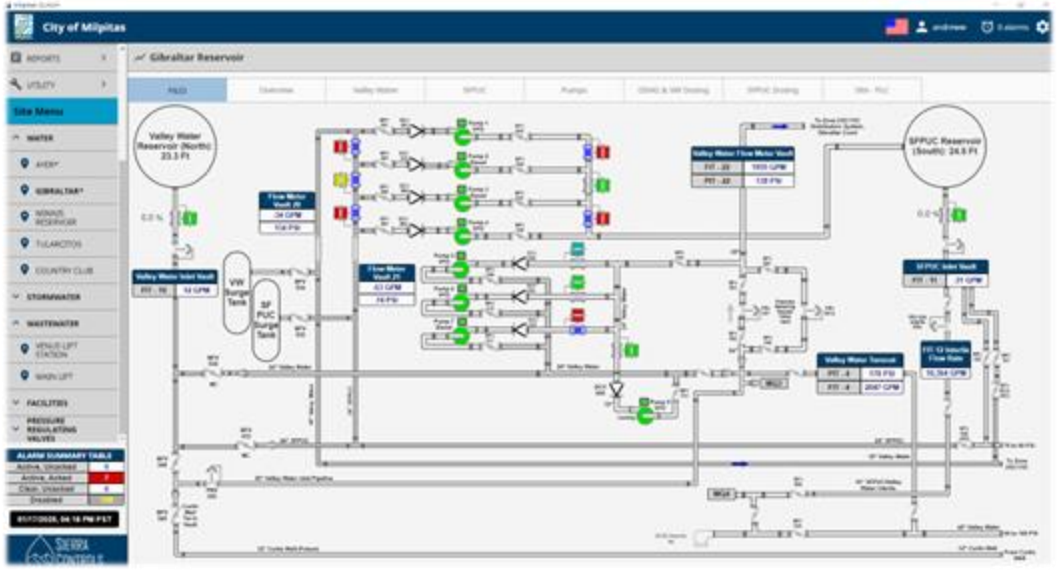
- **Stands for: Supervisory Control And Data Acquisition**
- Refers to a remote system used to communicate, control and collect data. An HMI (Human Machine Interface) is a local version, but is generally at the location being monitored or controlled.
- Encompasses a large number of software platforms
  - Some common SCADA platforms include:
  - Aviva Wonderware
  - VTScada
  - Inductive Automation's Ignition!
  - ClearScada
  - GE iFIX
  - Emerson DeltaV
- ENGIE is platform neutral and will work with any of these
- Some of the platforms work better for wide area networks with multiple sites



SCADA and Smart Cities

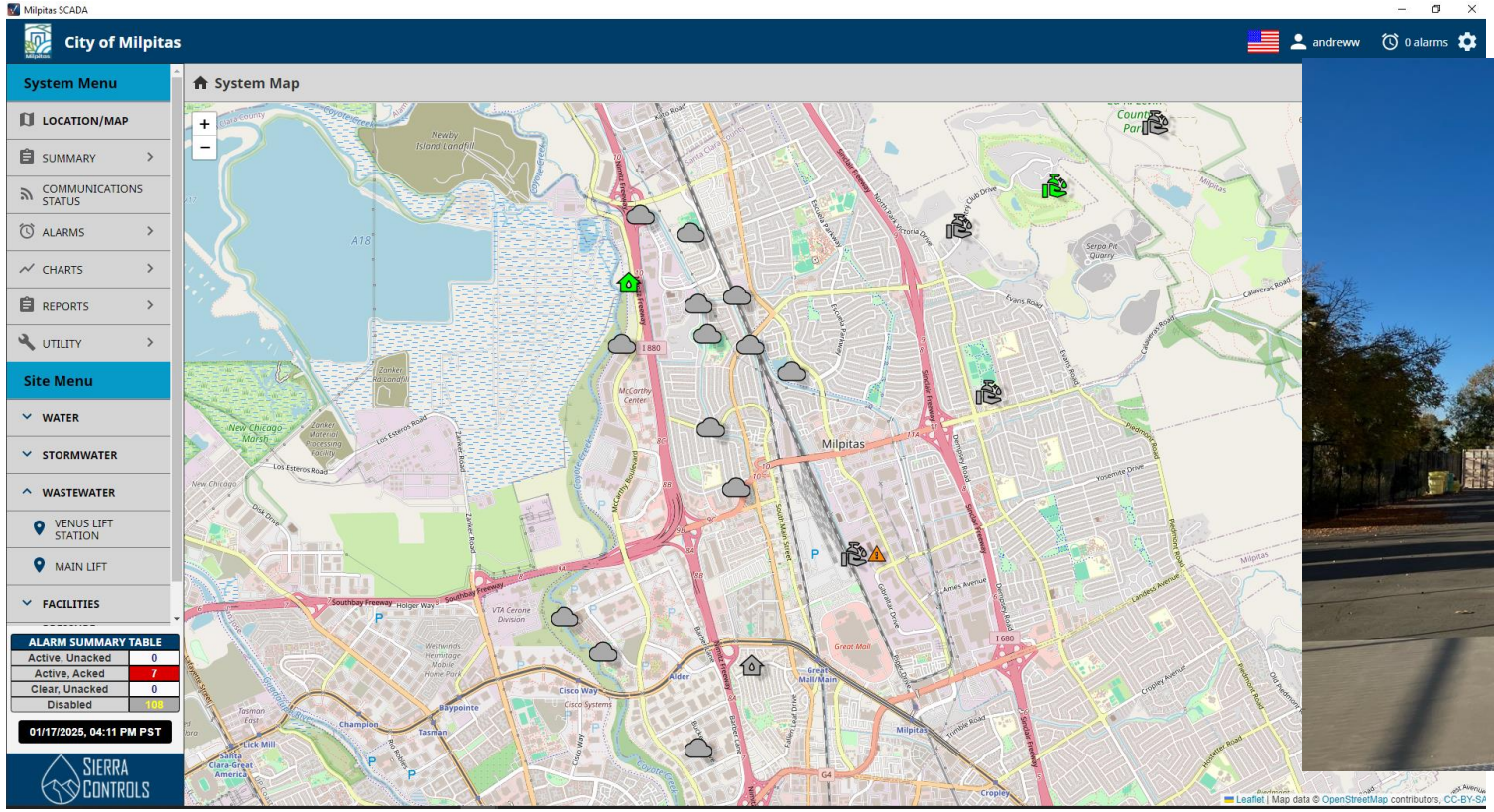
- SCADA has the potential to allow cities to monitor multiple systems on a single platform
- Integrate multiple systems for control & monitoring
  - Water Treatment
  - Pumping
  - Pressure Zones
  - Wastewater
  - Stormwater
- Using open API's can monitor other subsystems & trend data
  - Lighting
  - Building Controls
  - Streetlighting & Traffic Lights
  - Irrigation
  - SmartGrid & Microgrid
- Allows cities to free up resources to be used elsewhere, particularly maintenance staff
- Helps better monitor equipment and predict problems early
- Remote alerts & callouts for on duty or on-call staff
- Can integrate maintenance scheduling





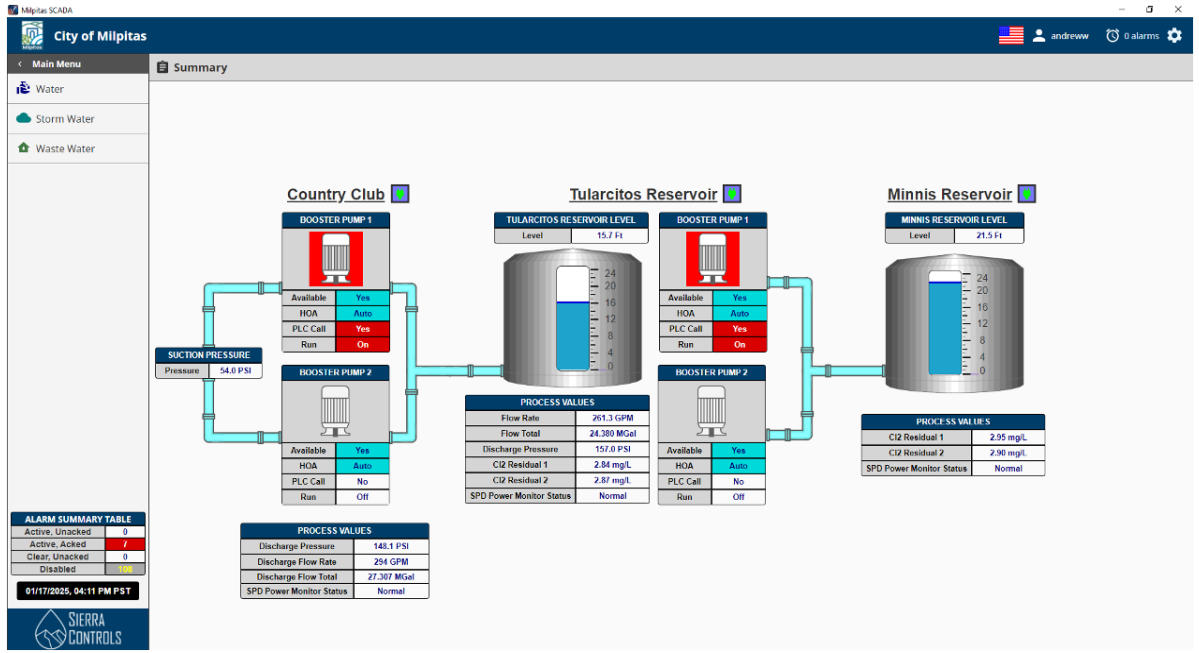
City of Milpitas SCADA Overview Map

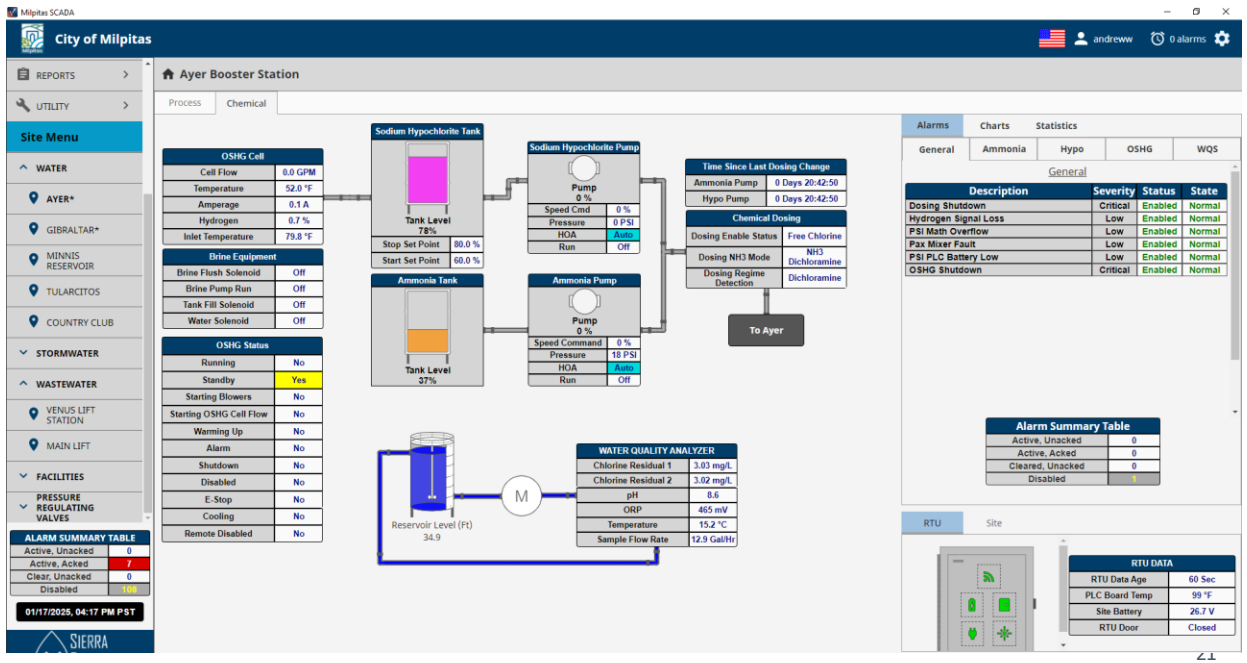
- SCADA encompassed 5 water sites, 2 wastewater sites, and 14 stormwater sites
- Milpitas upgraded from an older version of GE IFIX to Inductive Automation's Ignition! platform
- Main dashboard map gives overview of sites and of sites with active alarms
- Access is controlled at a user level allowing a range of access rights for each site including view only
- Can click on each sub-system for more detail and can click into each individual site



Milpitas Water System Upgrades

- Upgrade included automated reservoir dosing equipment to maintain water quality
- New modern booster pumps with performance monitoring
- Monitors water site interactions to know how each cascading site is affected
- Saved in excess of 2 Million kWh per year of power by not having to re-pump water unnecessarily
- Future upgrades include: PRV station upgrades, water loss tracking monitoring by integrating Badger water meter data into SCADA and reconciling with primary flow meter data.

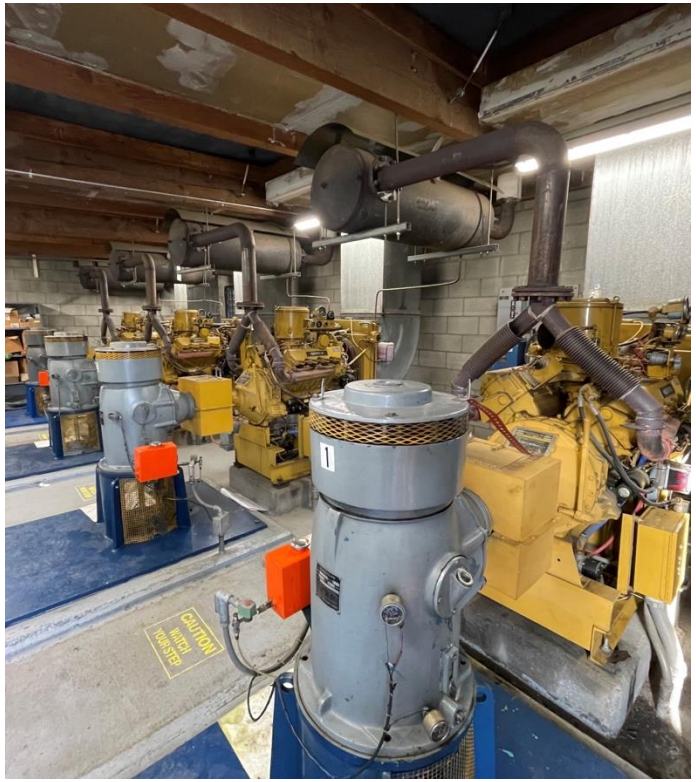




Milpitas Stormwater Site Monitoring

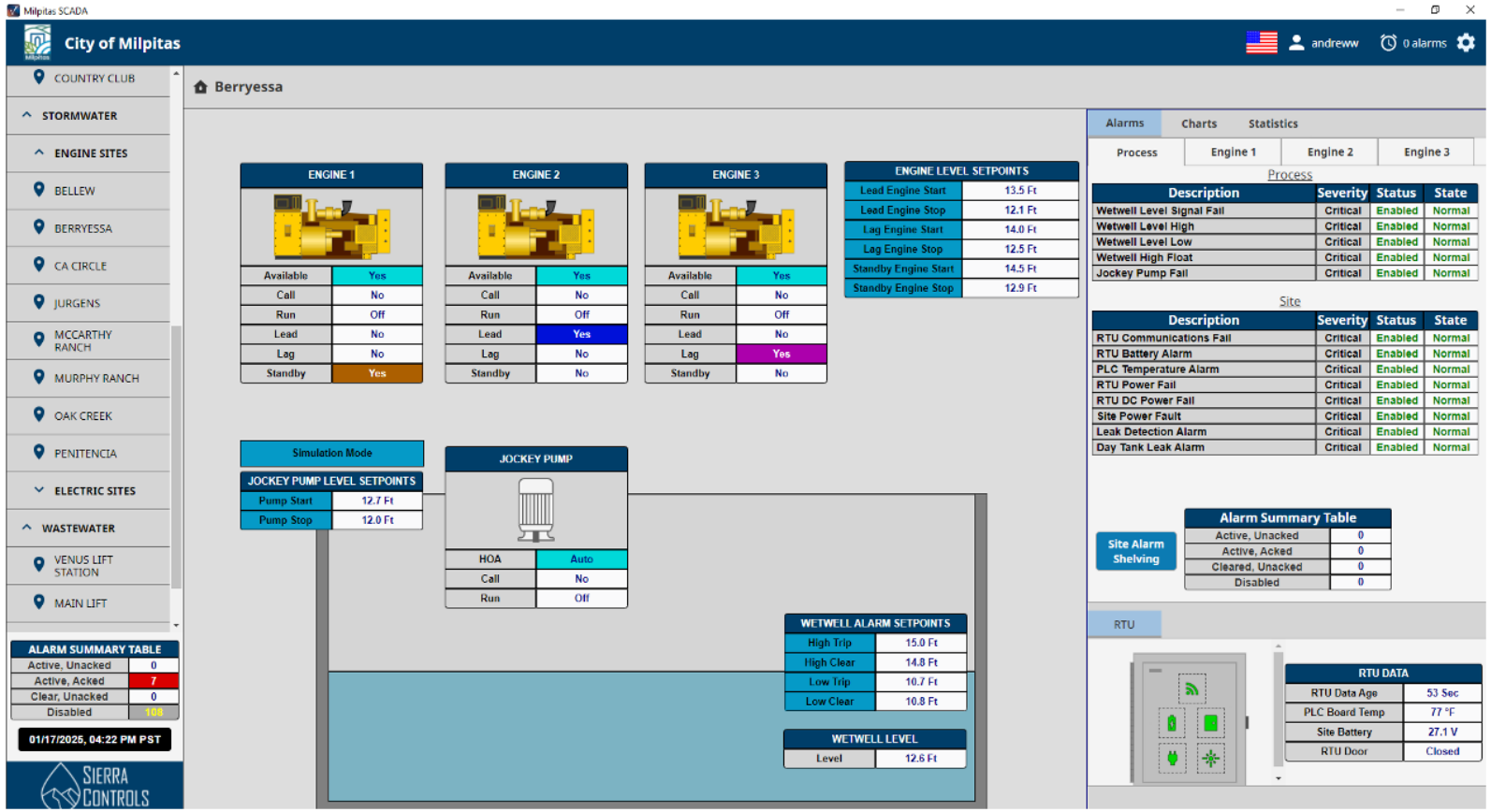
Controls Retrofit

- City of Milpitas had very old relay-based pump controls that were at end-of-life and had become difficult or impossible to find parts for.
- The old controls also had no way to monitor engine health or diagnose alarms (every alarm was a callout for staff)
- ENGIE was able to replace the old relay-based controls with modern PLC Controls and digital engine controllers and avoid a total engine replacement at a cost of over $450,000 per engine plus permitting costs.



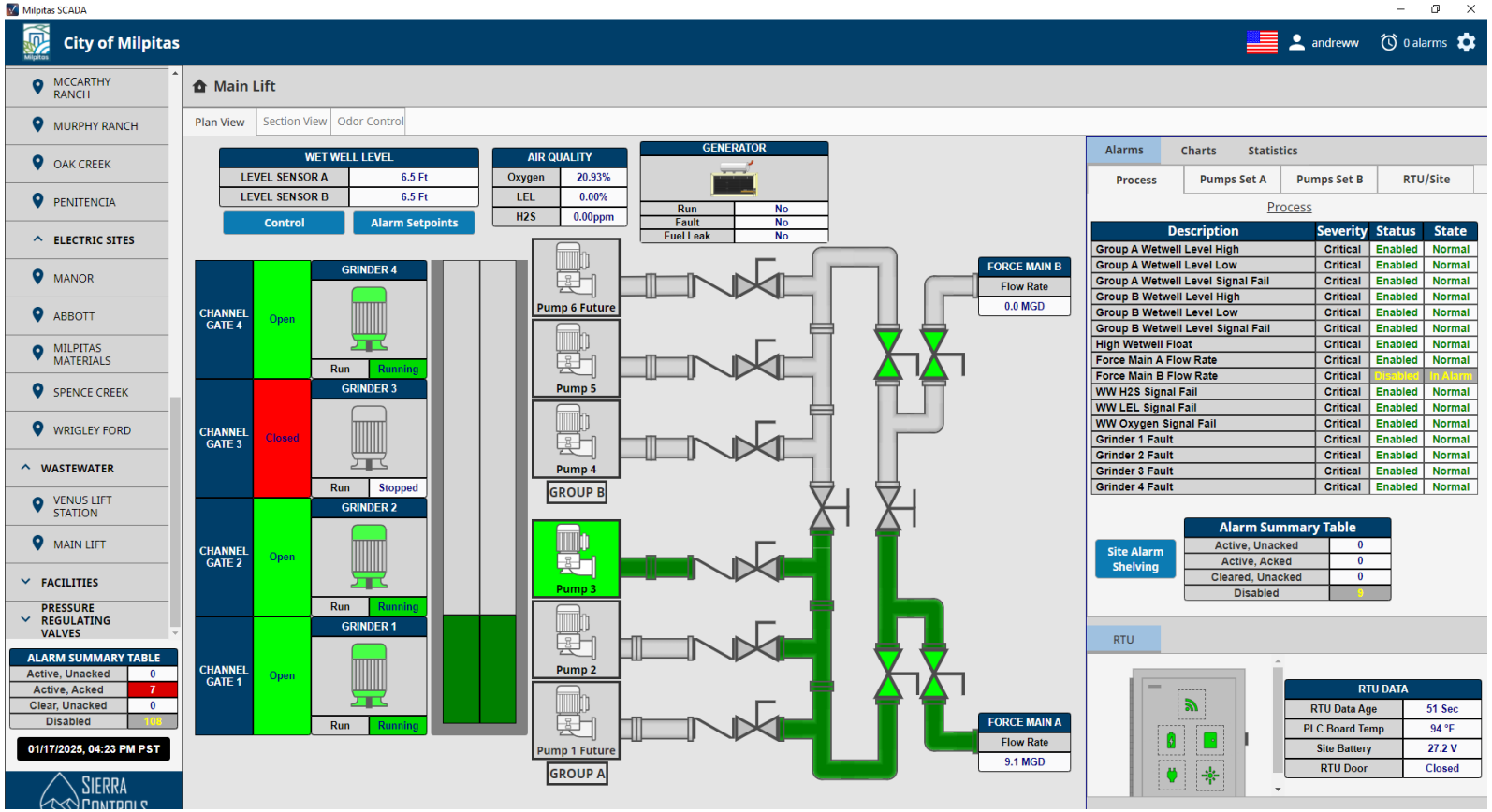
Milpitas SCADA Stormwater Site (Engines)

- Allows overview of all stormwater site conditions and has both local HMI and remote monitoring
- Allows city to see all active alarms and current operations (allows staff to designate critical and non-critical alarms)
- Monitors critical engine and electric driven pump parameters and site conditions like diesel tank leaks and power outages



Milpitas SCADA Wastewater Site (Lift Station)

- Allows overview of all lift station site conditions and onsite generator status
- Allows city and staff to see all active alarms and current operations (allows staff to designate critical and non-critical alarms)
- If there is an equipment failure the system can switch to redundant equipment automatically and there is redundant controls



Milpitas SCADA Water Project Outcomes

- Manage expanding critical infrastructure without increased staffing
- Monitor critical infrastructure performance from a single platform
- Reduce energy consumption and operational costs
- Maintain environmental compliance
- Improve water quality

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Pete Hill

Environmental Policy Innovation Center

ENVIRONMENTAL POLICY INNOVATION CENTER

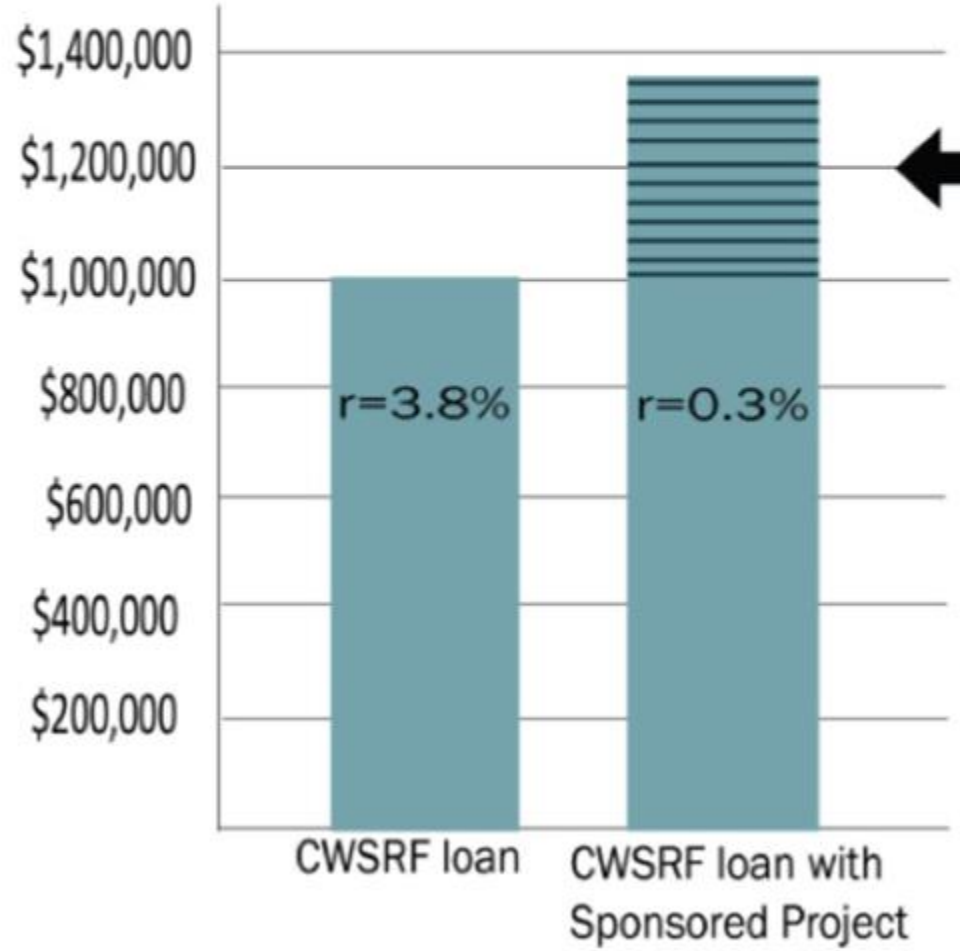
Making the CWSRF work for Green Infrastructure: Bringing the Green to Green Infrastructure

Pete Hill, Senior Policy Advisor

Great Lakes St. Lawrence Cities Initiative Annual Conference

May 15, 2025

	Loan Amount	Interest Rate (r)	Total Repayment Over Twenty Years
CWSRF Loan	$1,000,000	3.8%	$1,463,707
CWSRF Loan with Sponsored Project	$1,393,442	0.3%	$1,463,707



Additional Funds for Sponsored Project

*Same repayment amount despite larger loan amount when you include a sponsored project!

2025 anticipated loans:	158M
Difference between 2.1% and 0.1% interest rate over 20 years	34M
10% of value of these projects paired up with sponsored projects	3.4M

ENVIRONMENTAL POLICY INNOVATION CENTER

Plan of action/next steps

Cities Initiative Annual Conference

- Mayoral Advocacy w/ State SRF agencies
  - Comment on annual intend. use plans
  - Advocacy letters to state agencies
  - Willingness to pay survey
- Adoption of sponsorship prog. in 1 or more states
- Development of project pipeline and registry with municipalities and communities

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Counc. Sylvain Ouellet

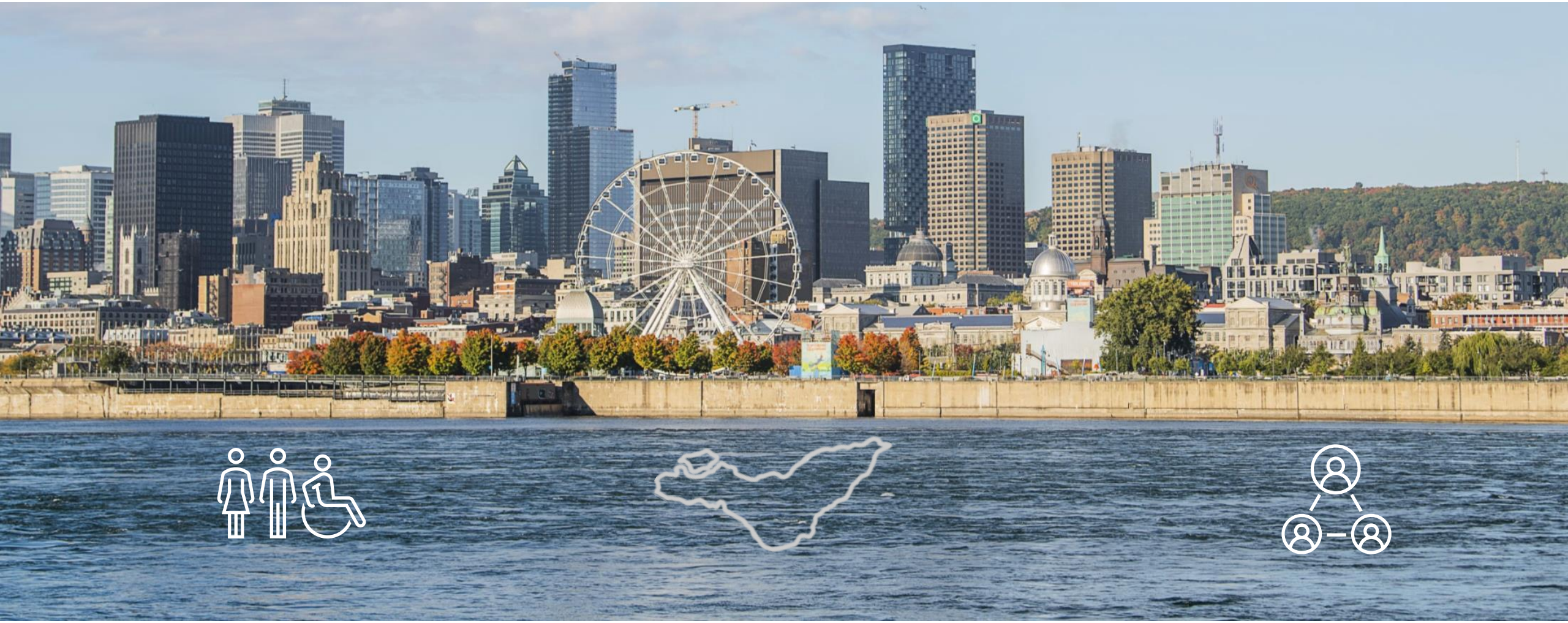
Montreal

Montreal's Cloudburst Management Plan and green infrastructures

Sylvain Ouellet - City of Montreal

Great Lakes and St. Lawrence Cities Initiative – Milwaukee 2025

The City of Montreal



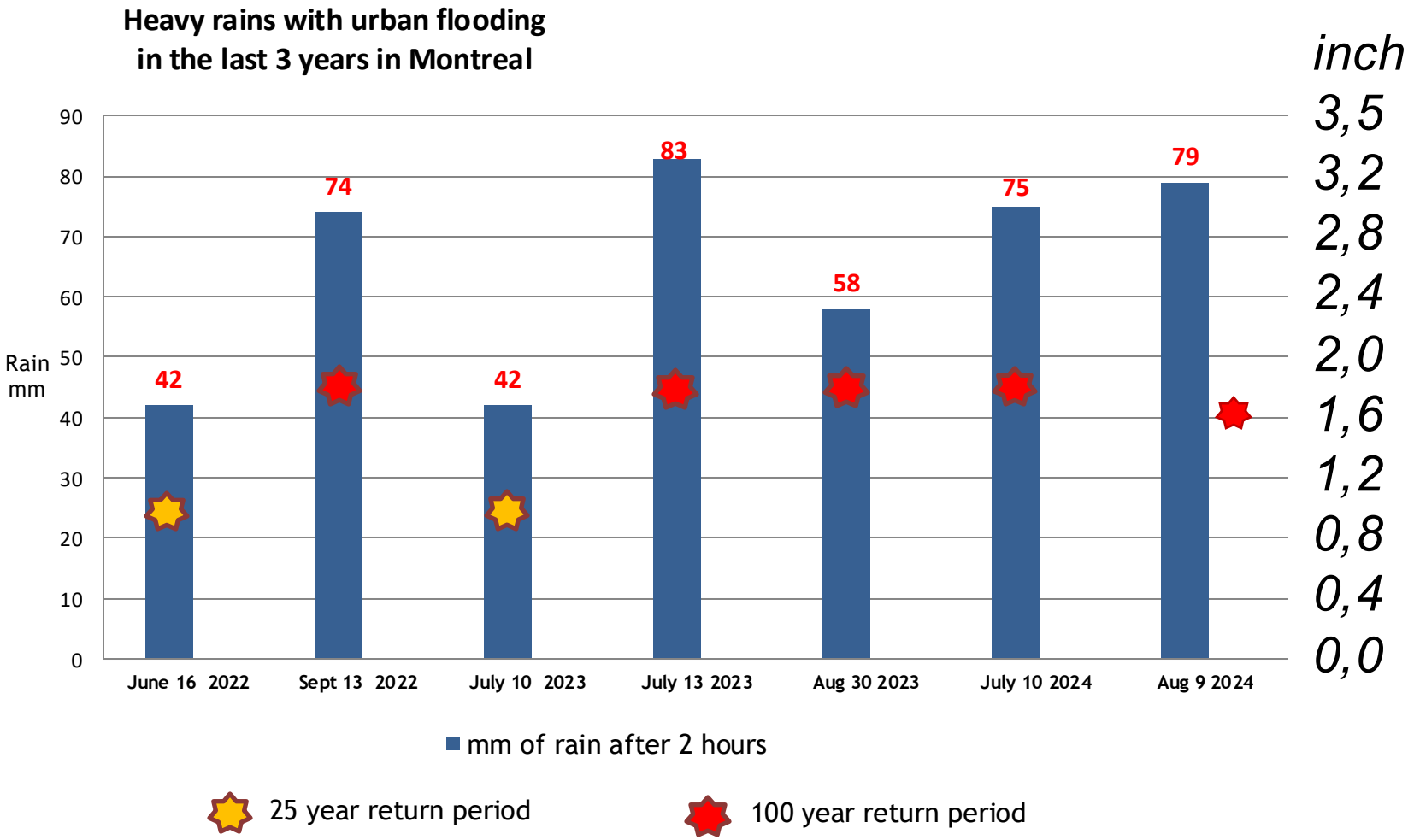
The population of the Montreal metropolitan area is 2.3 million inhabitants

The Island of Montreal covers an area of 497 km² and has approximately 200 km of shoreline.

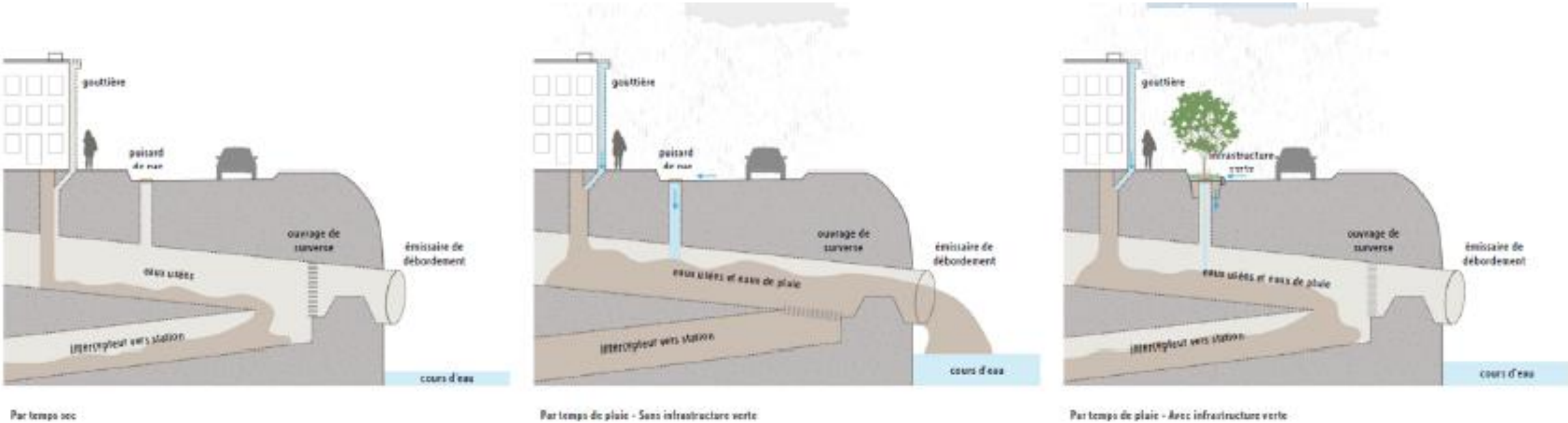
With 4 628 inhabitants per km², Montreal is one of the most densely populated cities in Canada

A new reality

Increase of heavy rainfalls due to climate change



Montreal old combined sewer system



Every year, the sewer system overflows, releasing the equivalent of 1,200 Olympic-sized swimming pools of raw wastewater.

The strategy

Small rainfalls = we need more m^2

The goal : prevent raw wastewater overflow

Solution : more green!

- More trees
- Blue-green curb extensions
- New tax on big parking lots
- Etc.

Heavy rainfalls - we need more m^3 + resilience

The goal : prevent local flooding

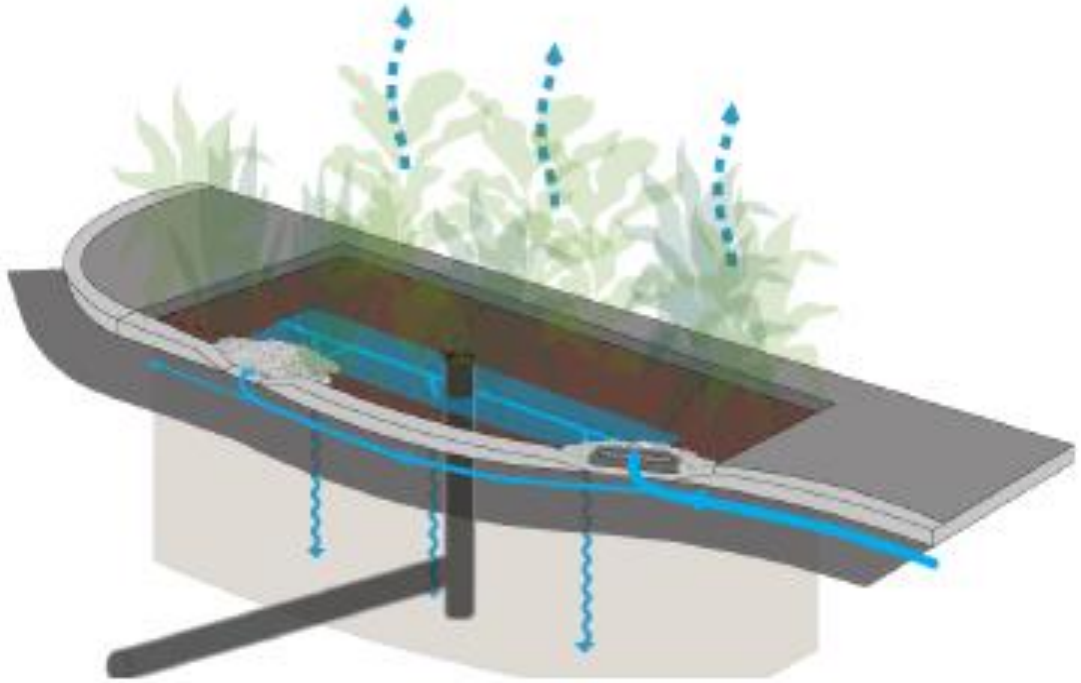
Solution : low cost m^3

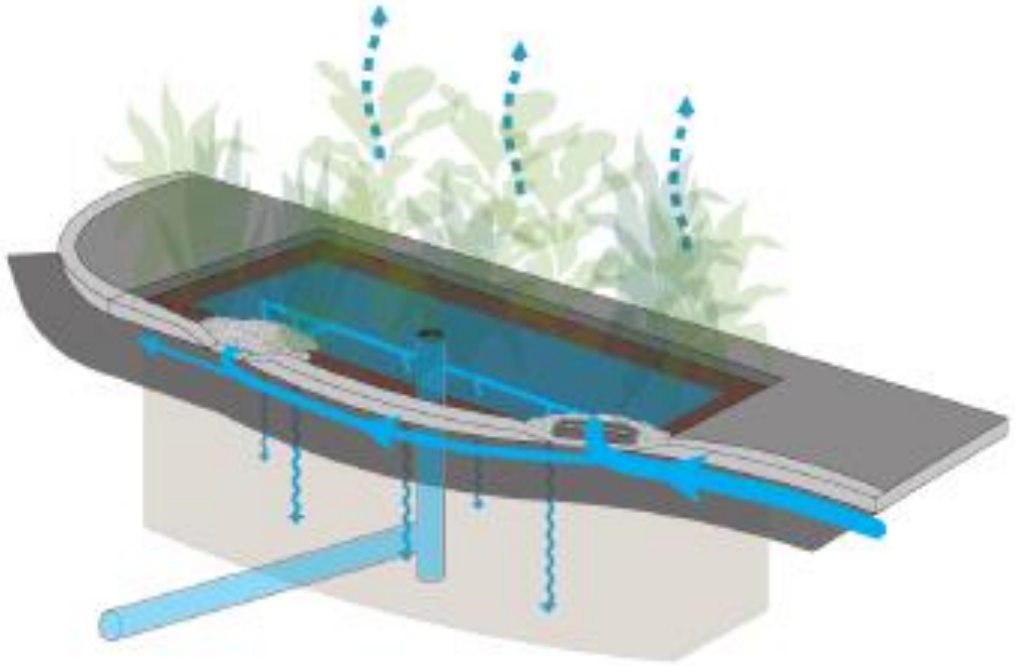
- Resilient parks $
- Water squares $$
- Undergroud retention bassins $$$

+ Resilient homes

A 2 km boulevard rebuilt with more trees and an innovative purpose-built green ditch

Blue-green curb extension
Safer for pedestrians
Greener + biodiversity +
reduce heat islands effect
Low cost water retention and
infiltration bassin
Just beautiful ☺



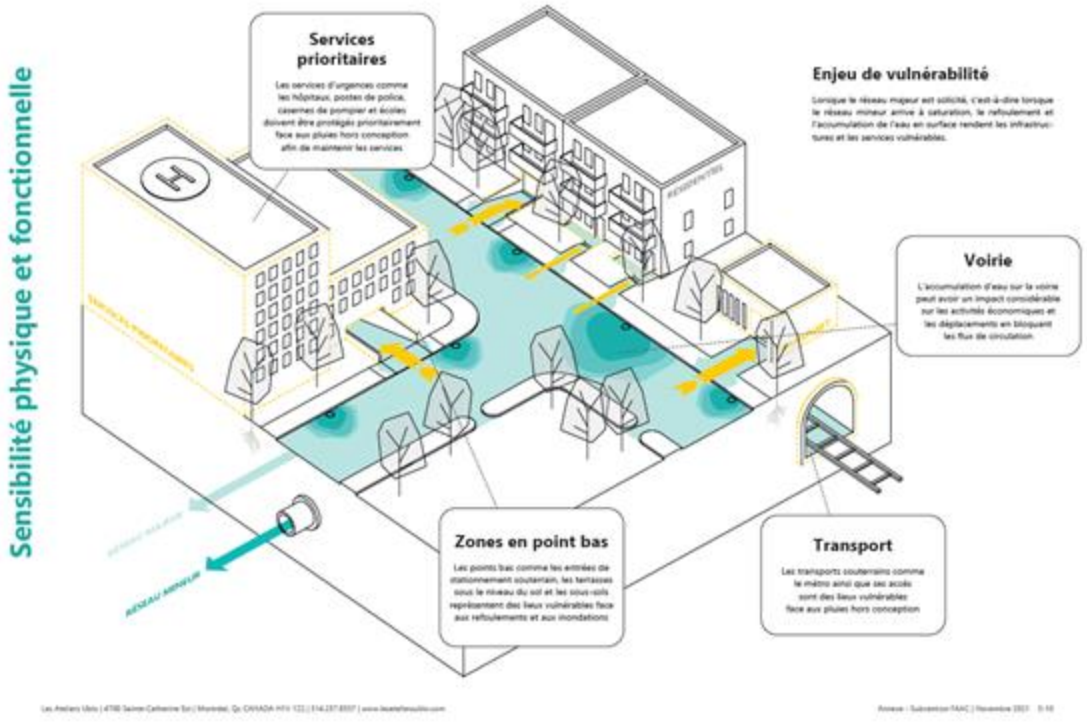



ARRÊT

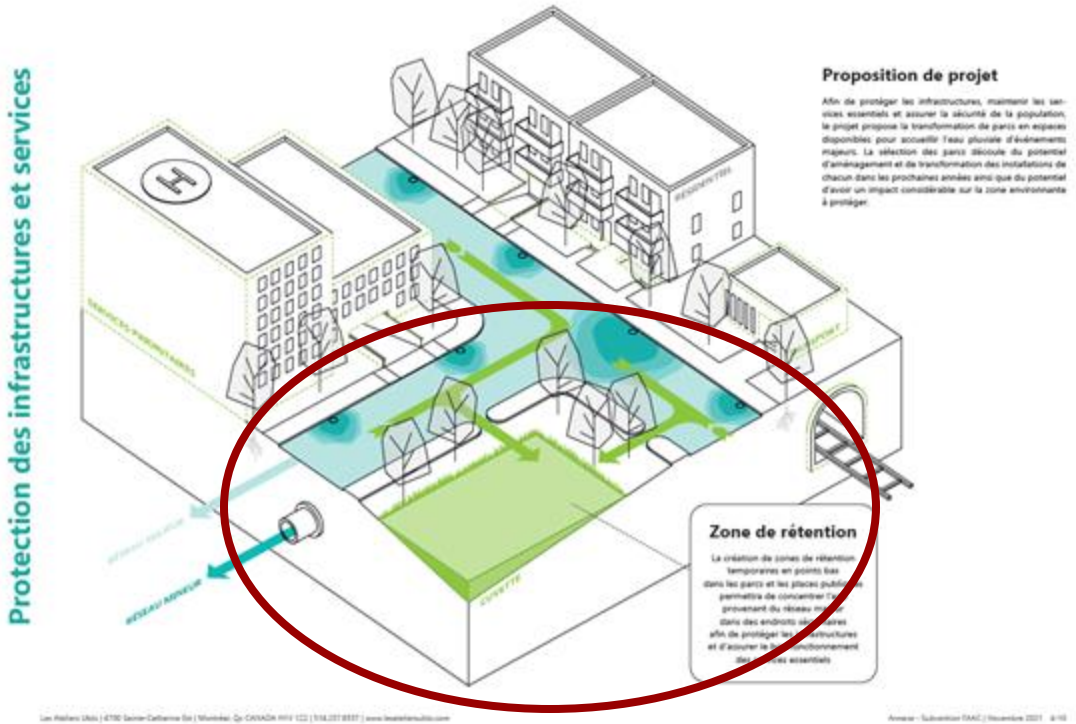
What's wrong in this picture?

What is a resilient park?

Conventional = only gray infrastructure = limited capacity during heavy rainfall events



Resilient park = green infrastructure = runoff diverted to park during heavy rainfall events



What is a resilient park ?

GOAL

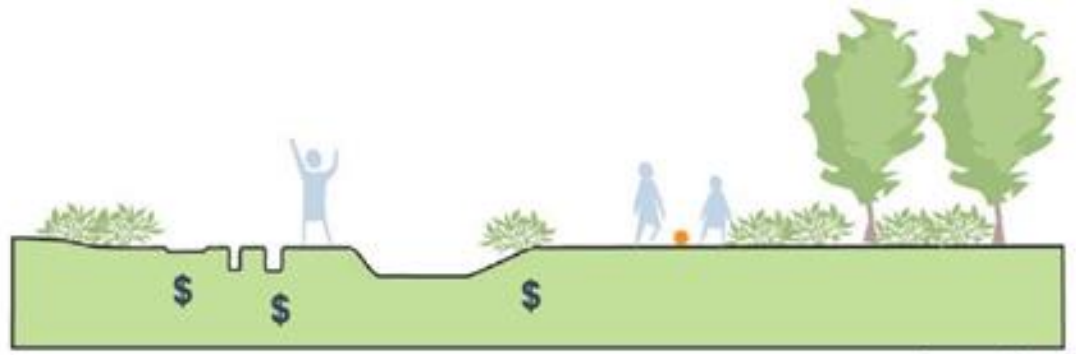
Designed to receive runoff from a peripheral area and temporarily retain water

=

Protection from flash flooding

Multifunctionality	Maintaining its function as a park	Cost-effectiveness	Stimulating the Community
• Landscaping design opportunities • Diversified vegetation • Biodiversity • Reducing heat islands • Improving quality of life, etc.	Space dedicated 99 % of the time for citizens' use, and 1 % for stormwater management	Mutualized investment and limitation of expensive gray infrastructure costs	• Citizen implication • Citizen awareness by making rainwater visible

Traditional public space



Resilient public space


Ru
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Ru
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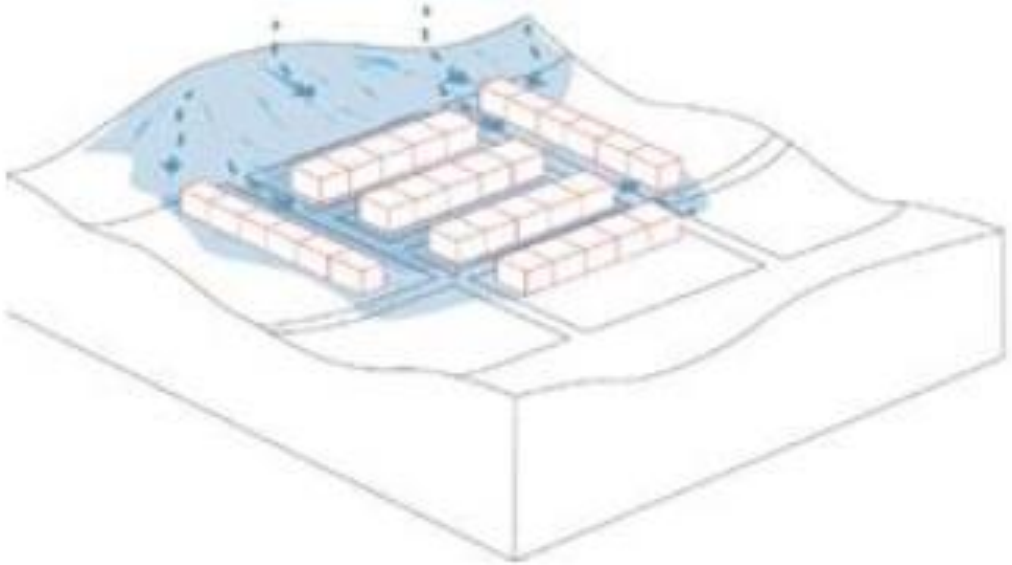
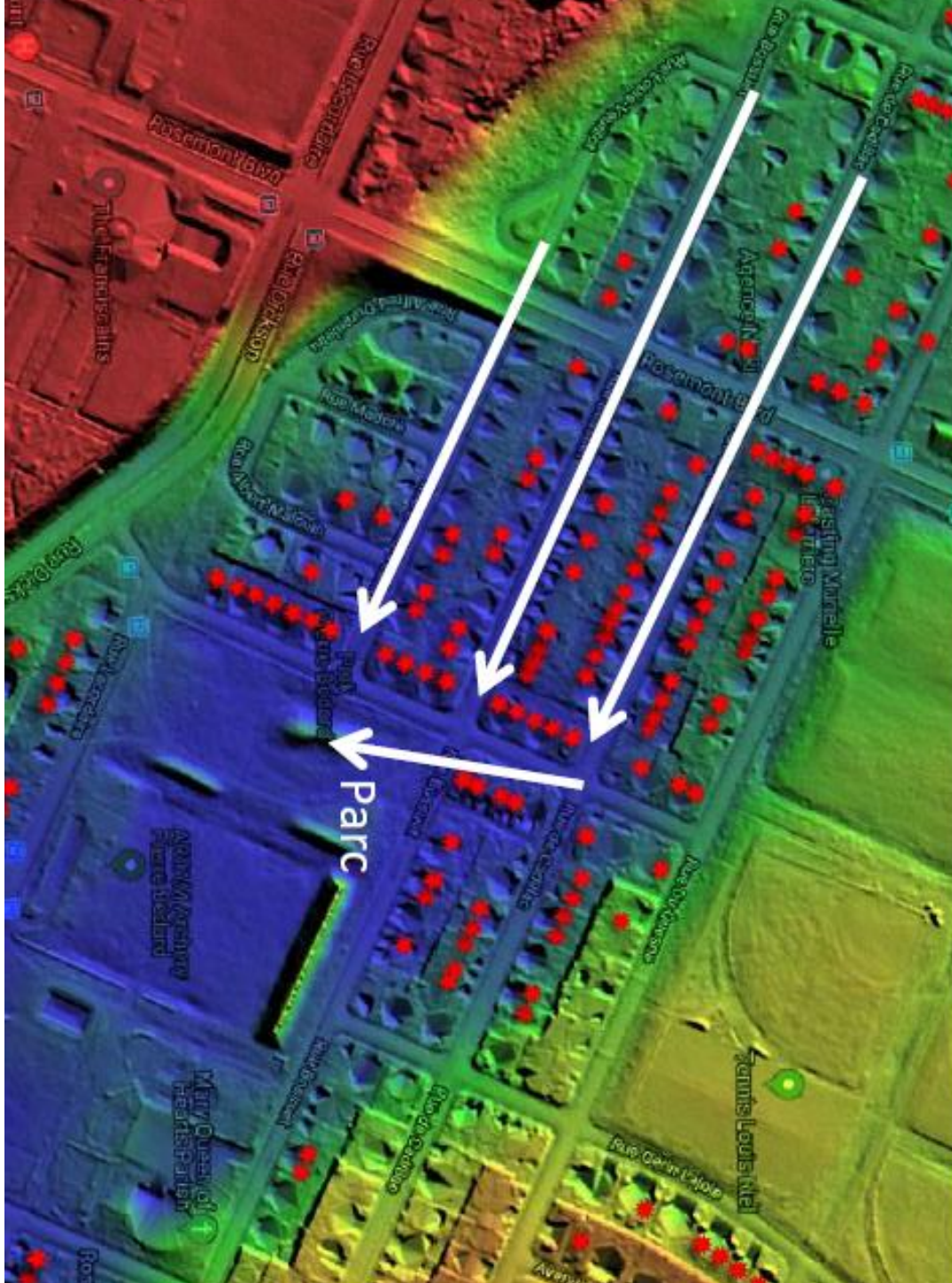
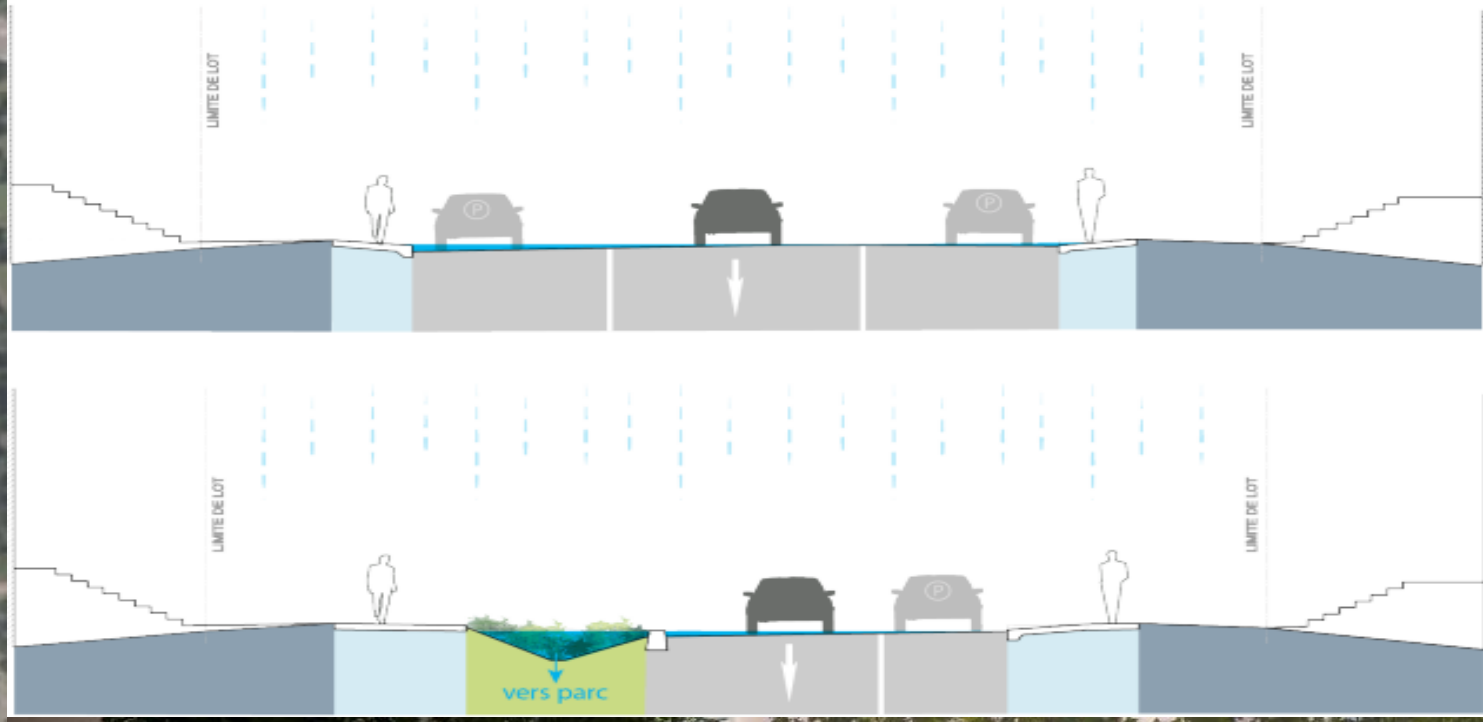
Make rain an event in the park and build around it

An innovative project to protect an at-risk neighborhood built in an old riverbed






Boulevard Rosemont
PARC PIERRE-BÉDARD
rue Du Quesne
rue Gérin-Lajoie
rue Lacordaire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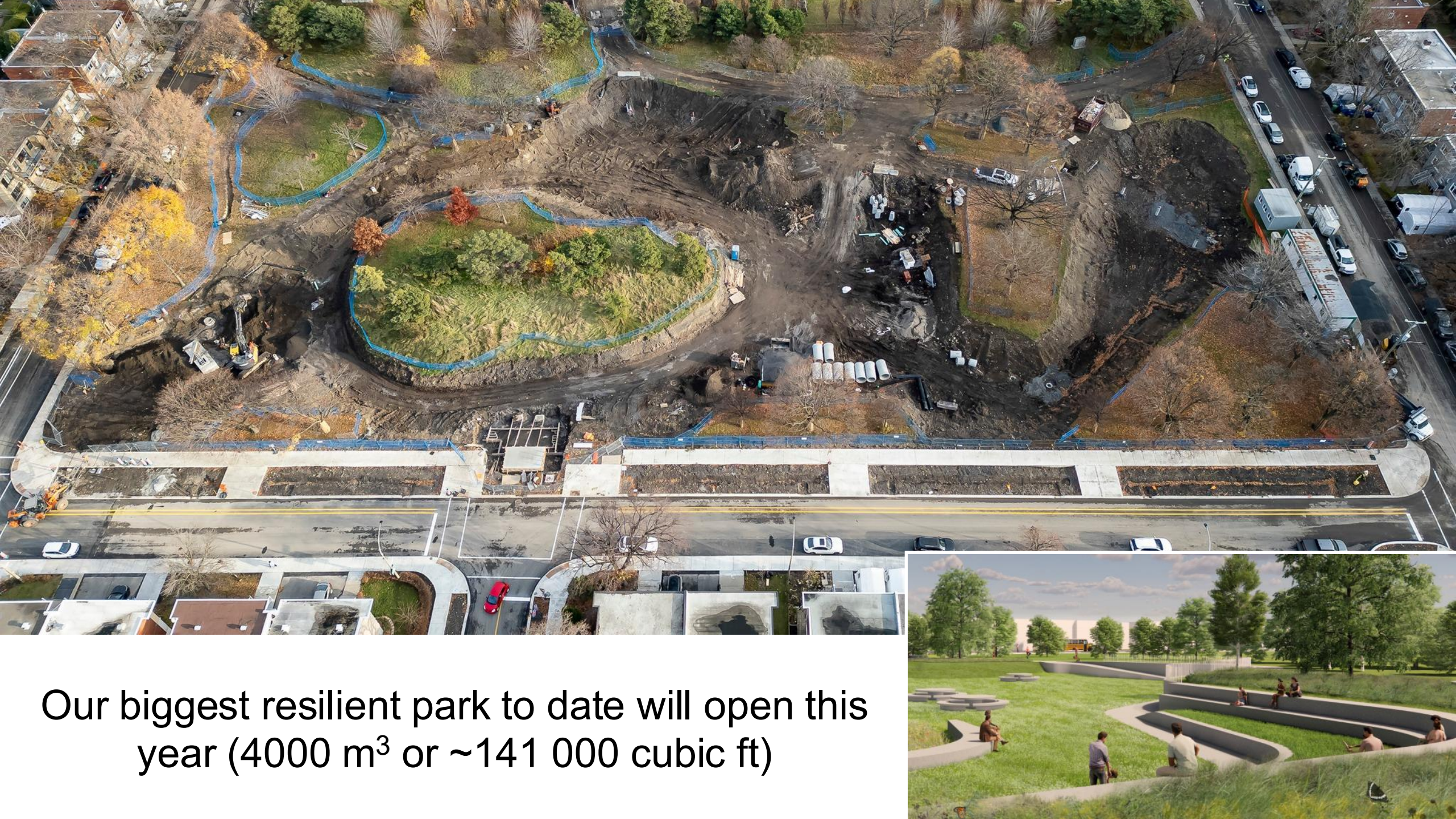


Our biggest resilient park to date will open this year (4000 m^3 or ~141 000 cubic ft)

Performance outcomes for 2022 - 2025

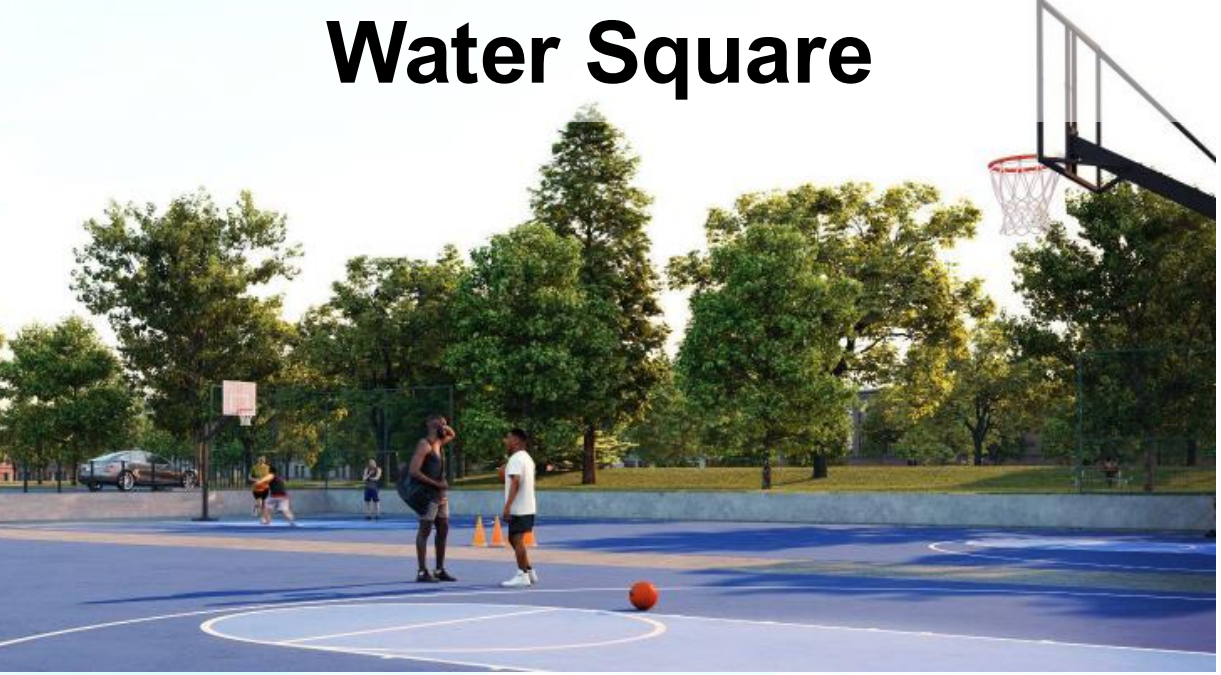
Green infrastructures on streets

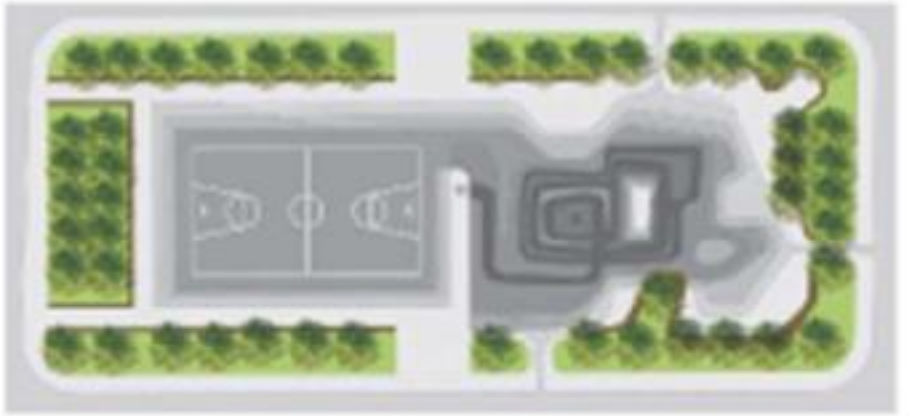
- Built :
  5600 m² (~60 000 sq ft)
- Under construction :
  11 000 m² (~118 000 sq ft)
- In design :
  10 000 m² (~107 000 sq ft)

Resilient parks

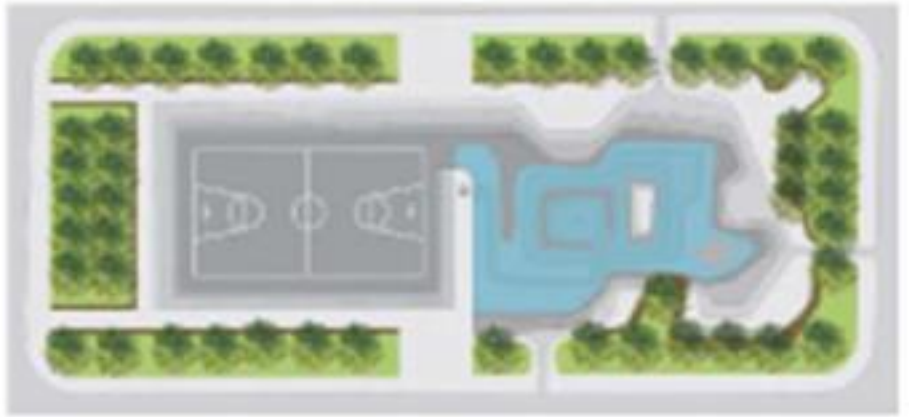
- Built :
  2700 m³ (~95 000 cubic ft)
- Under construction :
  8800 m³ (~311 000 cubic ft)
- In design :
  6700 m³ (~237 000 cubic ft)

Water Square





Dry situation



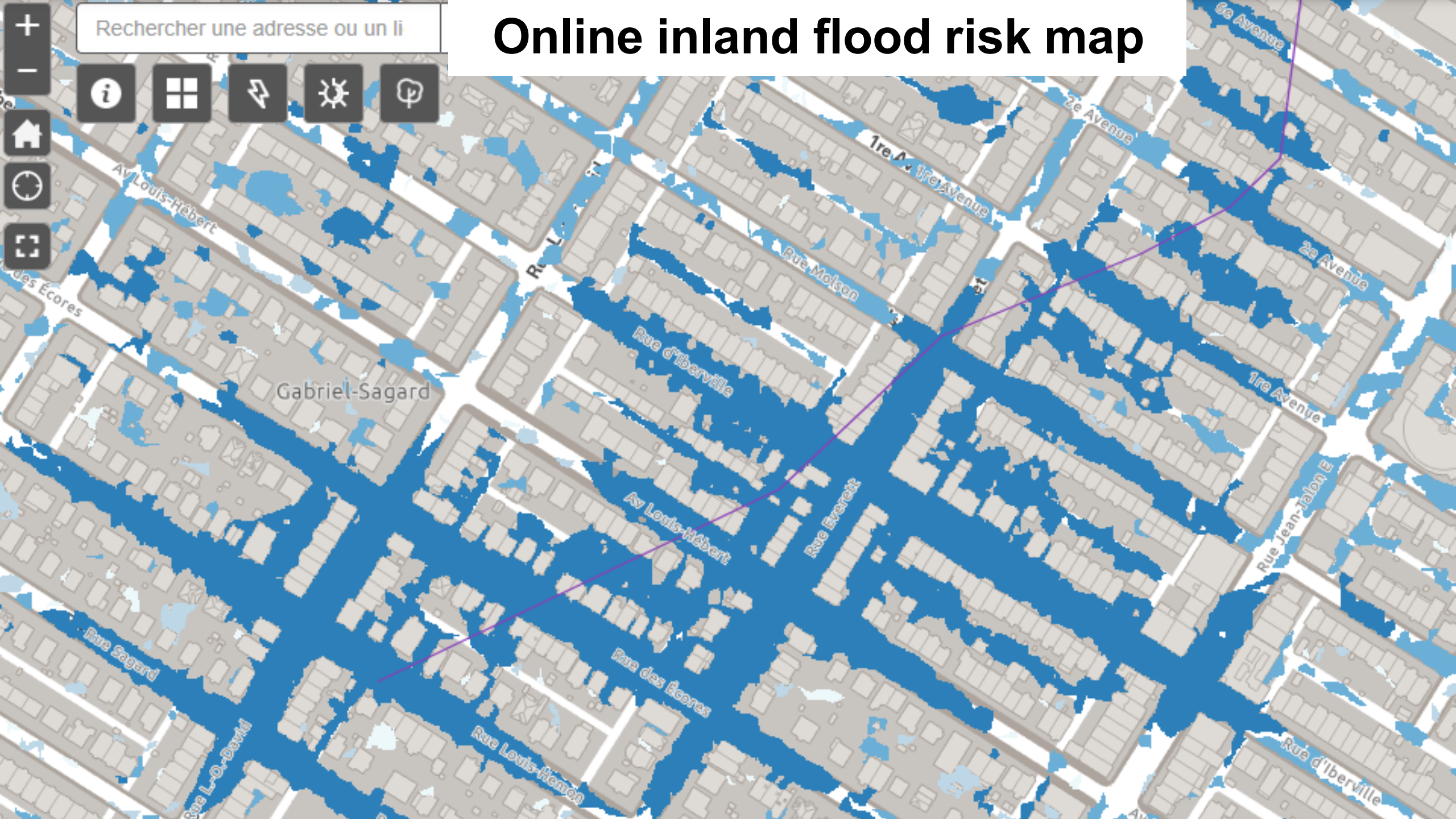
Medium rainfall

Once a year

Building resilience

Action 1	Action 2	Action 3
Helping homeowners now	**Preventing new buildings from flooding**	**Improving Drainage system**
• Testing new protective measures • Providing financial support to implement new measures	• Update master plan and local by-laws to integrate flood resilience	• Prioritizing resilient parks and green infrastructures • Optimizing investments in gray infrastructures
Quick actions to upgrade existing buildings	**Making every new building resilient**	**Reducing cost of investment ($ / m^3)**

Online inland flood risk map



Example of pilot project to test an adaptation measure for existing problems

Original door

Reverse slope driveway causing a thousand of basement floodings

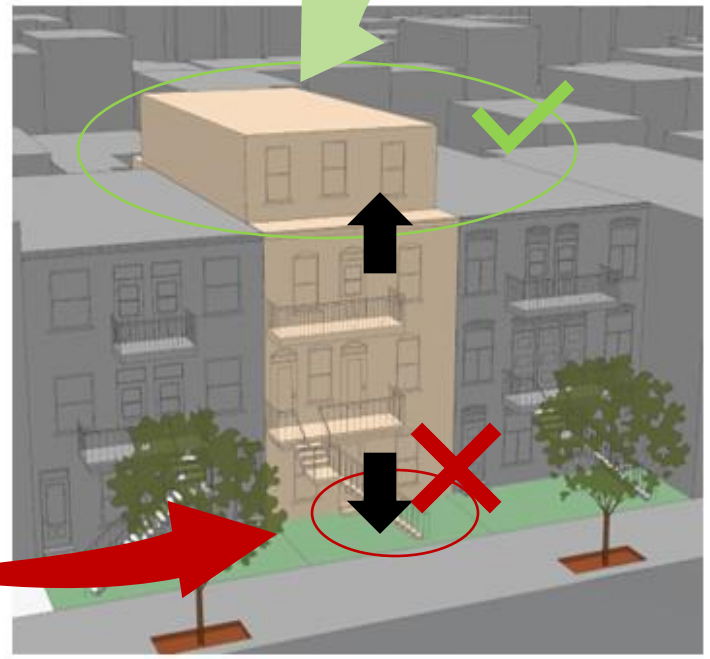
Waterproof garage door testing

Property insurable again

Example of regulations to reduce vulnerability to flooding

Example of a low-lying area

Urban planning regulations authorize an additional floor

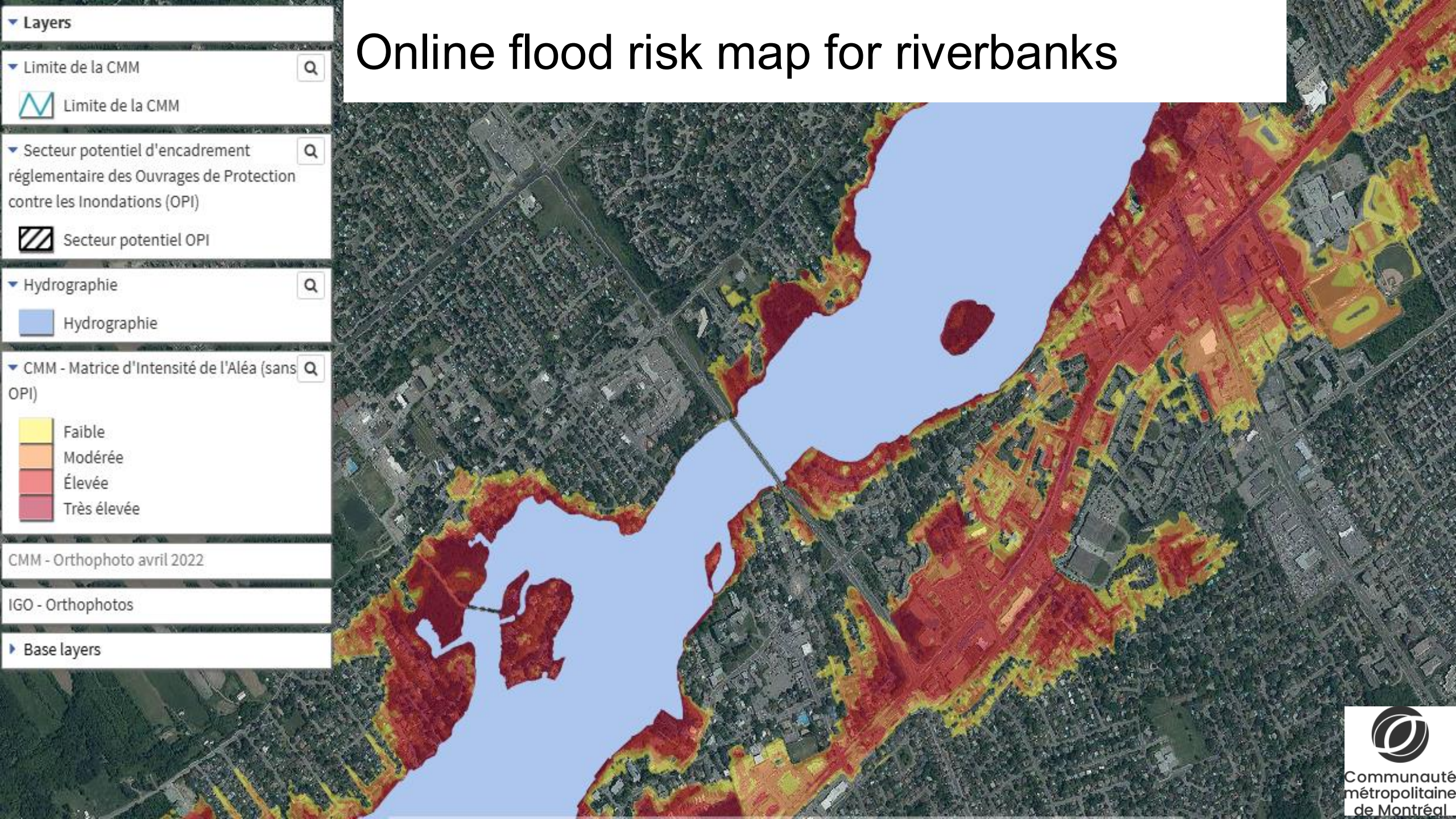


Reducing vulnerability by prohibiting residential use on floors below ground level

There is always a need for new, strategically located grey infrastructure 1500-3000 $/$m^3$

(~42-92 $/sq cube)

Online flood risk map for riverbanks



Communauté métropolitaine de Montréal

Real-time water level cameras

Communauté métropolitaine de Montréal

Online georeferenced water level forecasts for the next 72 hours

CRUES
GRAND
MONTRÉAL

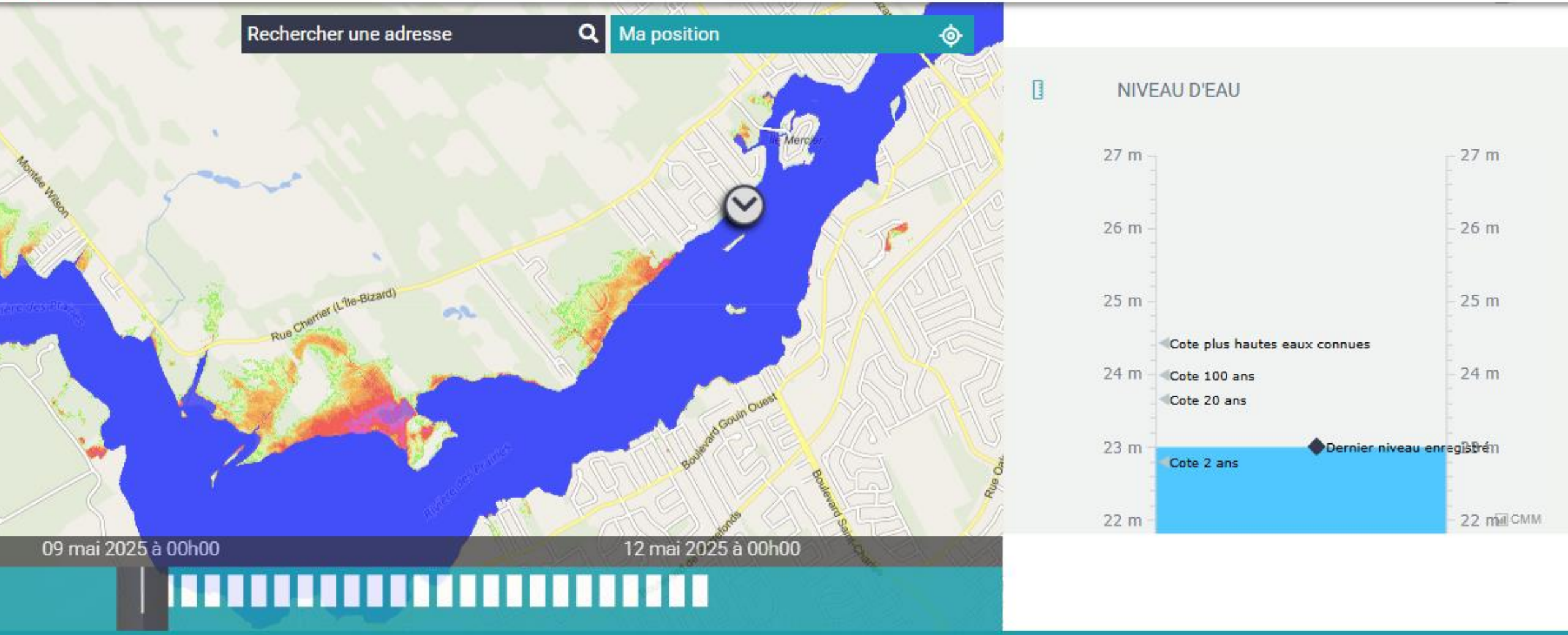


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TABLE DISCUSSIONS

1. What was the most valuable takeaway from the presentations?

2. What is one thing you still have a question about?

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Emily Simonson
US Water Alliance

Counc. Sylvain Ouellet
Montréal, QC

Pete Hill
Environmental Policy Innovation Center

Katy Glynn
Engie

Thomas Monter
Engie

John Paul Jewell
Engie

PANEL Q&A

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We can learn from one another to expand **GREEN INFRASTRUCTURE** and **RESILIENCE** across the Great Lakes Region

THANK YOU

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CLOSING CEREMONY

SIMONE BALLROOM 1

TODAY

4:45 PM – 5:30 PM

PRESENTED BY AQUA ACTION

THE FUTURE OF FRESH WATER | L'AVENIR DE DE L'EAU DOUCE

MAY 14 - 16, 2025 MILWAUKEE, WI

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