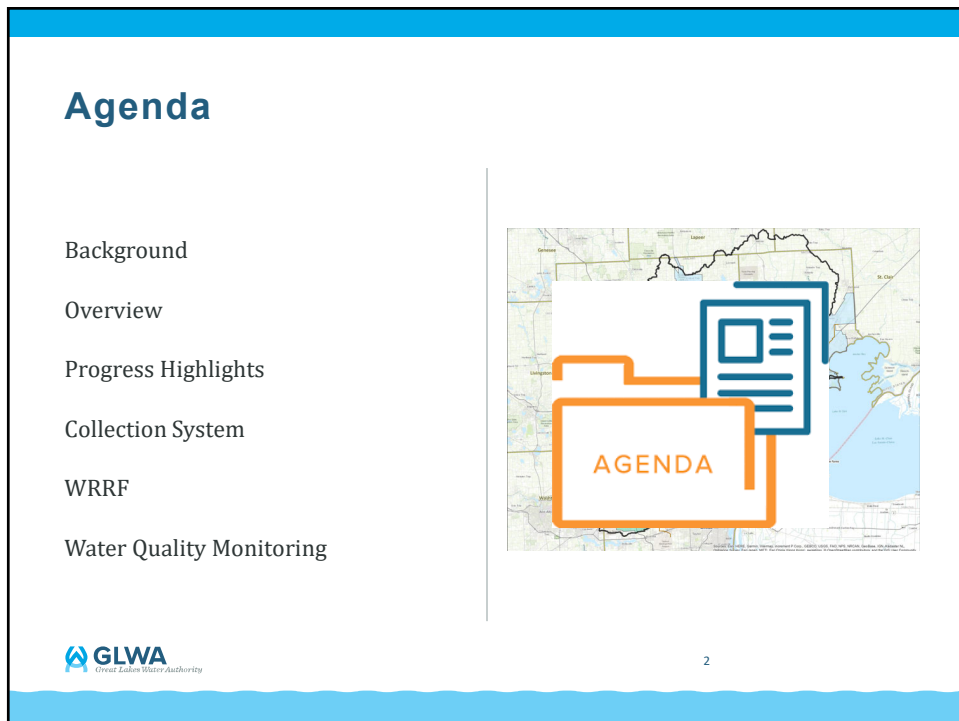




1



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Background



3

Background

WHERE?

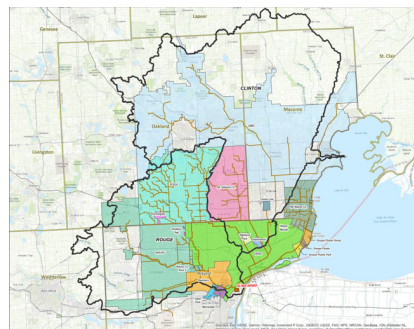
Regional wastewater system.

WHAT?

Long range plan (40-years) to provide regulatory compliant and reliable wastewater services.

WHY?

Provide environmentally sustainable, reliable and cost-efficient regional services.

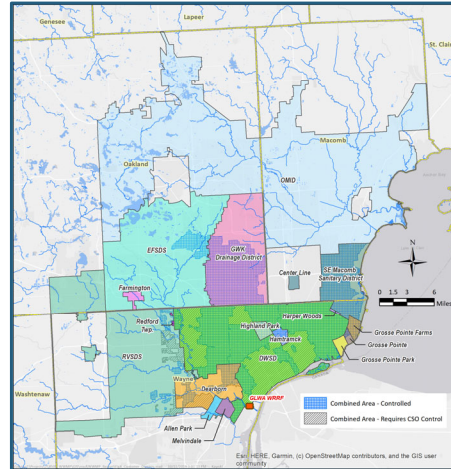


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Regional Wastewater Collection

- Member Partners include 78 cities, villages and townships
- 944 square mile service area
- 25% of the service area has combined sewers
- 2.8 million residents served by GLWA
- 8% projected population growth by 2060



5

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

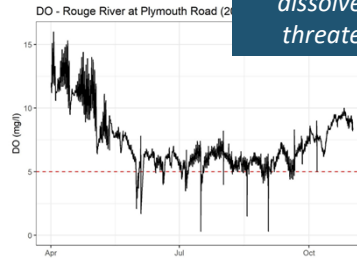
- 95% reduction in untreated combined sewer overflows from 1995 to present
- Treatment for 97% of all wastewater flow (WRRF and CSO facilities)
- Metropolitan Beach opened 98% of the time in 2018 and 2019



6

More Improvements are Needed to Protect Water Quality

- Currently ~2 billion gallons of untreated combined sewer overflows during a typical year (varies with rainfall)



Sewer overflows cause low dissolved oxygen and threaten aquatic life

- Water quality impairments still limit recreation and aquatic life uses

Water contact recreation standards are not fully realized



7

7

Overview of Wastewater Master Plan



8

The Wastewater Master Plan Provides a Cost Managed Roadmap based on 5 Outcomes

- Most affordable and cost-effective projects first
- Larger projects are phased in based on financial capability
- Projects approved annually in GLWA and Member CIP budgets
- Affordability evaluated with each 5-year regulatory permit update
- Phased approach allows time to reassess and re-prioritize upcoming investments

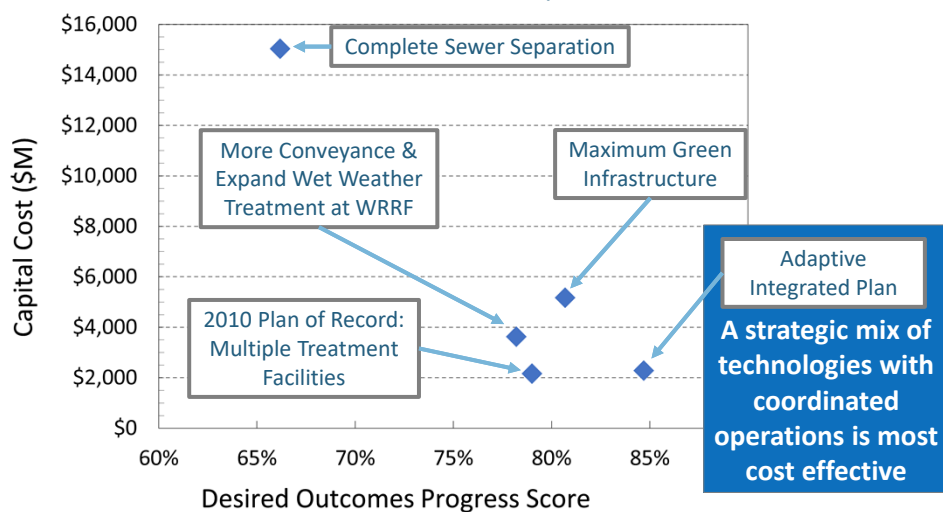


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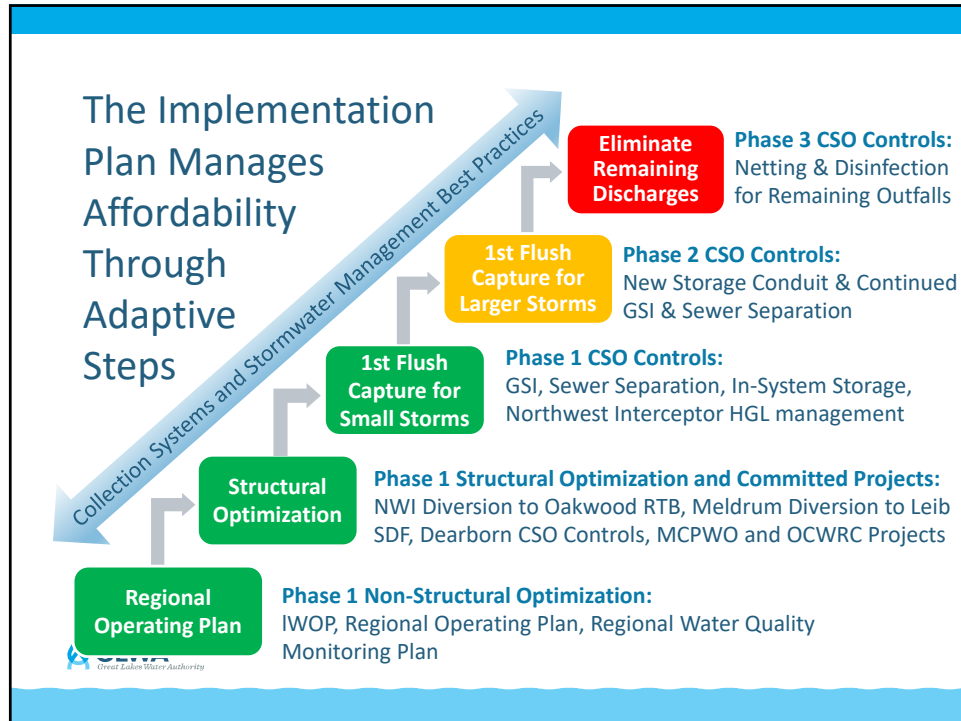
Ways to Achieve the Desired Outcomes

Value for Investment Analysis*

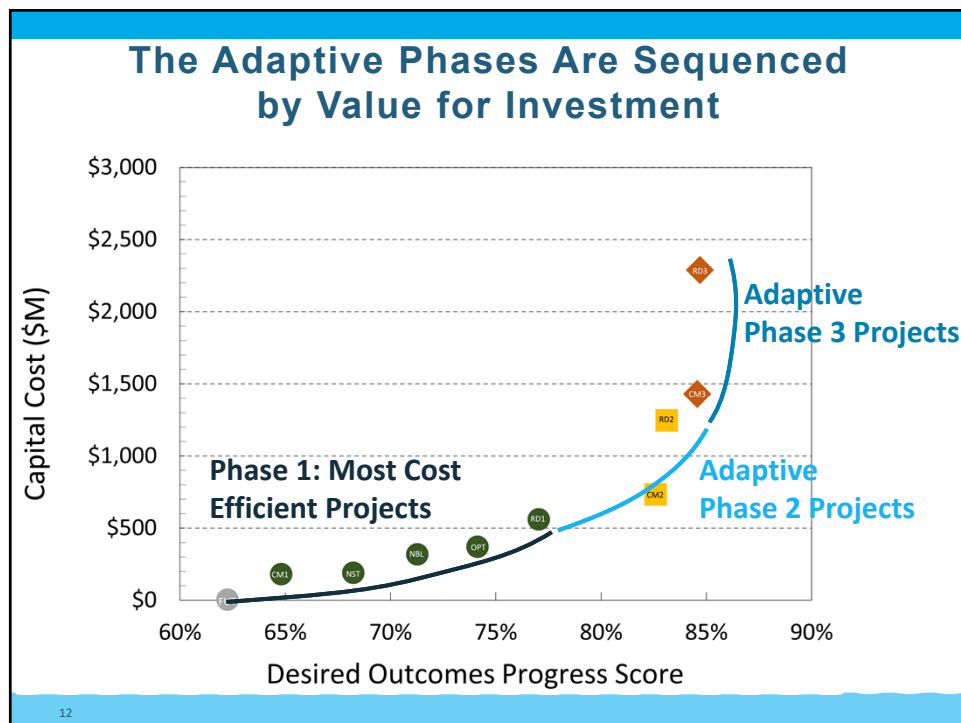


10 *All alternatives include regional collection system and stormwater management best practices

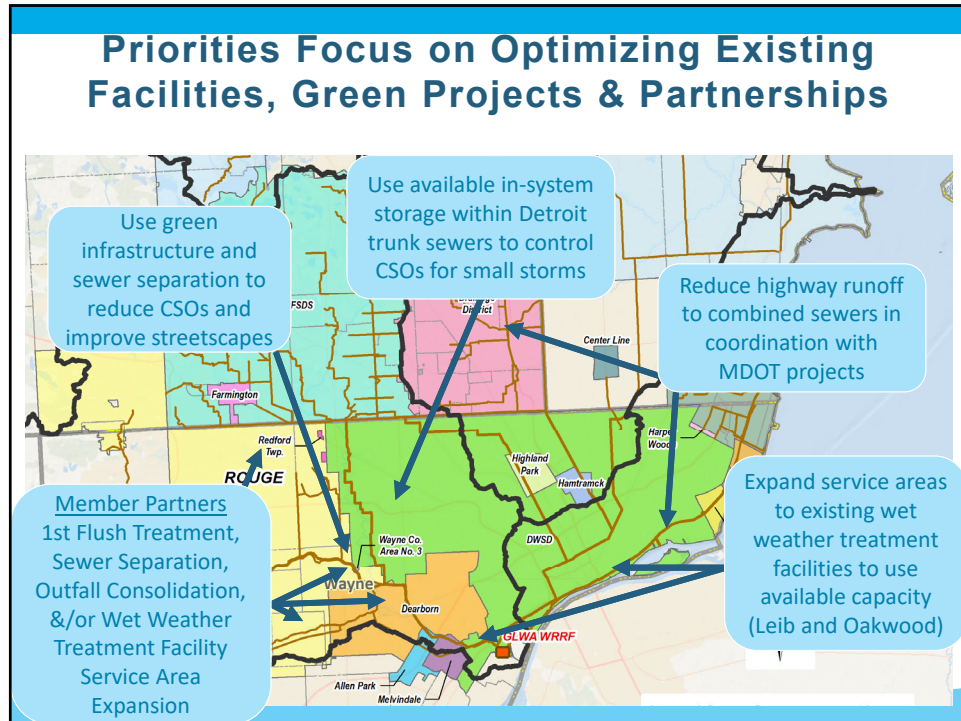
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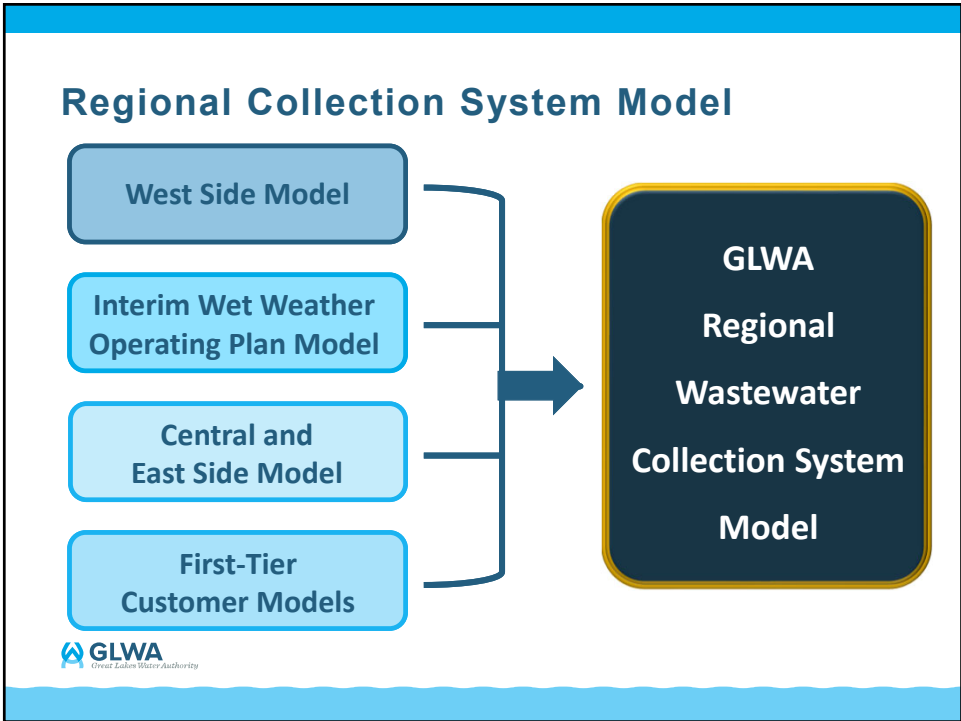


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Progress Highlights



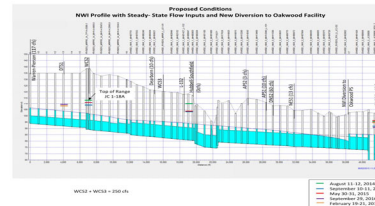
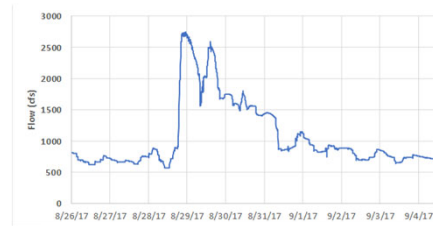
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Regional Operating Plan

- ◆ Critical Hydraulic Grade Line
- ◆ Member Dashboards
- ◆ Regional Dewatering Plan
- ◆ Pre-Storm Planning
- ◆ Post-Storm Performance Review
- ◆ Regional SWMM Model as “Digital Twin” of Ovation system
- ◆ Ground Rules for Member Contract Capacity Management



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Great Lakes Water Authority

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Collaboration with MDOT

Seeking Removal of Stormwater from the Combined Sewer System

I-375 Modernization

I-94 Drainage Improvements

I-75 North of 8-Mile Road

Gordie Howe International Bridge



GLWA
Great Lakes Water Authority

18

18

Gordie Howe International Bridge

- ◆ 167 acre site for toll plaza, interchange, customs facilities
- ◆ New separate storm sewers will be designed for 100-year storm and include stormwater detention basins
- ◆ Current discussions about the best way to remove stormwater from the combined sewer system
- ◆ Important for how stormwater is handled in new transportation projects.



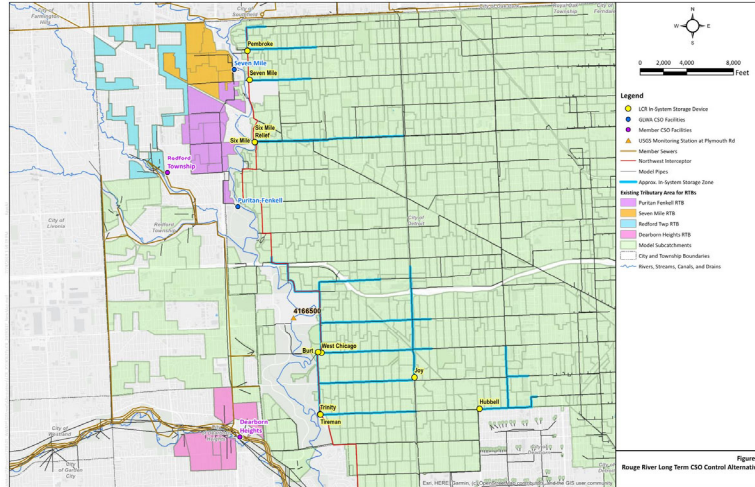
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Collection System Improvements

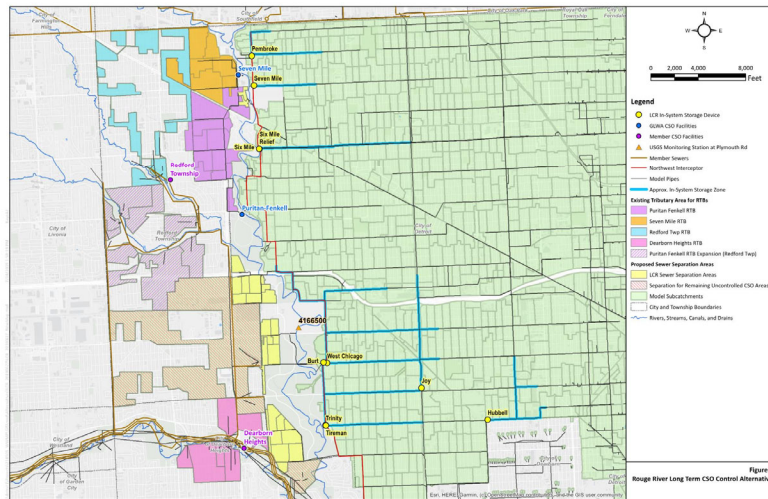


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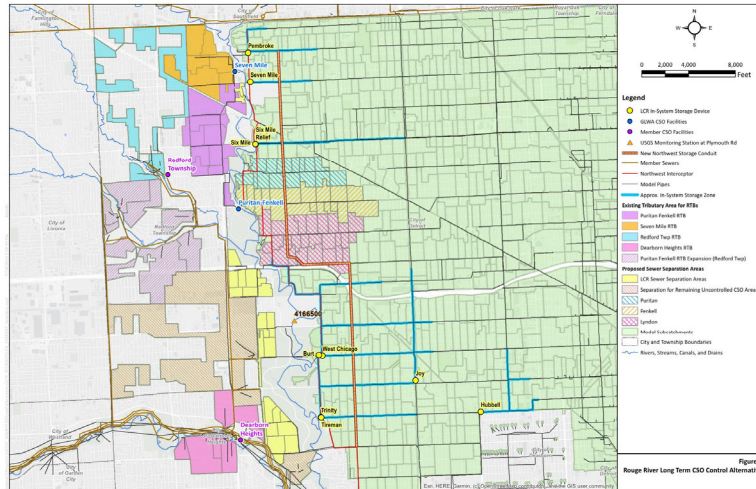
Rouge River – In-System Storage



Rouge River – Sewer Separation



Rouge River – Sewer Separation

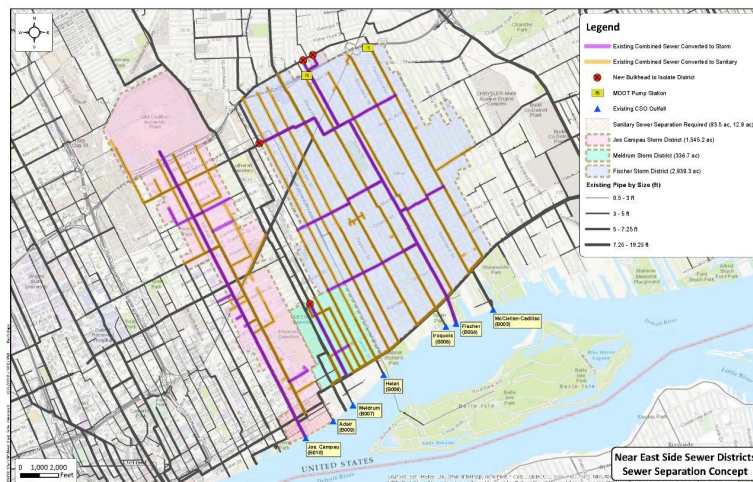


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Detroit River – Sewer Separation



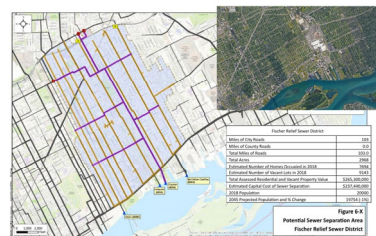
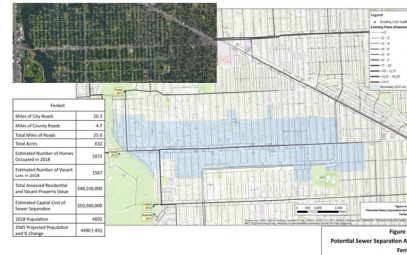
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Why Sewer Separation?

- ◆ Solves root cause of CSO's.
- ◆ Most resilient to rising river level.
- ◆ Repurposes existing large diameter relief sewers as new storm drains.
- ◆ Catalyzes coordinated capital improvements, potential redevelopment and MDOT participation.
- ◆ Ability to improve neighborhoods facing population decline or low growth.
- ◆ Multiple funding sources.



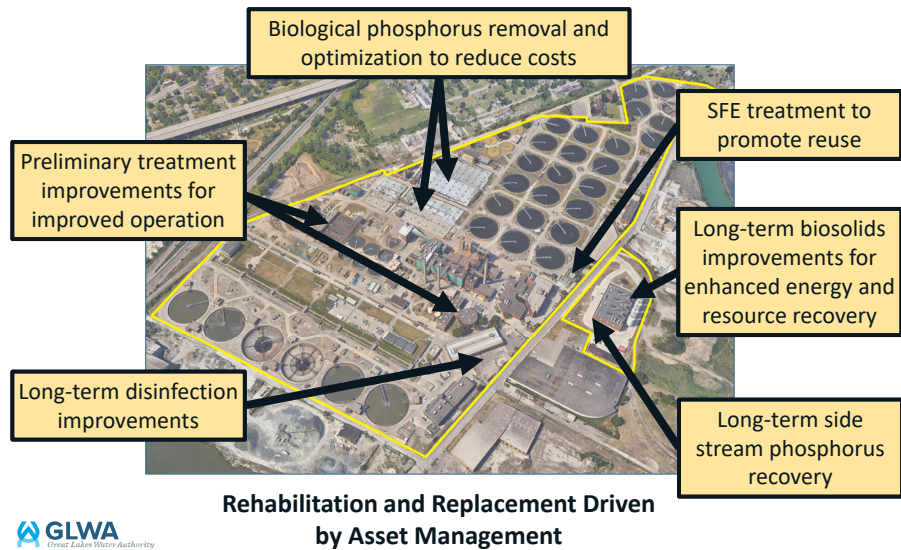
Green Stormwater Infrastructure

- ◆ Baseline of 7.4 square miles managed with GSI in Detroit (2017)
- ◆ Analyses of new publicly funded opportunities underway by DWSD, OCWRC, MCPWO and other Members
- ◆ Future projections for an additional 6 square miles managed with GSI by development-driven compliance with stormwater ordinances
- ◆ Implementation in conjunction with sewer separation and downspout disconnection
- ◆ Management of stormwater in low density areas using GSI as an interim practice until redevelopment occurs
- ◆ Featured in MDOT projects for I-375, I-94, GHIB, and M-39
- ◆ Tool as a best management practice for MS4 water quality compliance.

WRRF Improvements



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WRRF Alternatives Aeration Decks 1 & 2



- System underloaded
- ILPs have reached their useful life
- Some EBPR achieved but not optimized
- Mixer/aerators operate in a narrow band which requires significant operator attention
- Oxygen feed manually controlled

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Water Quality Monitoring and Modeling Program

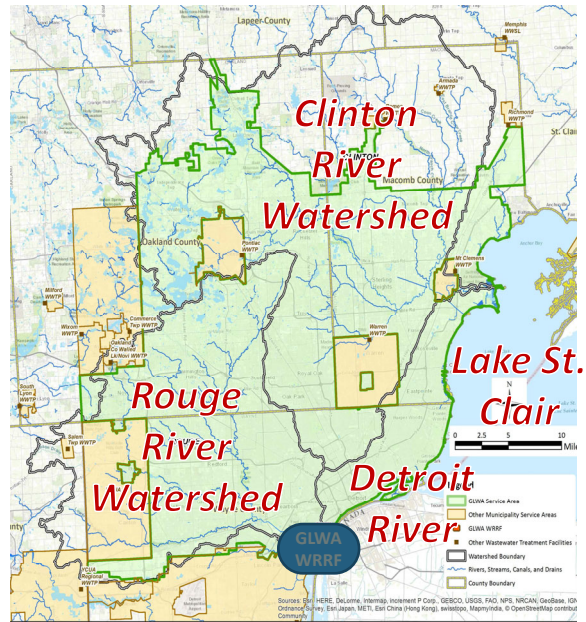


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Water Quality Monitoring

Water Quality Based Plan

Pipes know no
Boundaries! We can
accomplish more together.



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Water Quality Monitoring Program Design

Master Plan Concept for the Program based on:

- Water Quality History and Trends
- Water Quality Goals for Each Water Body
- Site Selection with Watershed Groups

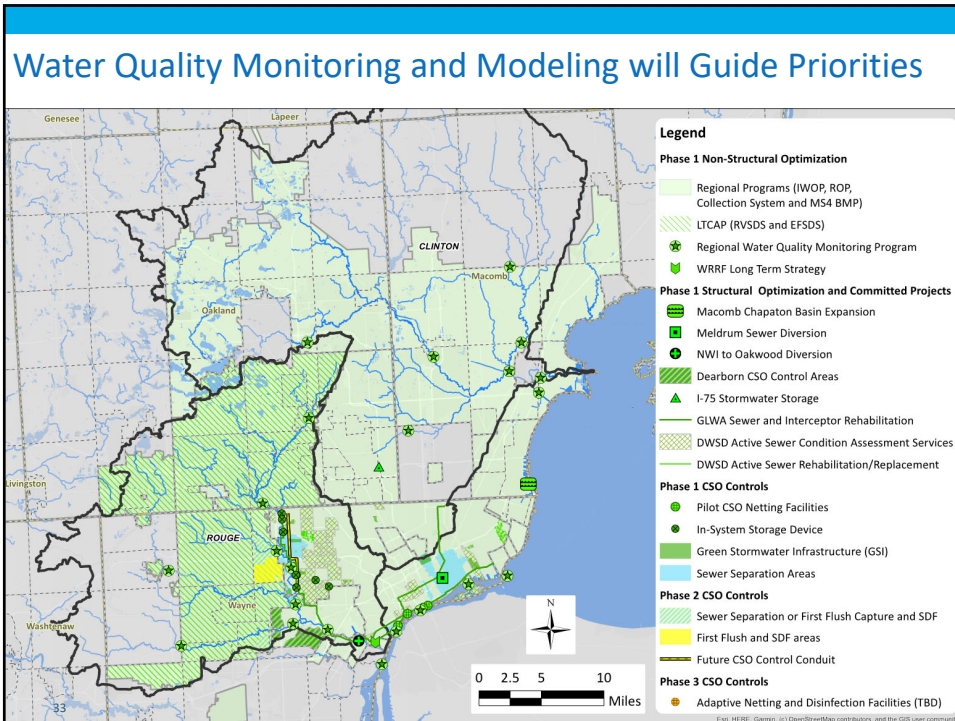
Next Steps in Implementation

- GLWA and USGS
- Role of the Watershed Hub Core Group



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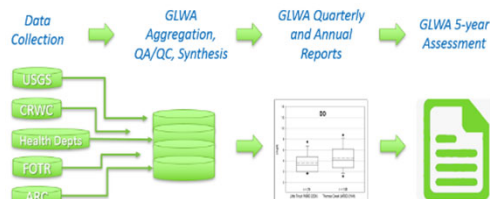
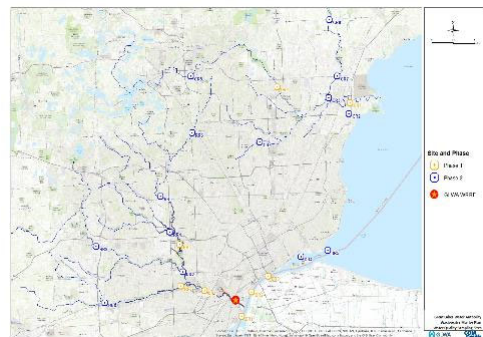
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Regional Water Quality Monitoring Program

- Re-establish water quality monitoring network from previous studies
- Continuous data for dry weather and wet weather conditions
- Include data from other organizations
- Reporting and assessment of findings



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Water Quality Models will Augment the Monitoring Program

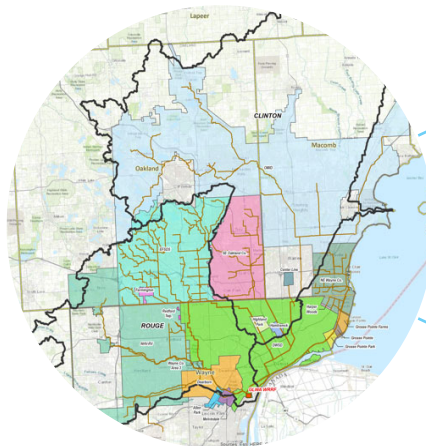
- ◆ New models were created during the Wastewater Master Plan
- ◆ Models can analyze “what if” scenarios
- ◆ Models can predict future improvements
- ◆ Current focus of modeling is on river flow, stage, dissolved oxygen and bacteria
- ◆ Future expansion of model capabilities to include:
 - ◆ Shorter river reach segments
 - ◆ Add nutrients and other constituents
 - ◆ Evaluate models for Clinton River and Lake St Clair to integrate into the regional model



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Key Take-Aways



Regional

Collaborative

Water Quality
Focused

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