

# STORMWATER MANAGEMENT POND **AUTOMATED MONITORING**

SMART CITY TASK FORCE  
APRIL 12, 2022



# OUR AGENDA

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01

What were we doing?

Reactionary maintenance strategies based on anecdotal observations

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02

What are we doing now?

Automated stormwater management pond monitoring at 10 locations

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03

What can we expect?

A shift from reactionary observations to proactive, informed programming

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04

Where do we go from here?

Coming soon: A drone litter audit

# OUR INFRASTRUCTURE

## DID YOU KNOW?

### Vaughan's Stormwater Management System



- 150 stormwater management ponds
- Nearly 1,000 km of storm sewers and over 22,000 catch basins

## STORMWATER MANAGEMENT

### The Role of Stormwater Management Ponds



- Provide water quality improvements and flood mitigation measures in watersheds
- Collect stormwater run-off and contaminants

## TRADITIONAL APPROACHES

### Manual Operational Constraints and Maintenance

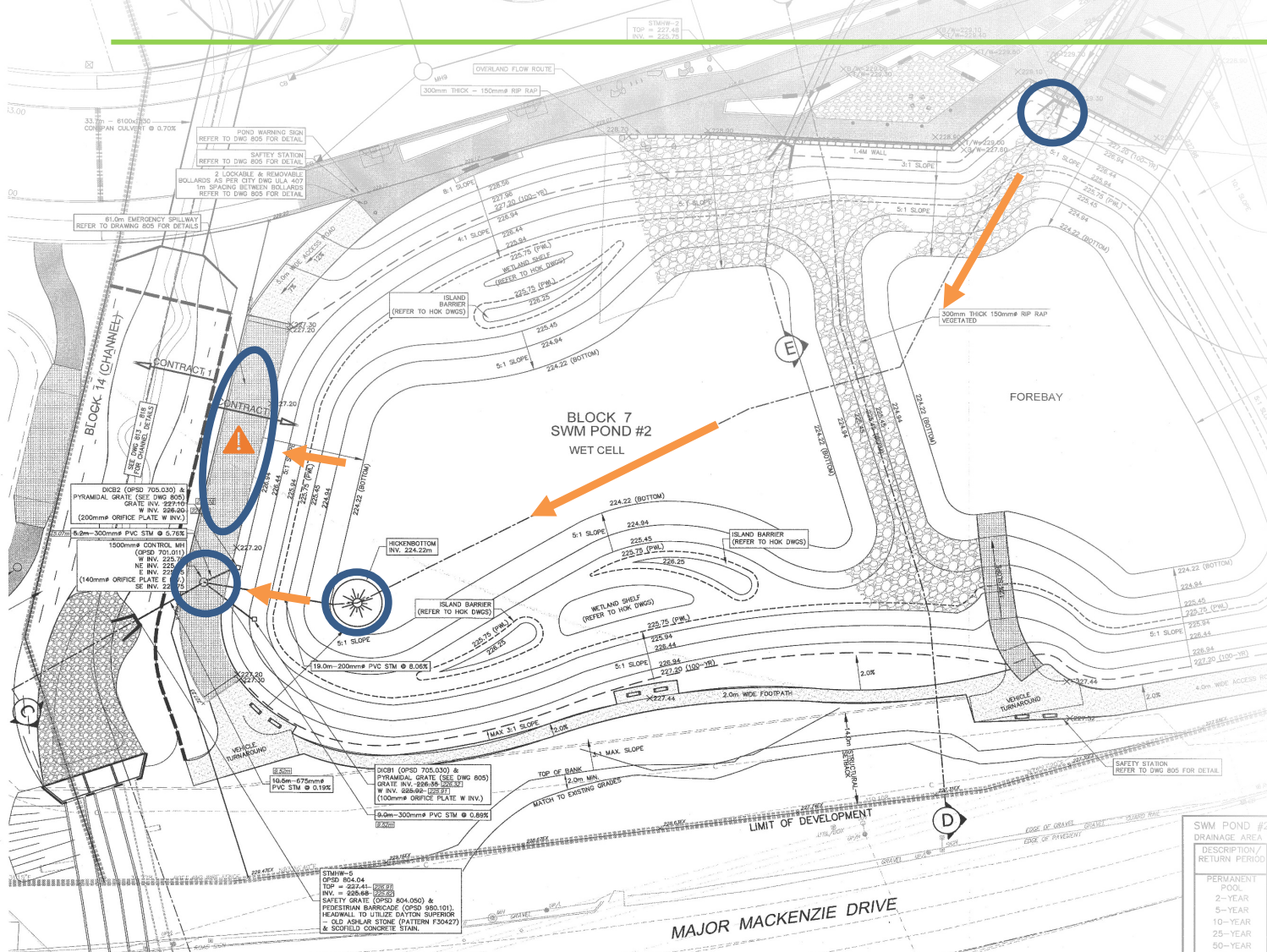


- Reactionary during large storm events
- Based on historical anecdotal observations
- Time consuming





# OUR INFRASTRUCTURE



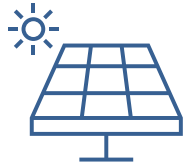
## HOW DOES YOUR LOCAL POND WORK?

### Cortellucci Vaughan Hospital Pond

- ☒ Inlet
- ☒ Forebay
- ☒ Main cell
- ☒ Quality outlet
- ☒ Quantity outlet
- ☒ Emergency overflow



# AUTOMATED MONITORING



**ioticity™**  
The only Industrial IoT Network of its kind

Off-Grid Solar-Ready

Professionally installed, turnkey,  
industrial-grade solution to monitor  
the quality of your water infrastructure

24/7 - Remote Reporting and Early Warning System

Scientific-Grade Sensors

Connect the dots™

# AUTOMATED MONITORING

## INITIAL DEPLOYMENT

### 10 Locations City-wide



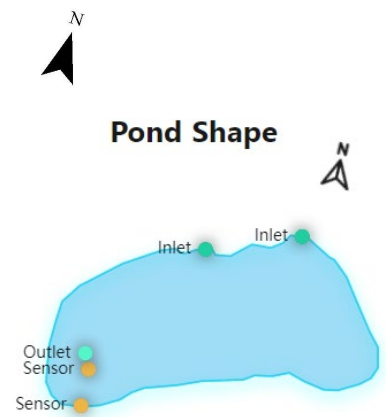
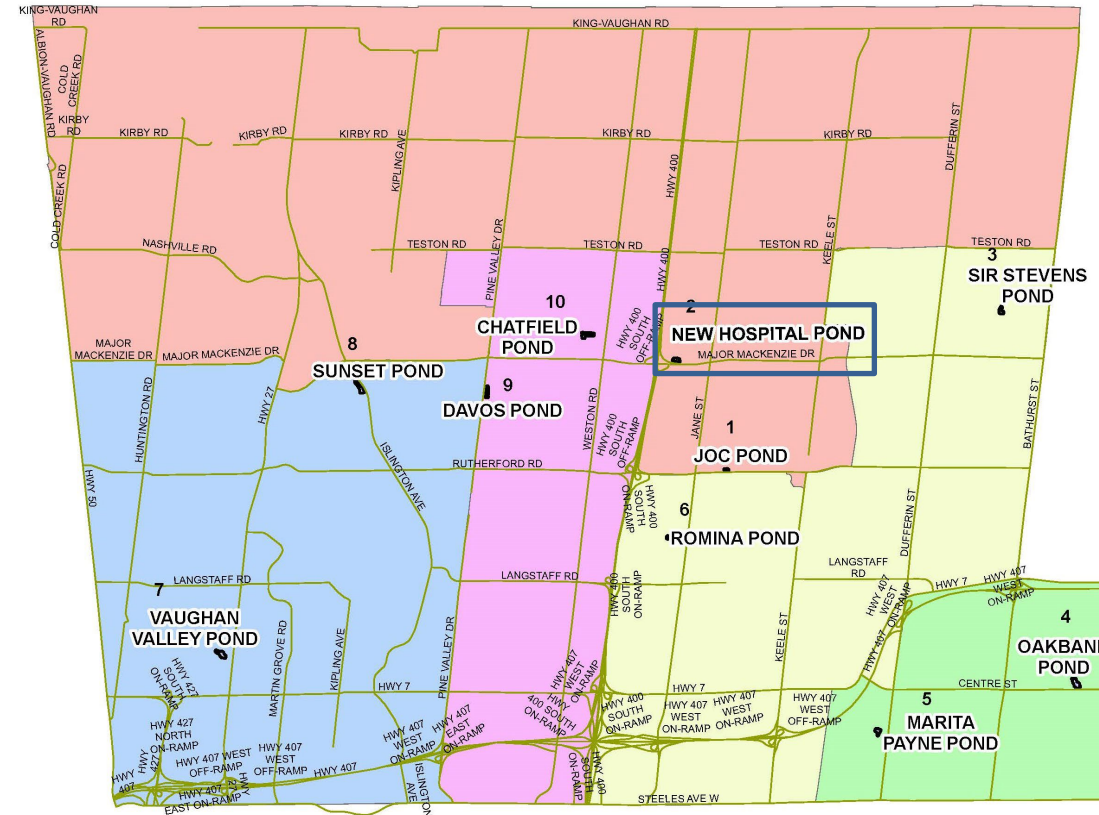
- Tributary land use
- Tributary road network
- Date of construction
- Type of pond

## DATA METRICS

### Water Quality and Quantity Indicators



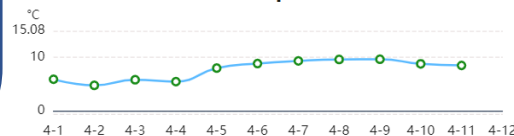
- Temperature
- Specific conductivity
- Salinity
- pH
- Turbidity
- Water depth
- Oxidation reduction potential
- Dissolved oxygen
- Total dissolved solids
- Total suspended solids



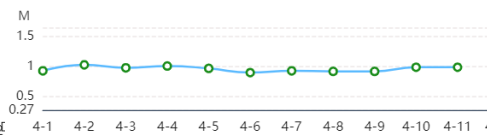
### Air Metrics

Temp: 7.6 °C  
 Rainfall (24h): 0 mm  
 Air Pressure: 987.0 hPa  
 Humidity: 64.1 % RH

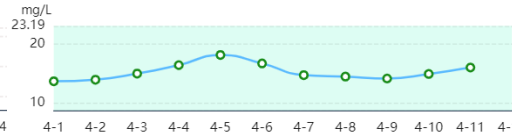
### Water Temperature



### Depth



### Dissolved Oxygen





# OUR ADVANTAGE

Reactive → Proactive

- + Data-driven decision making
- + Predictive analytics
- + Early warnings
- + Historical data
- + Quick detection of pollutants
- + Strategic resource deployment





# OUR FUTURE



- ✓ Joint collaboration with Innovation York, Mitacs and Public Works
- ✓ Study to commence in 2022 using a data-driven approach via drones to conduct a litter audit
- ✓ Intelligence will help inform future programming and communication efforts







# THANK YOU

Emilie Alderman, Acting Director of Environmental Service  
[emilie.alderman@vaughan.ca](mailto:emilie.alderman@vaughan.ca)

Shanon Kalra-Ramjoo, Associate Director of Portfolio Management  
[shanon.kalra-ramjoo@vaughan.ca](mailto:shanon.kalra-ramjoo@vaughan.ca)

