

Wastewater Master Plan

Regional Collaboration at its Best

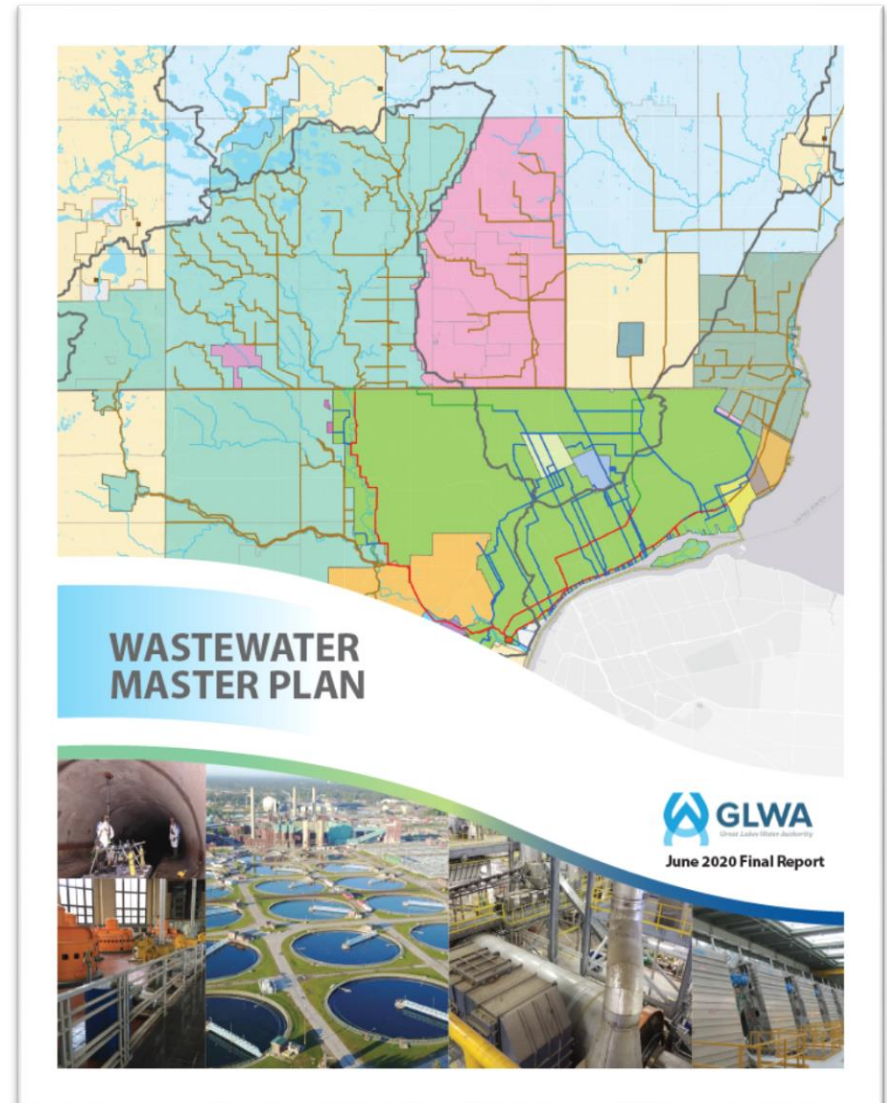
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Sherri Gee

August 26, 2020



Agenda

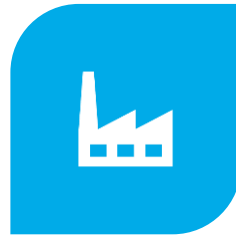
- Key Take-Aways
- Where We've Been
- What We Accomplished
- Where We're Going
- Formal Approval



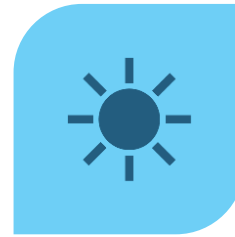
Key Take-Aways



SHARED REGIONAL
VISION &
PARTNERSHIPS



OPTIMIZE USE OF
EXISTING ASSETS



HOLISTIC ALL-
WEATHER WATER
QUALITY APPROACH



ADAPTIVE & FLEXIBLE
ADDRESSES
AFFORDABILITY

Wastewater Acronyms and Jargon

- CSO – Untreated Combined Sewer Overflow (overflows from combined sewer systems)
- EGLE – State of Michigan Dept of the Environment, Great Lakes & Energy
- GIS – Geographic Information System, an IT program that organizes layers of info. into visualizations using maps
- Gray Infrastructure – Brick and mortar approach to address increased flows due to wet weather
- GSI – Green Storm Water Infrastructure, nature-based approach to reduce stormwater runoff such as rain gardens
- Interceptor – Large, deep sewer that collects or intercepts sewage flow from smaller and shallower sewers
 - DRI – Detroit River Interceptor
 - NIEA – North Interceptor East Arm
 - NWI – Northwest Interceptor
- ISD – In-System Storage Device, a device that holds back flow within a sewer pipe
- IWOP – Interim Wet Weather Operating Plan, GLWA’s real-time operating protocol for optimizing sewer operation
- NDF - Netting and Disinfection Facility, a wet weather treatment approach that screens and disinfects flow
- Regulator – a device that controls sewer flow rate through a portion of sewer pipe
- RFP – Request for Proposal
- ROP – Regional Operating Plan, regional, real-time operating protocol for optimizing sewer operations

- RTB – Retention Treatment Basin, a wet weather storage and treatment facility
- SDF – Screening and Disinfection Facility, a wet weather treatment facility
- SSO – Sanitary Sewer Overflow (overflows from sewer separated systems)
- WQ - Water Quality Monitoring – A system of devices in rivers that perform real-time sampling and analysis of river water
- Watershed - an area of land that separates waters flowing to different rivers
- WRRF – Water Resource Recovery Facility also sometimes called a Wastewater Treatment Plant or WWTP

Where We've Been

The bottom of the slide features two overlapping blue geometric shapes. On the left is a long, horizontal rectangle. On the right is a smaller, square-like shape that overlaps the right edge of the first rectangle, creating a layered effect.

The Region Has Achieved Substantial Water Quality Progress in 50 Years

From

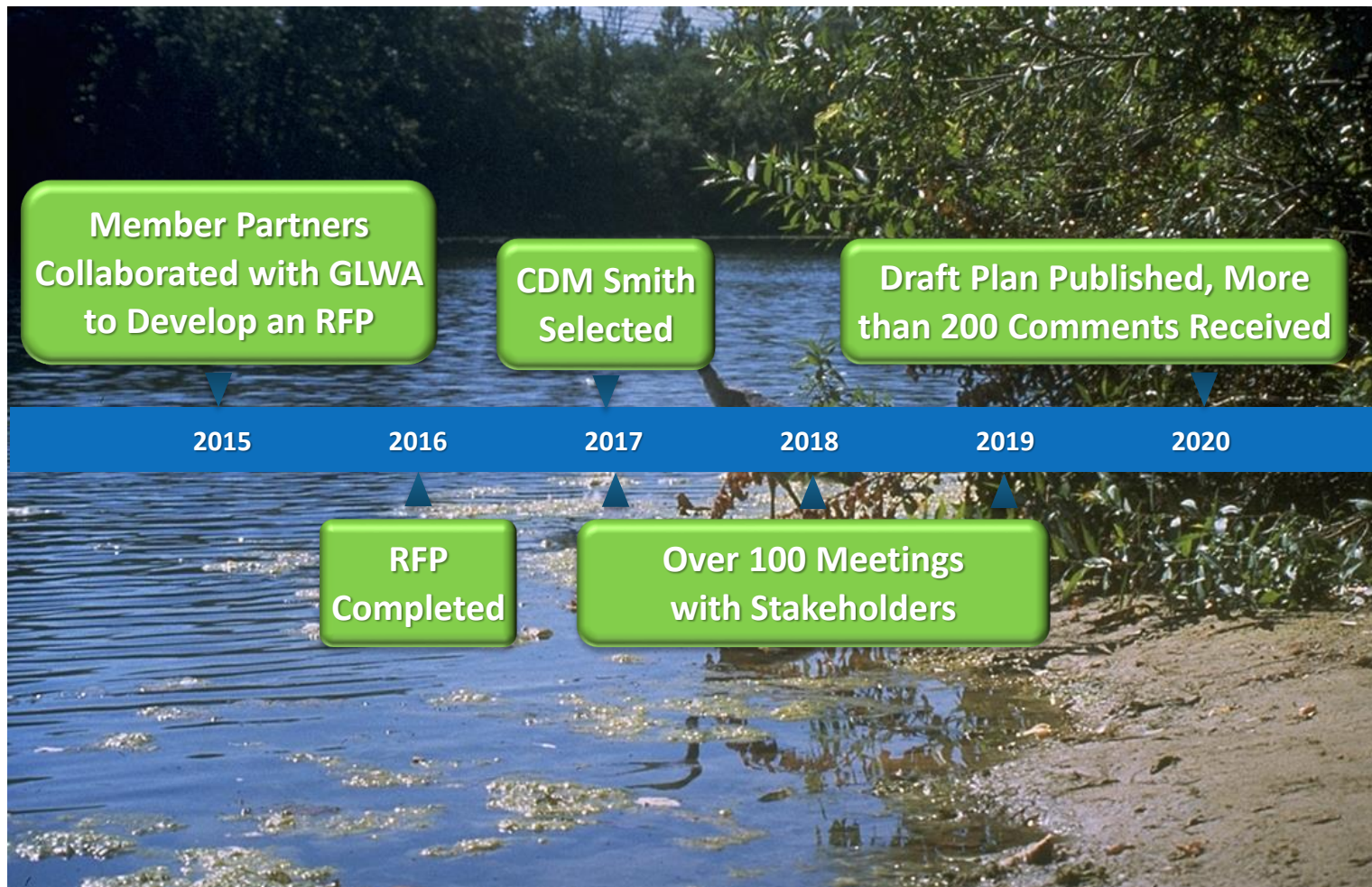
- Rouge River Fire in 1969
- Great Lakes Agreement and Clean Water Act

To

- 95% reduction in untreated combined sewer overflows from 1995 to present
- Treatment for 97% of all wastewater flow (WRRF and CSO facilities)
- Lake St. Clair Metropark opened 98% of the time in 2018 and 2019

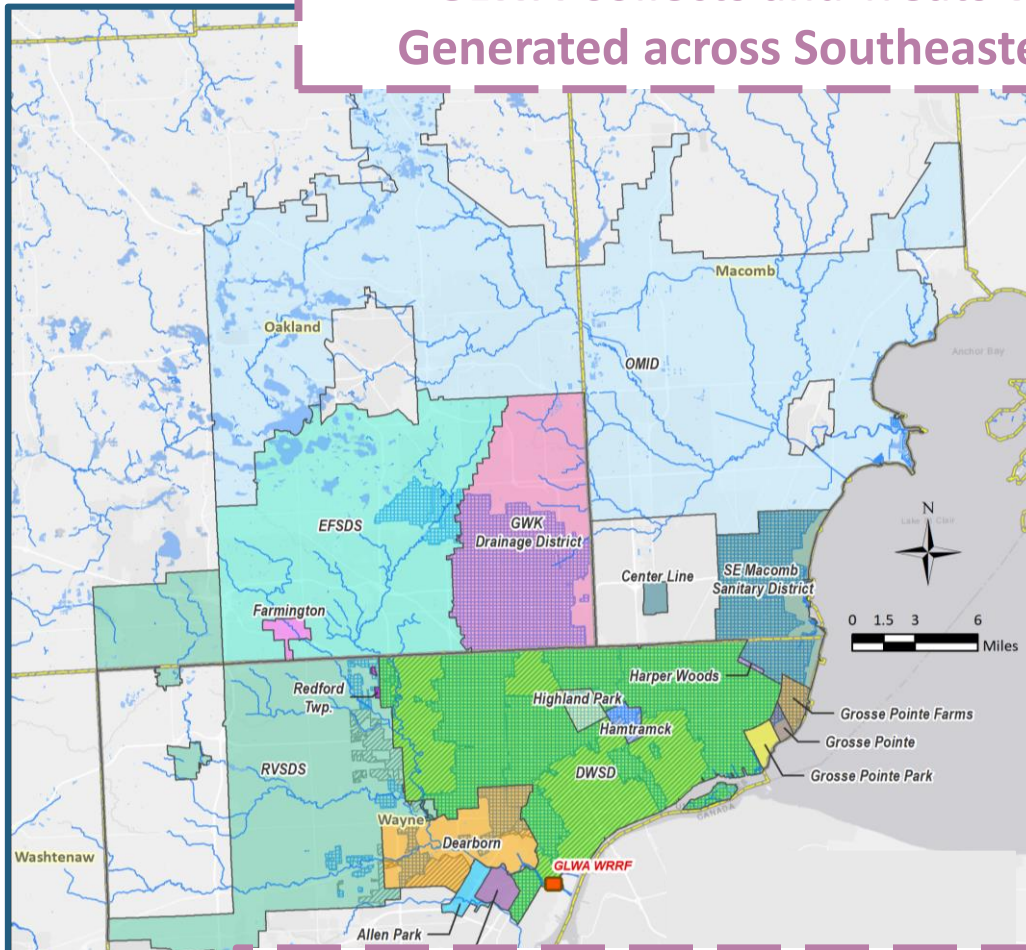


Framing Today's Discussions



Developing a 40-Year Wastewater Master Plan

GLWA Collects and Treats Wastewater
Generated across Southeastern Michigan



- 86 collection systems operated by Member Partners
- 944 square mile service area
- 2.8 million residents
- 8% projected population growth by 2060

GLWA and its Members are responsible for protecting water quality by controlling wastewater and stormwater discharges

GLWA, Member Partners, and Key Stakeholders Worked Together to Reach a Shared Vision



The Steering Team Established the 5 Desired Outcomes

Focused the planning process for the WRRF, biosolids, regional operations planning, and control of remaining SSOs and CSOs

The outcomes balance people, the environment and affordability.



What We Accomplished

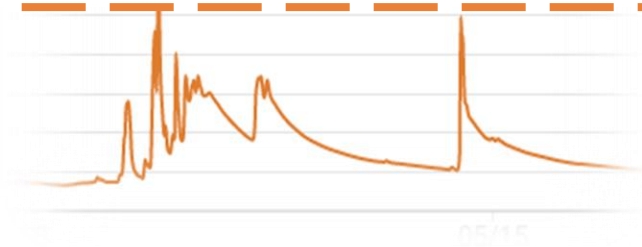


New Decision Support Tools

- Regional wastewater collection system model
- Innovative water quality model
- Improved collection system representation from 3,400 to 30,000 pipes
- Member collection system models are part of the new regional model
- Improved decision support capability
- Regional model sharing - One Model!
- EGLE and Member endorsed



Advanced system models and data integration tools



Innovative Projects and Implementation Partnerships

- ◆ MDOT Highway Stormwater Removal: GHIB, I-375, I-94
- ◆ MDOT Climate Resiliency Study
- ◆ Contract Capacity Increase Offset through Sewer Separation
- ◆ Northwest Interceptor Diversion to Oakwood RTB
- ◆ Regional Operating Plan
- ◆ In-System Storage
- ◆ EGLE's new General Permit for Collection Systems

**Pipes and waterways
don't know boundaries**

**We can accomplish more
for less by working
together!**

Early Benefits

Expansion of the Regulators on the Detroit River Interceptor



Maximizes use of existing assets and available capacity



Delivers the greatest reduction in untreated overflow per dollar expended



Reduced modeled average annual volume of untreated overflow to the Detroit River by 160 MG



Reduced modeled average annual frequency of untreated discharges to the Detroit River by 25 overflows at individual outfalls



Significant benefits realized during small to mid-size storms and the initial phase of large storms



Increased modeled average annual flow to the WRRF by 160 MG

Early Benefits

EFSDS Capacity Request

Regional thinking has afforded an opportunity to collaborate with Oakland County's Evergreen Farmington Sewage Disposal System for each to realize cost savings

- Oakland County's EFSDS must either build a sanitary retention tank (SRT) or obtain more capacity from GLWA's regional system
- In lieu of building the SRT along 8 Mile Road capacity could be created by contributing to a sewer separation project on the Rouge River in Detroit.
- The sewer separation project will provide much more environmental benefit with reductions in frequency and volume of untreated discharges.
- The details are presently under discussion.

Early Benefits

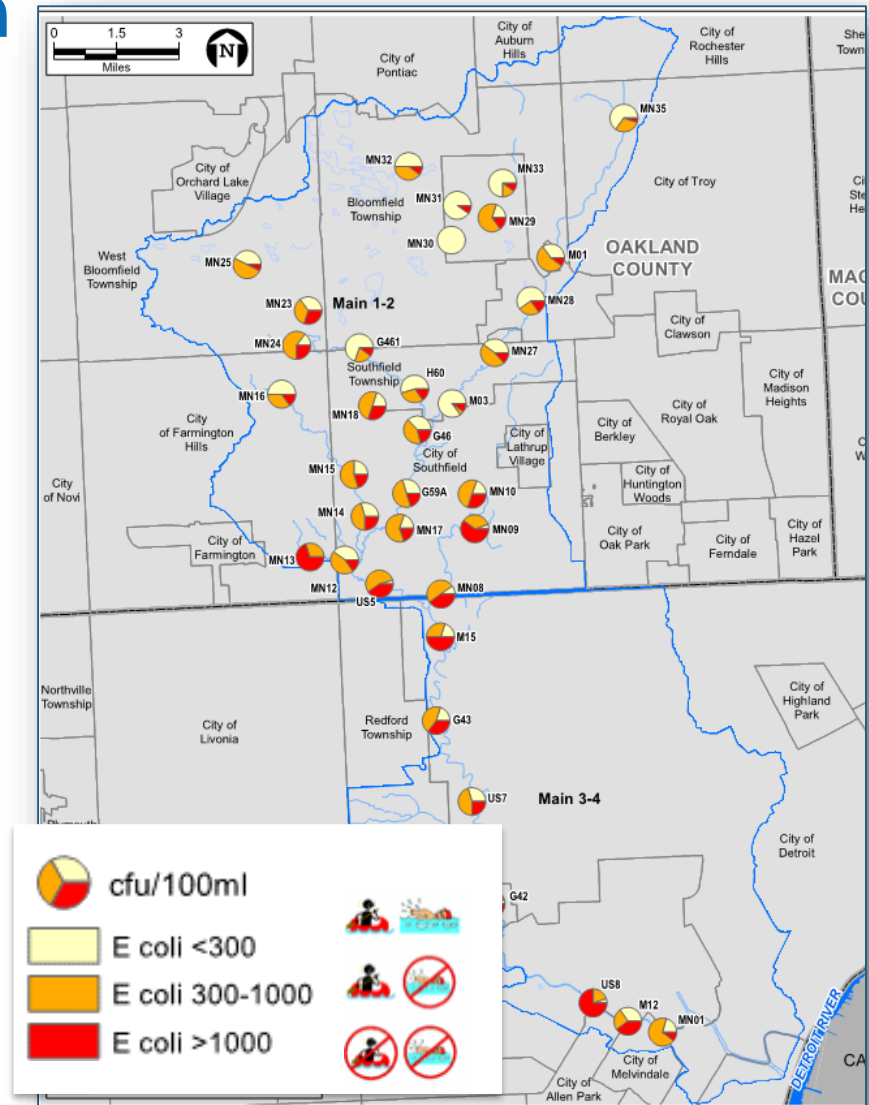
Coordination with MDOT

- Gordie Howe International Bridge project designers are working with GWLA and DWSD to divert already separated storm water to the Detroit River instead of discharging to the combined sewer system
- The I-94 improvement project designers are collaborating with GLWA and DWSD to consider the best way to address freeway drainage as the project is being designed.



Holistic All-Weather Water Quality Approach

- Regionally integrated strategies considered all major sources
- Decision framework identified most cost-effective projects
- Adaptive prioritized scheduling along parallel implementation pathways



Shared Regional Vision for the Future

Integrated Planning Promoted Shared Regional Commitment to Water Quality and Affordability

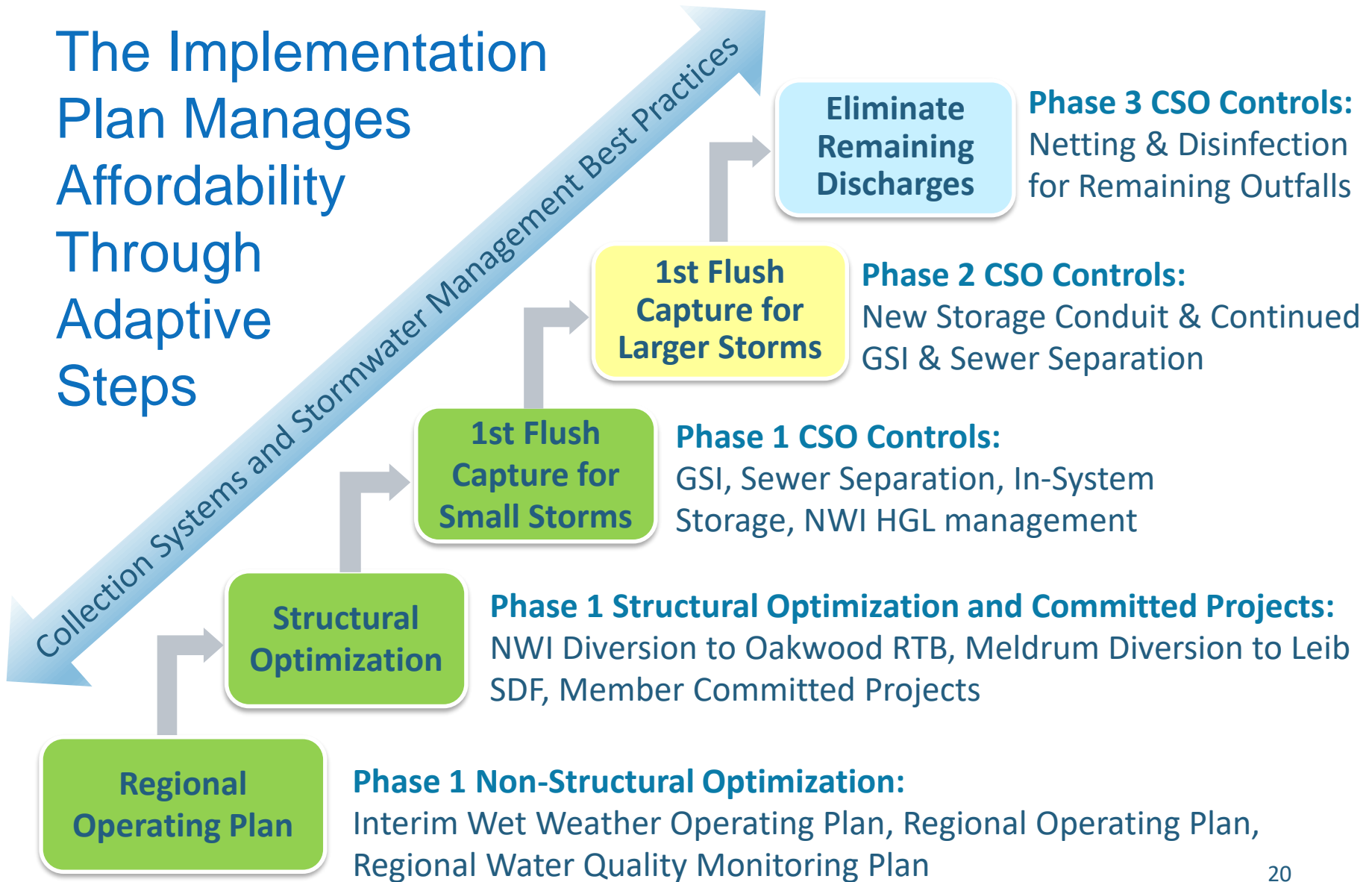
- Regional collaboration generated broad stakeholder support
- Integrated planning addressed diverse needs across the entire service area
- New regional partnerships e.g., new Watershed Hub Work Group



Where We Are Going



The Implementation Plan Manages Affordability Through Adaptive Steps



Phased Approach Reduced Life Cycle Costs



- Selected alternatives embraced investment value as a key objective.
- Compared to the prior plan of record, this wastewater master plan is projected to result in more than 20% lower CSO life cycle costs to achieve our water quality targets.

GLWA Adaptive Integrated Plan

Phase 1: Optimize

Phase 2: Adapt & Expand

Phase 3: Sustain

Non-Structural Optimization

Interim Wet Weather Operating Plan, Regional Operating Plan, Receiving Water Quality Monitoring, Log Jam Management

CMOM/MS4

Meet Dissolved Oxygen and Partial Body Contact Standards in Dry Weather

CMOM/MS4

Meet Full Body Contact Standards in Dry Weather and Dissolved Oxygen Standards in Wet Weather

CMOM/MS4

Meet all Water Quality Standards in Dry and Wet Weather

Committed Projects

Dearborn CSO, DWSD GSI, Chapaton RTB expansion, EFSDS & Clinton Twp SSO, Rouge Valley LTCAP

Structural Optimization

NWI Interceptor Diversion to Oakwood RTB, Meldrum Sewer to Leib SDF

LTCSO Plan

Rouge River First Flush Capture for Small Storms

*In-System Storage in Existing Large Sewers
Sewer Separation and Green Stormwater Infrastructure*

Rouge River First Flush Capture for Larger Storms

*Sewer Separation and Green Stormwater Infrastructure
New In-System Storage Conduit*

**Rouge River Netting & Disinfection
for Remaining Outfalls, if/where needed**

Detroit River Priorities

Ralph C Wilson Park Public Health Protection Collaboration, including Pilot Netting Facilities, PS1 and PS2 Pumping Improvements, Cost Effective Sewer Separation

Detroit River Adaptive Projects

*Continue Cost Effective Sewer Separation
Netting and Disinfection Pilot Project(s)*

**Detroit River Netting & Disinfection
for Remaining Outfalls, if/where needed**

Maximize Cost Effective Sewer Separation & Green Stormwater Infrastructure Opportunities/Partnerships

*Private investment through Stormwater Ordinances and Philanthropy
MDOT and City Project Coordination: Priority Areas West of Rouge River, Remaining Areas East and West of Rouge River, GHIB, I-375, Near East Side*

Dry Weather Inflow & Infiltration Control

WRRF Upgrades and Collection System Rehabilitation

The Master Plan Leverages GLWA Hub Utility Leadership and Regional Partnerships

GLWA Hub Will Integrate
Regional Activities and Guide
Adaptive Management

IMPLEMENTATION PATHWAYS

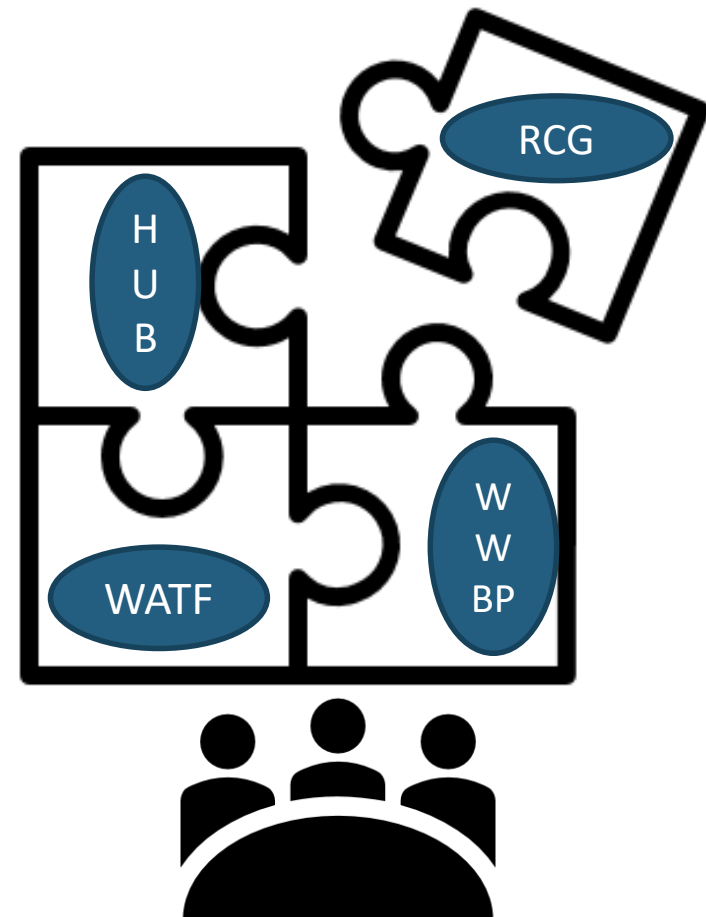
- Member Committed Projects
- Asset Management
- System Optimization
- WRRF Improvements
- Long Term CSO Control Plan
- Green Infrastructure
- Sewer Separation
- Regionally Integrated Planning
- Regional Operating Plan



New Work Groups Deepen Member Relationships and Facilitate Continued Collaboration

Representatives from counties where we provide wastewater services (DWSD, Oakland, Wayne, and Macomb Counties), with other Regional Partners

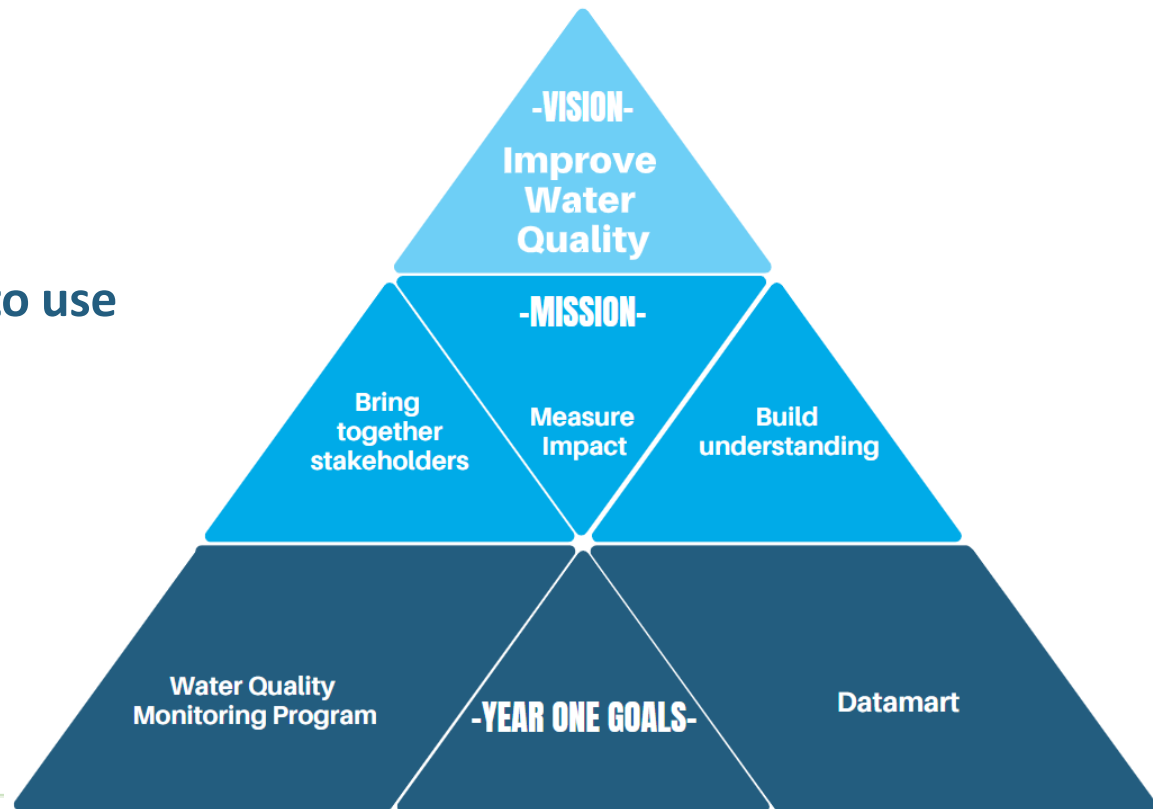
- Regional Collaboration Group (RCG)
 - problem solving
 - modification of plan as needed
- Regional Watershed Hub (Hub)
- Wastewater Best Practices (WWBP) Work Group
 - Regional Operation Consideration
- Wastewater Analytics Task Force (WATF)

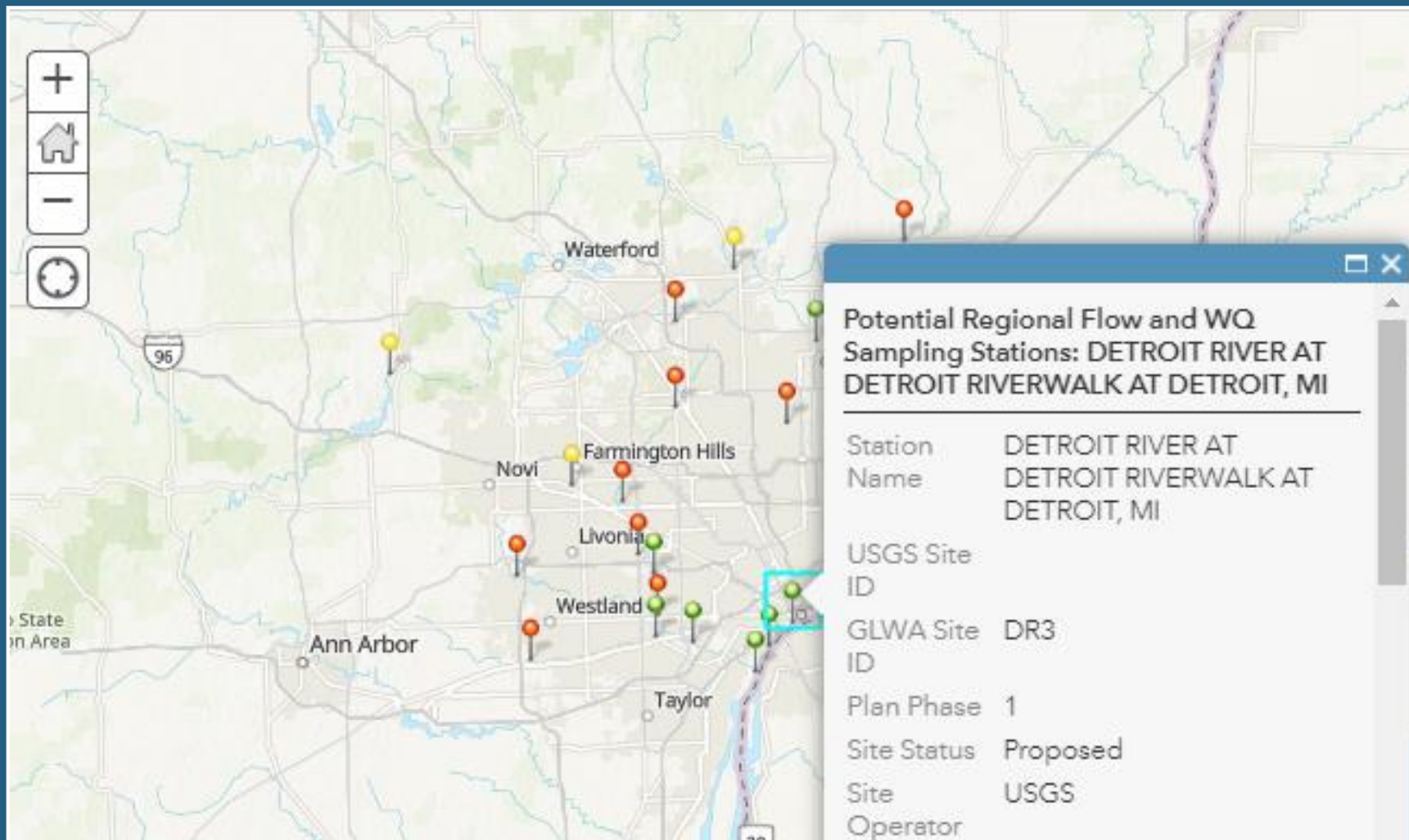


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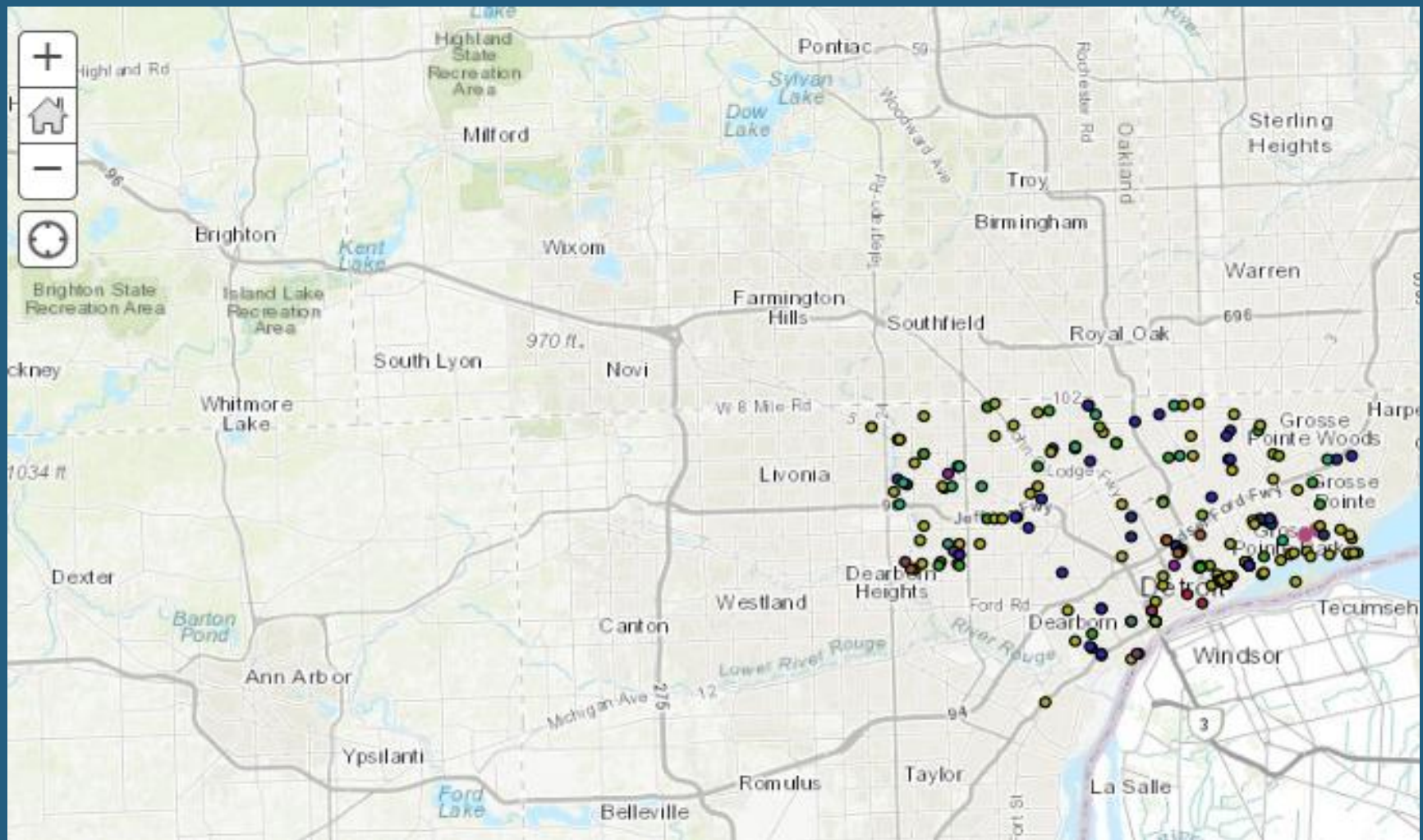
Watershed Hub Work Group

- Currently working with Member Partners to **collect & archive new and existing data**
- Designing **GIS Mapper & Datamart** with analytical applications to **put data to use**
- Monthly meetings of diverse stakeholders

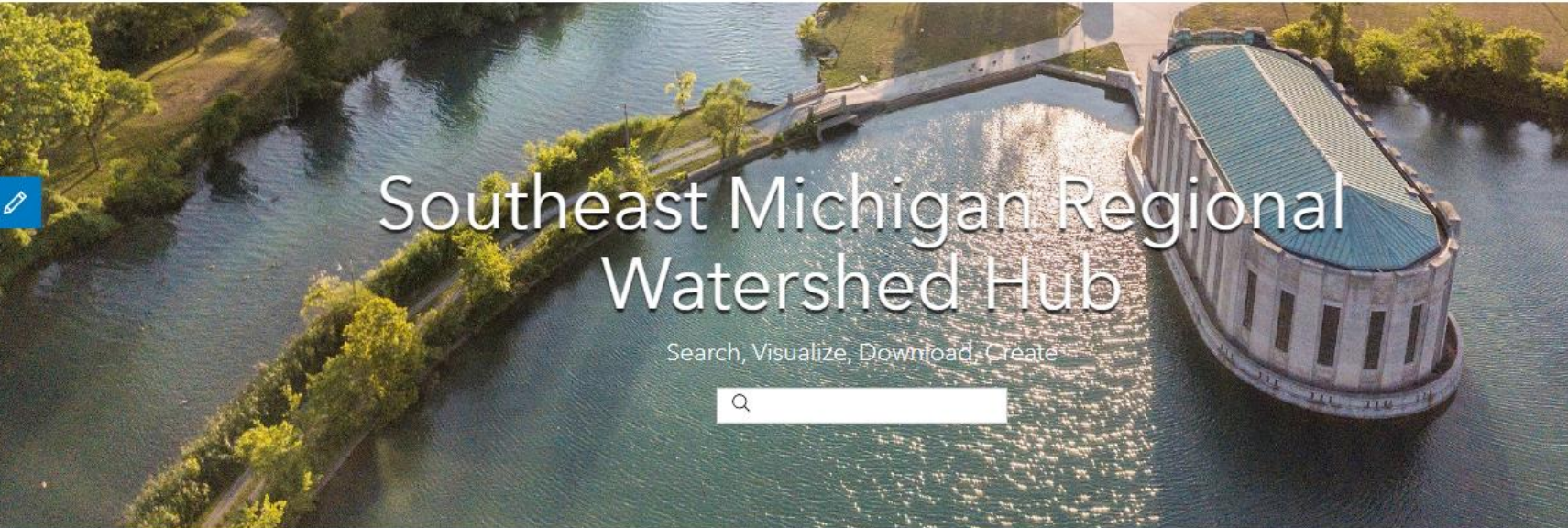




Shared GIS – Water Quality Monitoring



Shared GIS – Green Stormwater Infrastructure



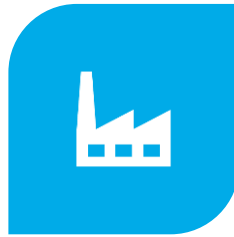
This is the platform for exploring and downloading GIS data, discovering and building apps, and engaging others to solve important issues. You can analyze and combine datasets using maps, as well as develop new web and mobile

Shared GIS – Dashboard

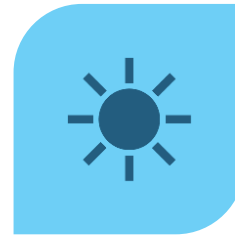
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Formal Adoption

- Looking for your feedback, comments and questions
- Will ask Board to formally adopt the plan next month



GLWA
Great Lakes Water Authority





GLWA

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