“Extra Eyes” Help Manage Sewer Overflows at the City of Buffalo

National Water and Wastewater Conference
November 2025

Michele Samuels, MBA, P.Eng.

Speaker Introduction

Michele Samuels

Client Solutions Manager, Xylem Vue

- Worked in water sector for 20+ years
- Spent a major portion of it at a large municipal public works utility – focused on operational performance and asset management
- Currently help utilities across Canada with adopting digital solutions and strategies

xylem
Let's Solve Water

Agenda

01 About the City of Buffalo

02 What issues were they facing?

03 How was the Xylem Vue Platform developed to help them?

04 What results have they seen so far?

05 What's next?

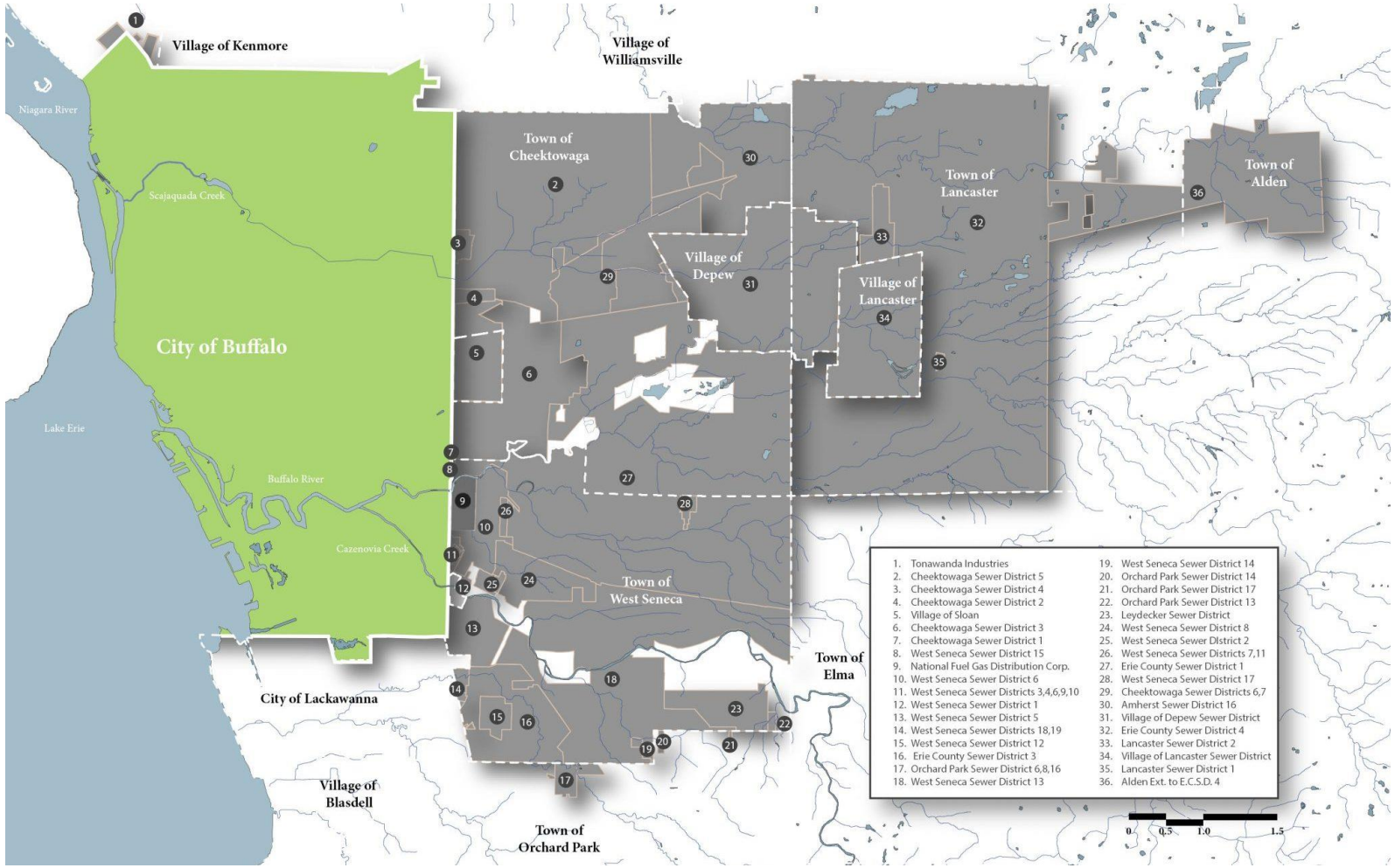
xylem
Let's Solve Water

- About the City of Buffalo

Buffalo Sewer Authority Overview

https://cdn.britannica.com/34/4834-050-BC652AF8/United-States-of-America.jpg

Buffalo Sewer Authority Overview



- Established in 1938
- Services City of Buffalo and 11 surrounding municipalities (> 550,000 people)
- 285 sq. km of coverage, 1,370 km of sewer pipe
- Annual operating budget of $54.9 million
- Undertakes over $20 million in capital projects annually
- Long Term Control Plan (LTCP) approved in 2014 to be completed in 20 years, 97% of wet weather flows to be captured upon completion

BUFFALO SEWER AUTHORITY

xylem Let's Solve Water

- What Issues Were They Facing?

BUFFALO
SEWER AUTHORITY

Wet Weather Operational Optimization and Real Time Control Coordination System

Visibility

Improve communication and knowledge sharing between WWTP and collection system teams by securely presenting data from multiple sources on one platform.

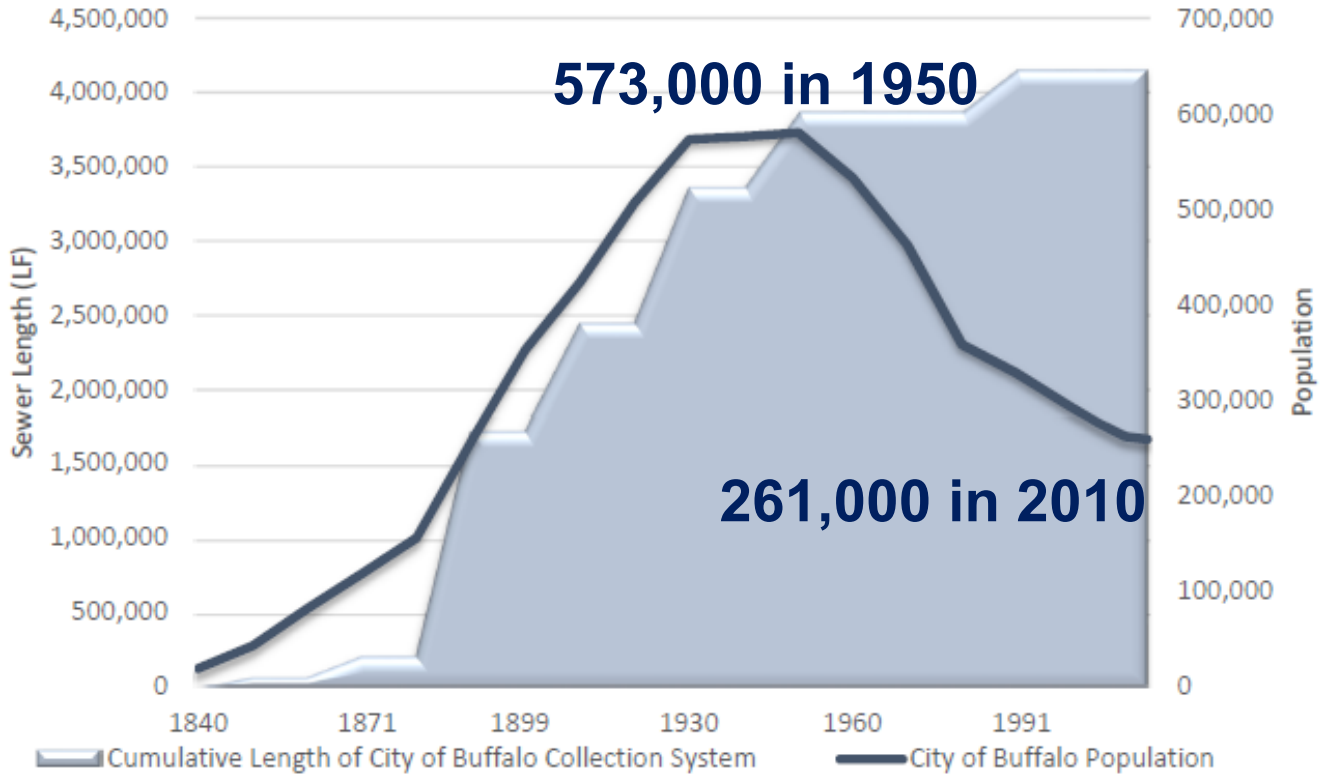
Optimization

Prevent overflows and reduce energy consumption/costs through coordinated control of existing and planned assets - including RTC sites, Bird Island WWTP, and other assets.

xylem
Let's Solve Water

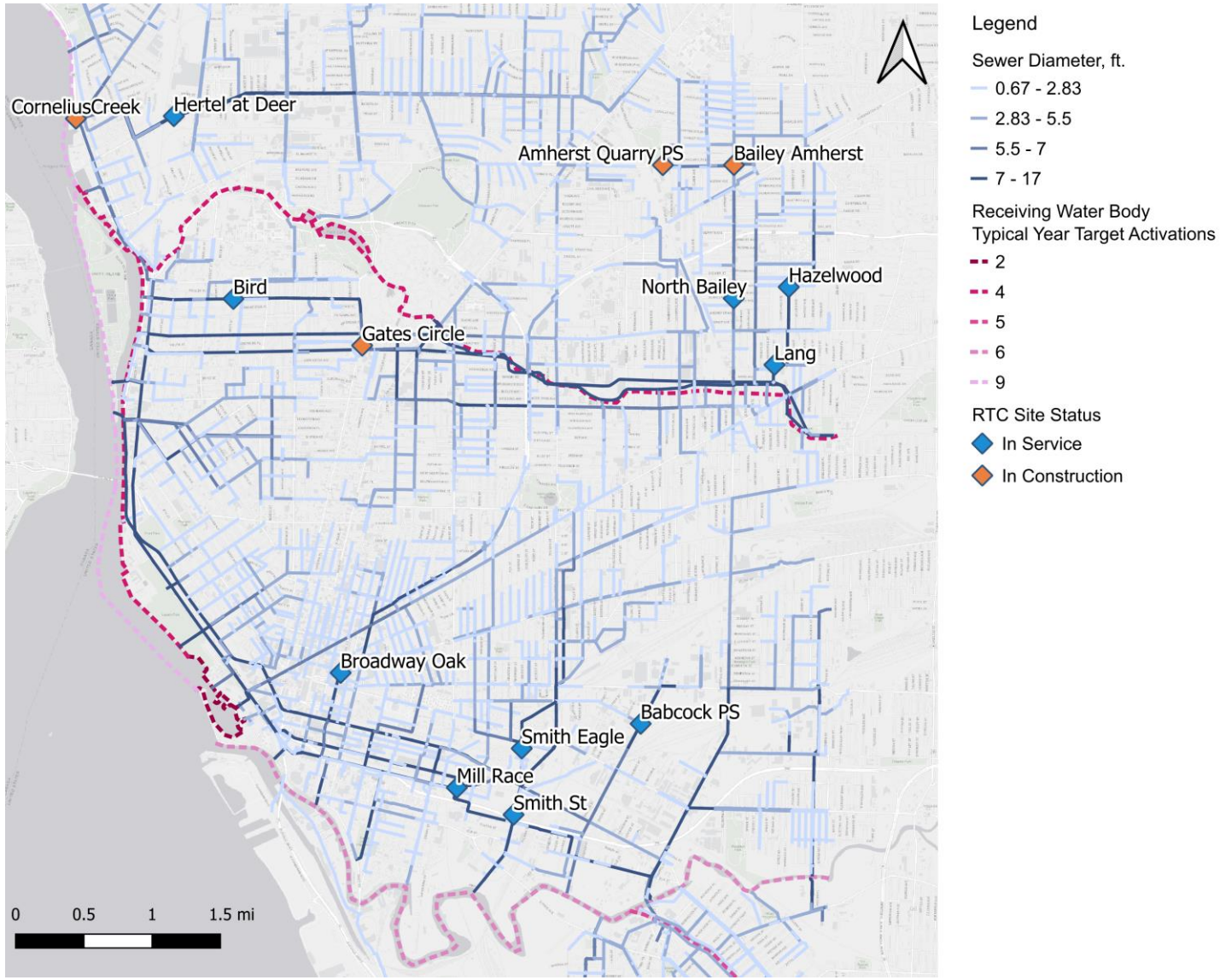
Why Real Time Control (RTC)/In-line Storage (ILS)?

55% Population decrease
Industry decrease



8 major trunklines were more than half empty during the peaks of the largest expected storm events in a typical year

Real Time Control Sites



BUFFALO SEWER AUTHORITY

xylem Let's Solve Water

- How Was the Xylem Vue Platform Developed to Help Them?

Data Management for Digital Transformation

High Level Architecture

Real-time monitoring and actions on key indicators

Service Operation Center | BI Connectors | Dashboards, reporting & AI

4. Operational Intelligence

Analytics, Optimization and Real-Time Decision Support

Water | Wastewater | Agriculture | Water Resources | Smart Building & Industry | Third-party Apps

3. Modular Business Applications (+20)

DMD Domain Master Data | **IoT Core** | **Device Management** | **GIS Framework** | **Data Science Framework**

2. Smart Water Engine

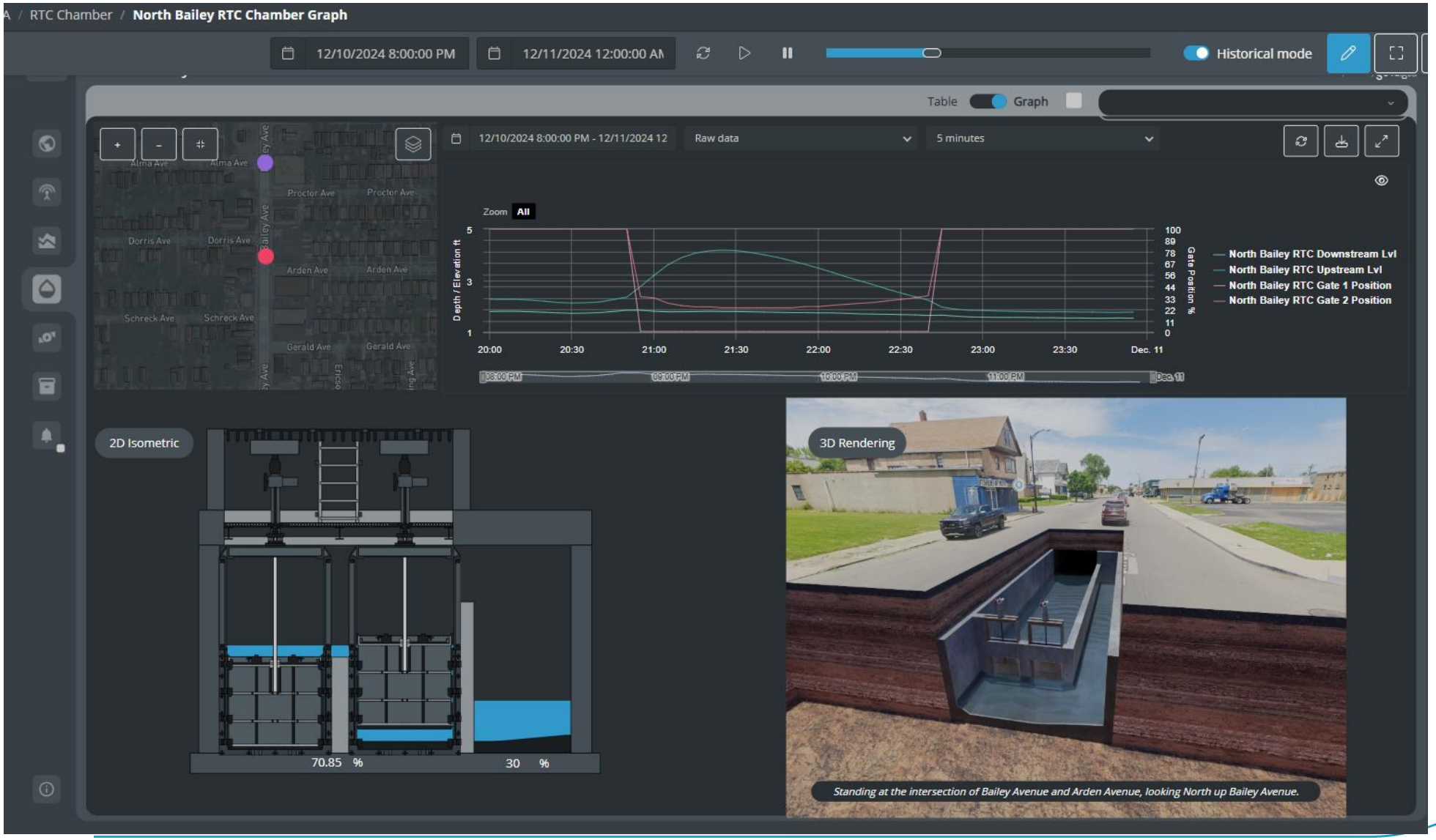
AMI / AMR | SCADA, PLCs & IoT Sensors | GIS, CMMS, CRM, ERP, etc. | EPANET, LIMS, other databases | Third-party systems & data

Over 120 protocols/systems already supported in Xylem Vue

1. Data Sources

xylem

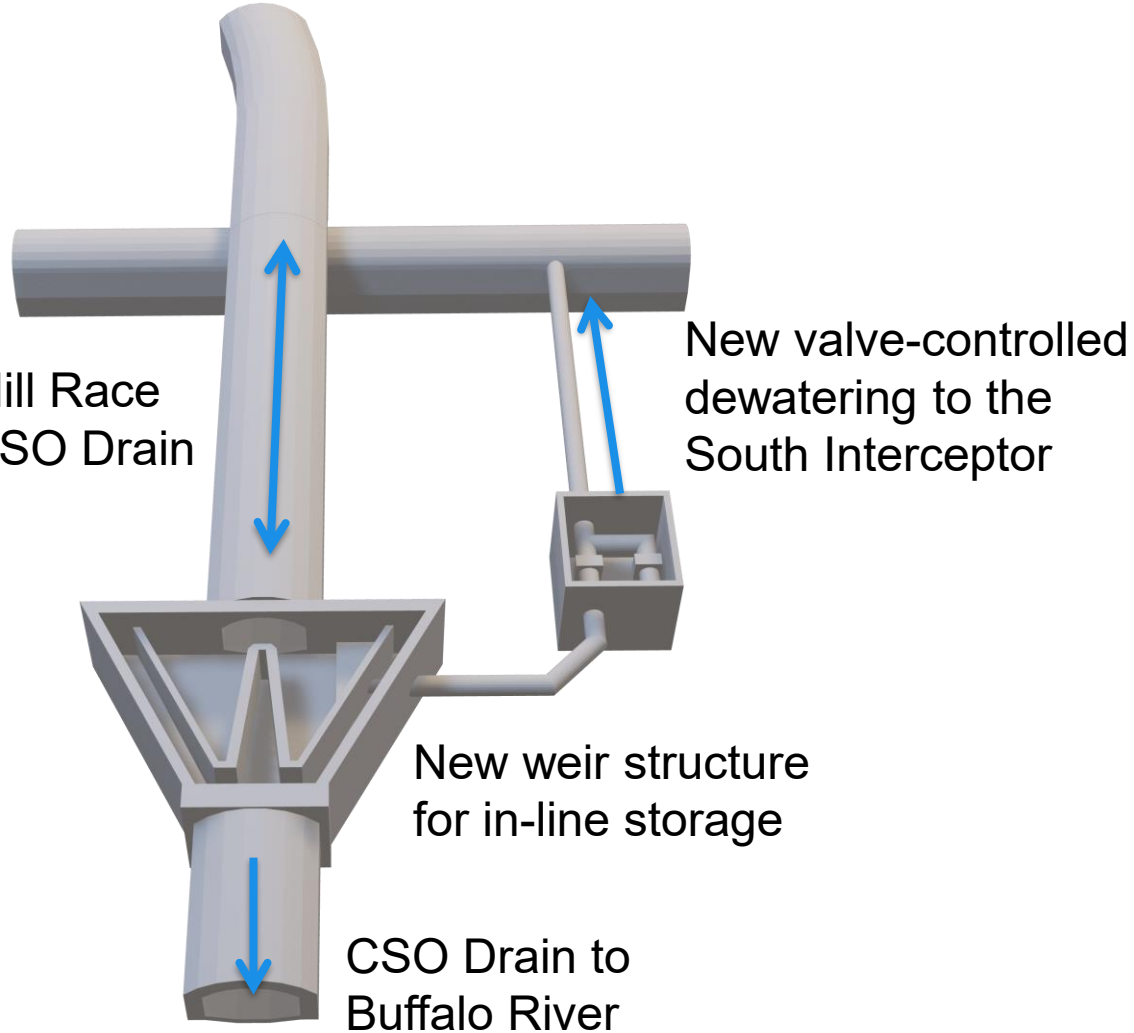
Local Control for In-Line Storage (North Bailey RTC)



Hertel at Deer In-Line Storage

Hertel at Deer RTC Construction Fall 2019 Commissioned January 2020

Other RTC Strategies



RTC Interception

- Flow is captured from existing CSO drains when there is available capacity in the downstream interceptor
- When valves are closed, static weir provides additional in-line storage before overflow occurs

Diversion

- Send flow to another area of the system that has available capacity

Dynamic Underflow Control

- Similar to RTC interception, allow CSO regulators to send more flow downstream
- Upsize existing pipe or add parallel pipe

BUFFALO SEWER AUTHORITY

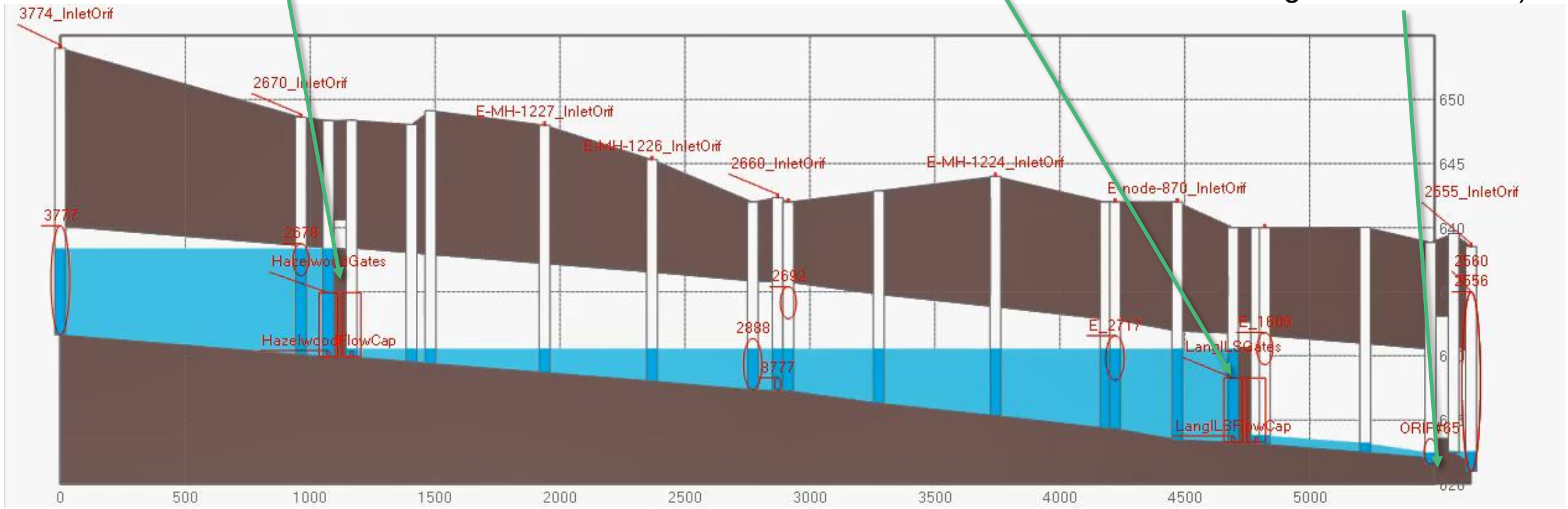
xylem Let's Solve Water

Coordinated Remote Control for In-Line Storage

Hazelwood RTC, commissioned in 2019

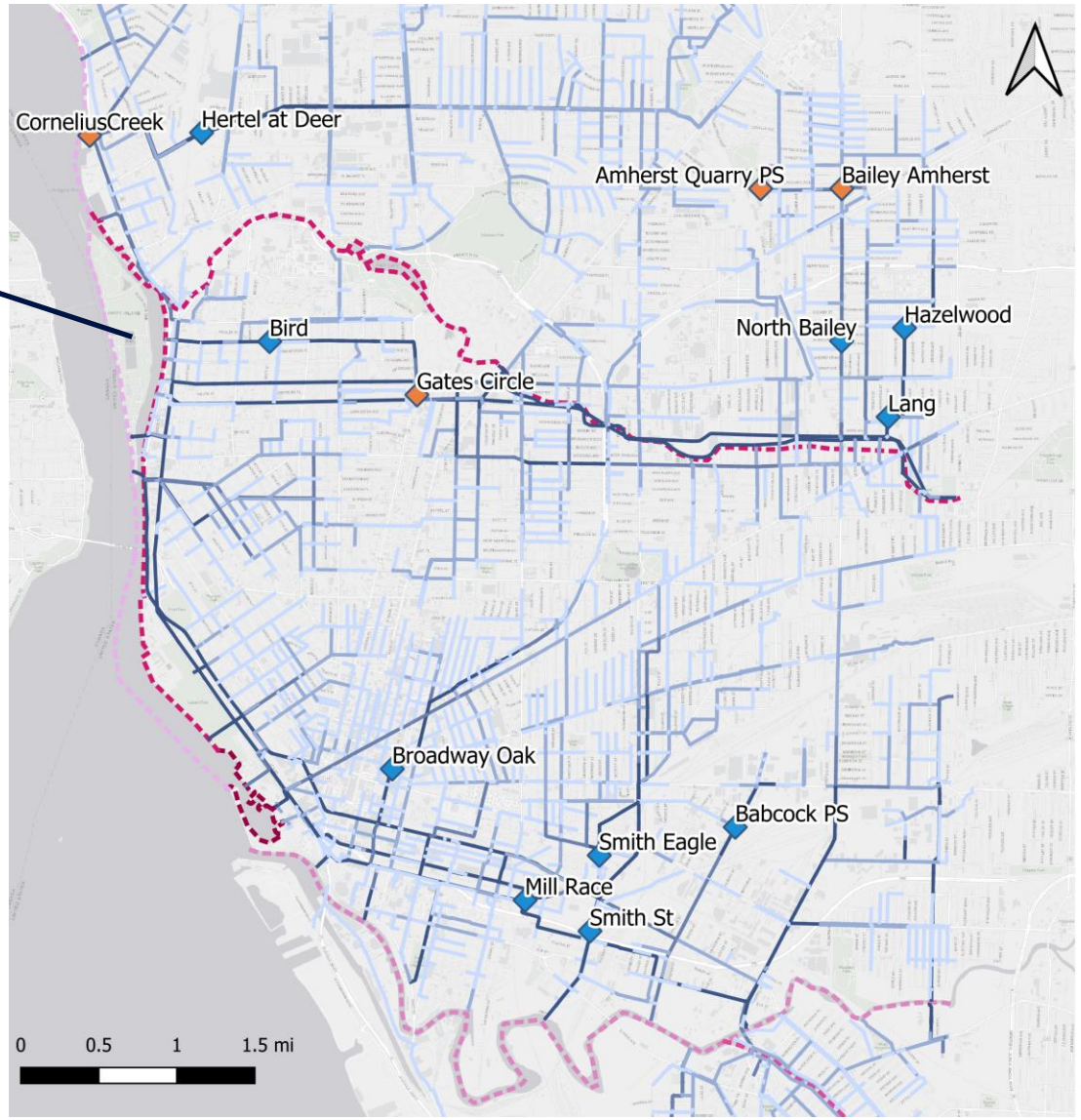
Lang Ave RTC, commissioned in 2017

SPP340 (CSO Regulator Chamber)



Globally Coordinated Control Strategy Objectives

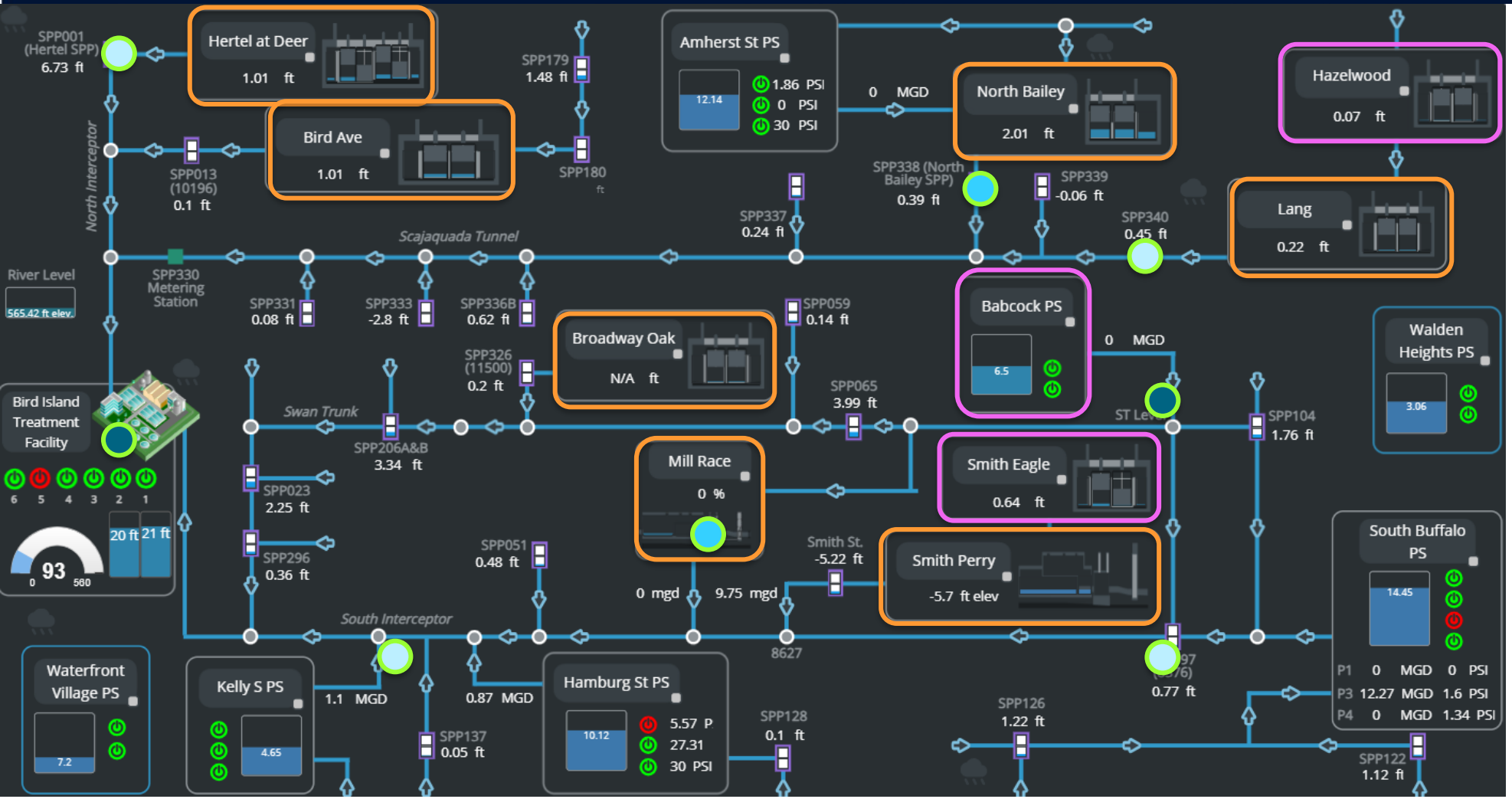
Treatment Facility
•Reduce stress on pumps and energy usage
•Reduce peak flows
•Provide actionable feedback to operators



Collection System
•Reduce magnitude and frequency of CSOs
•Utilize in-line storage efficiently

xylem
Let's Solve Water

Globally Coordinated Control Implementation



Remote Monitoring Inputs

- New location in design
- New location in construction
- Existing, communication pathway update

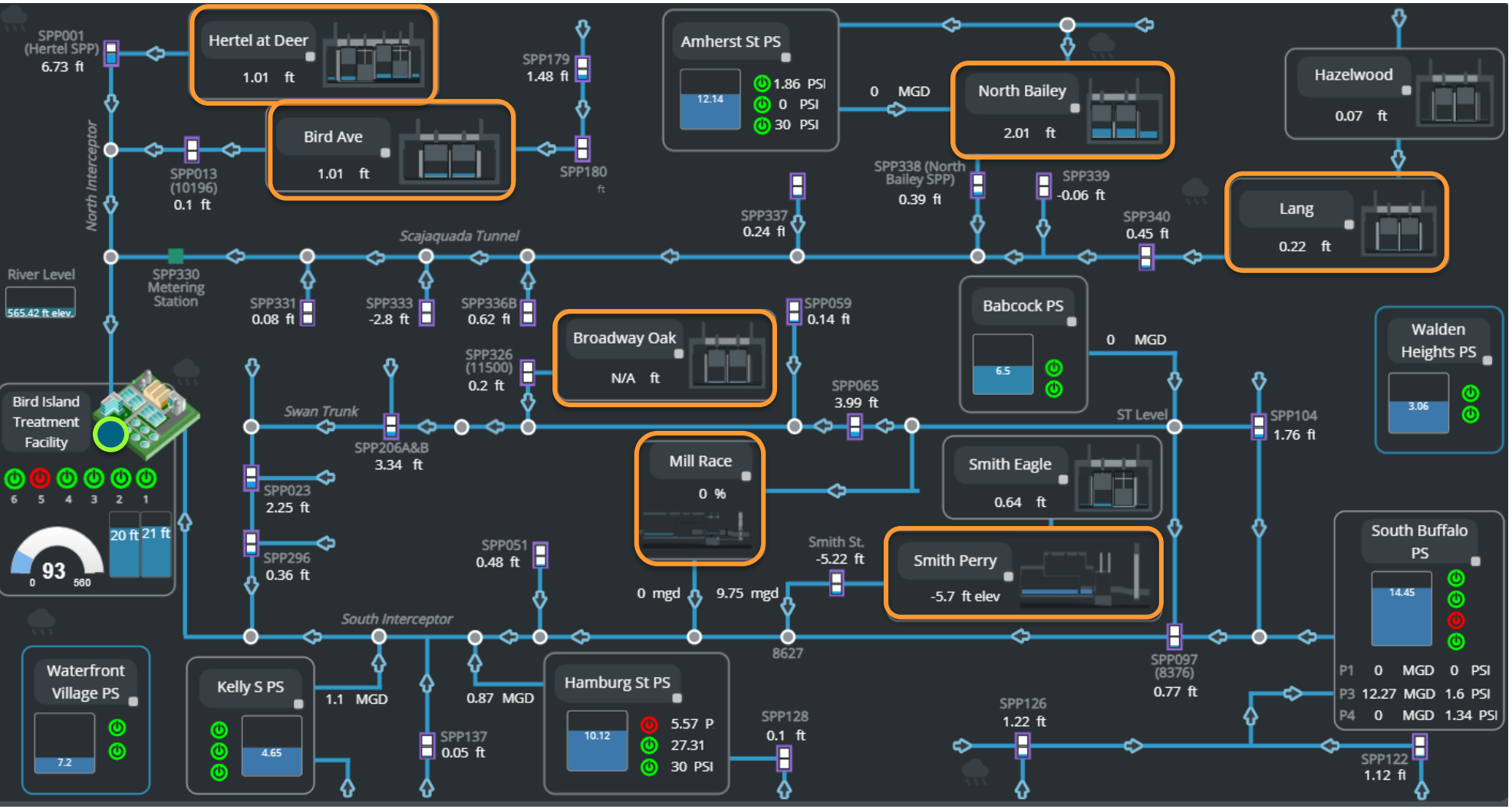
Coordinated Control Programming

- Remote mode exists, new inputs and logic
- New remote mode

BUFFALO SEWER AUTHORITY

xylem Let's Solve Water

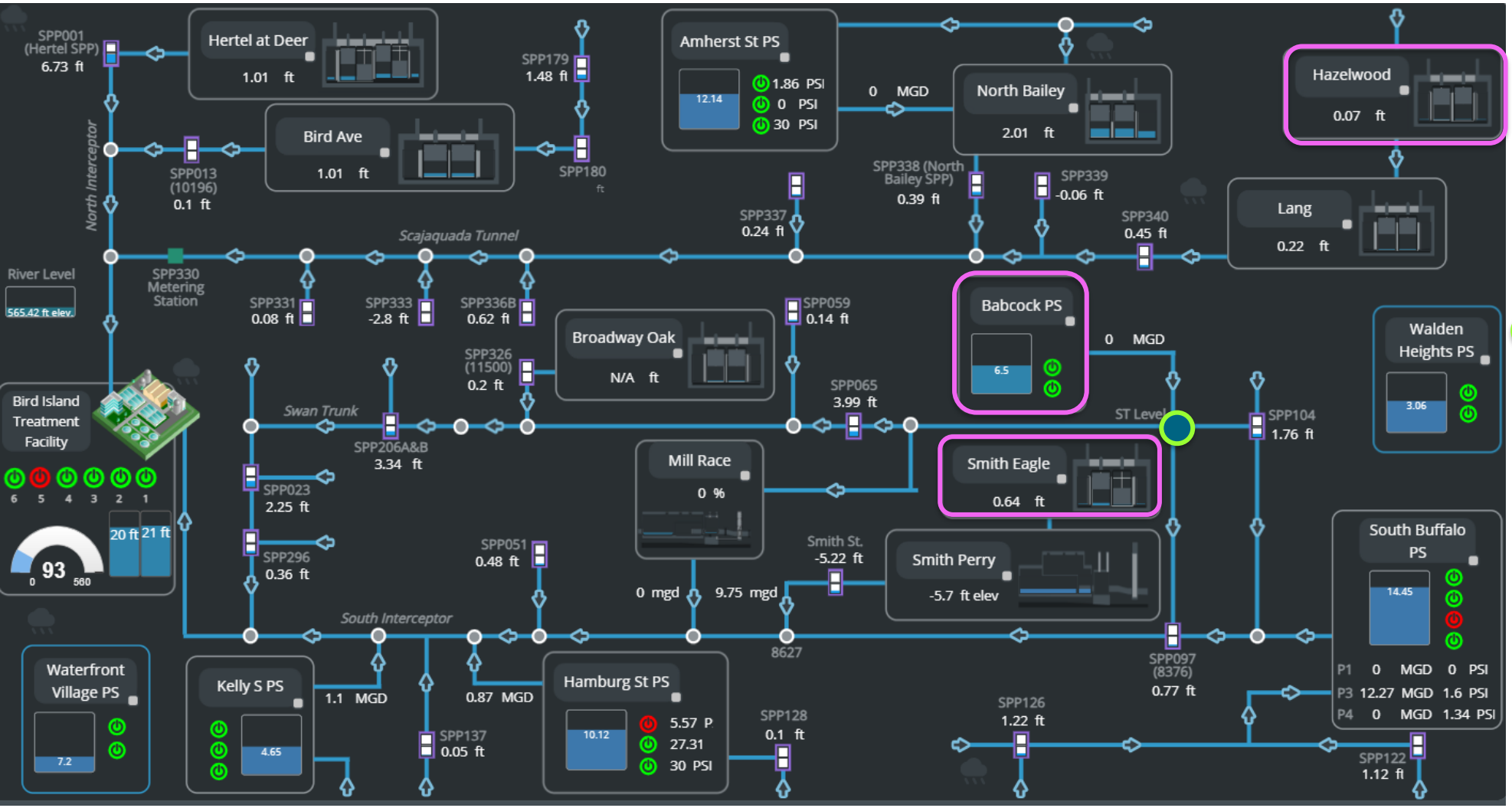
Current System – Local Control Sites



7 RTC sites start and end storage based on changes in level measured by sensors directly upstream or downstream of the RTC chamber connected to the control cabinet

xylem

Current System – Remote Control Sites



Current Remote Monitoring Inputs

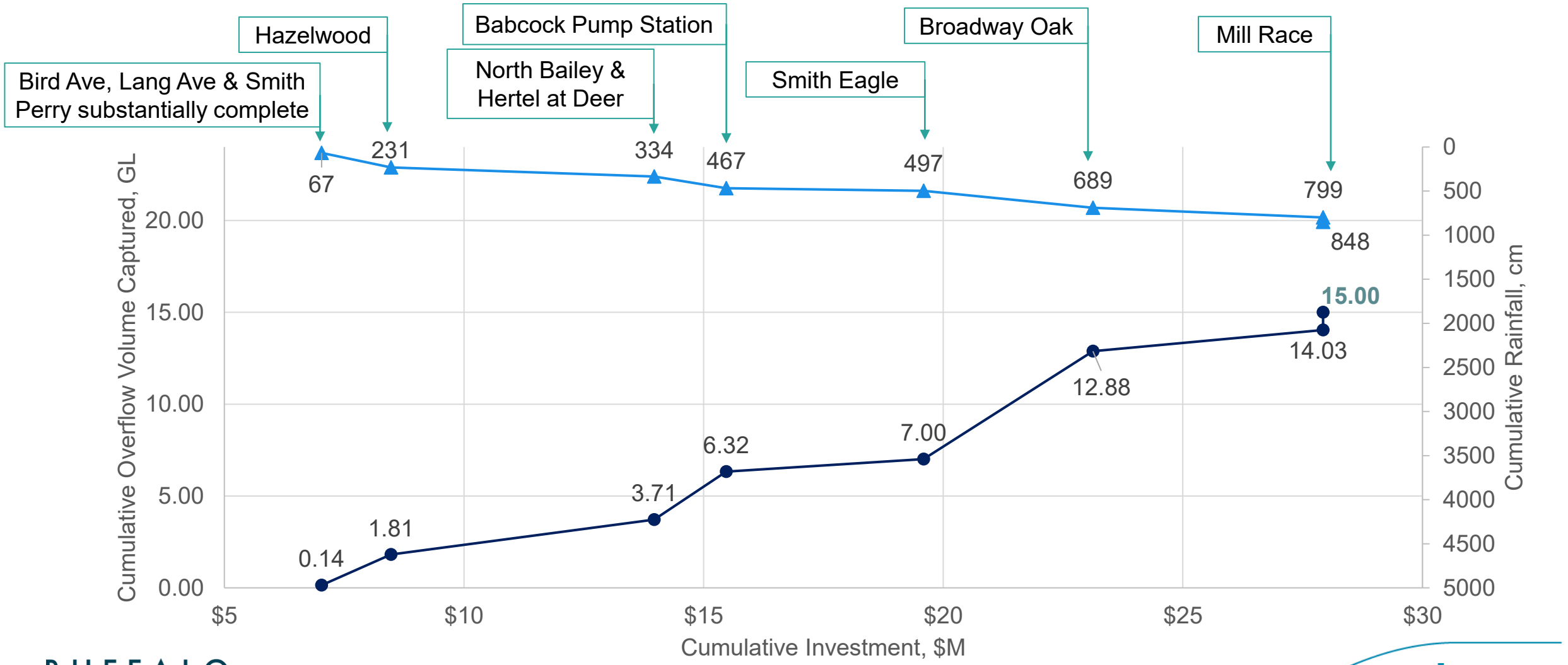
- Existing remote sensor

3 RTC sites start and end storage based on downstream level readings that are communicated from remote locations that are still upstream of the same SPP (close, but too far to connect to cabinet).

xylem

- What Results Have They Seen So Far?

Cumulative RTC Performance

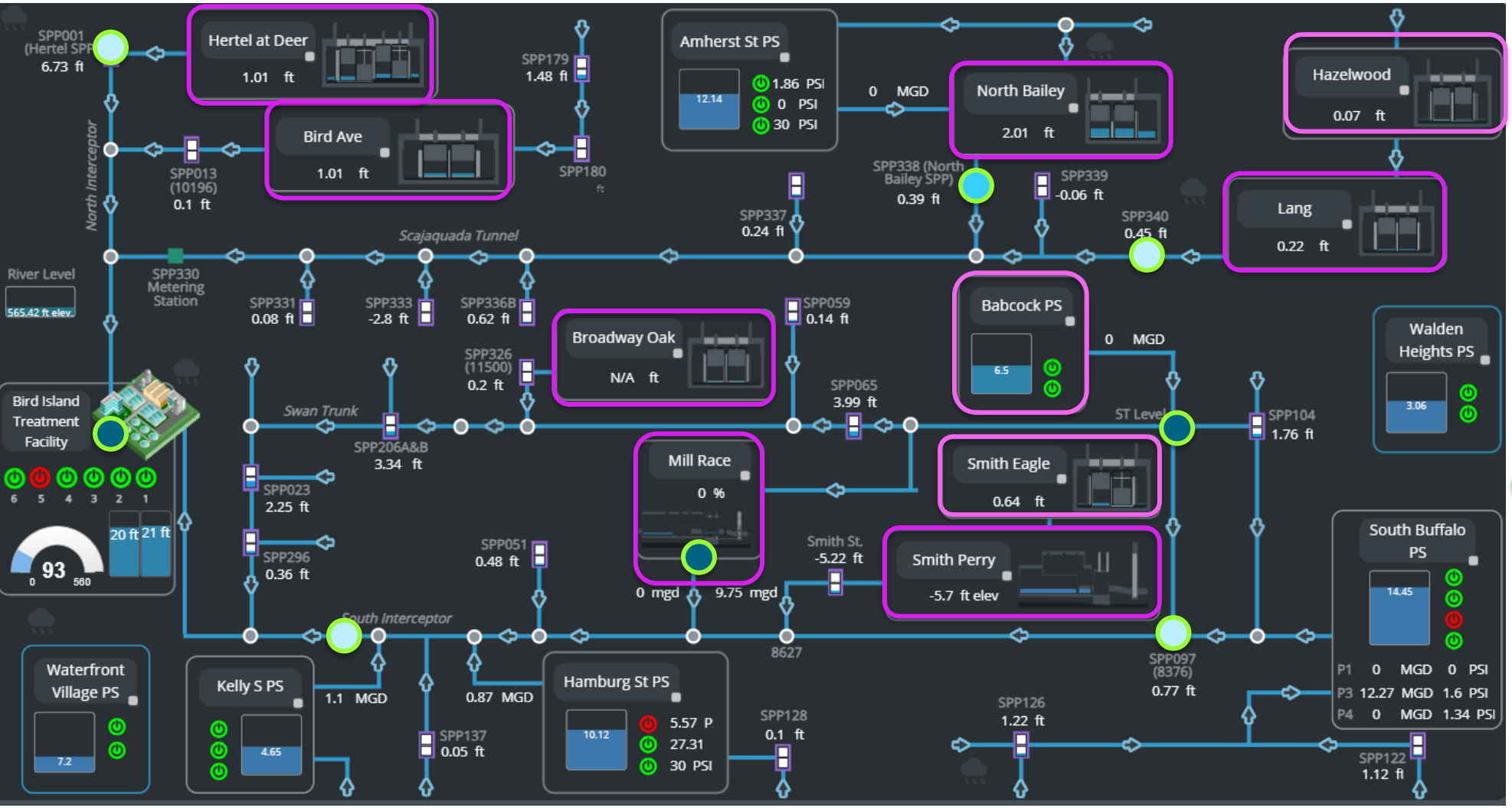


BUFFALO SEWER AUTHORITY

xylem Let's Solve Water

- What's Next?

Globally Coordinated Control – Future State



Global Control Remote Monitoring Inputs

- New location in design – remote monitoring bid
- New location in construction
- Existing, communication pathway update

With GCCS, all 10 sites will have a remote control mode. New permanent remote monitoring locations are under construction, and hardware-based VPN installation will support this change.

xylem

Thank You

michele.samuels@xylem.com