

# CS-036 Wastewater Master Plan

Second Annual Briefing to GLWA Board of Directors

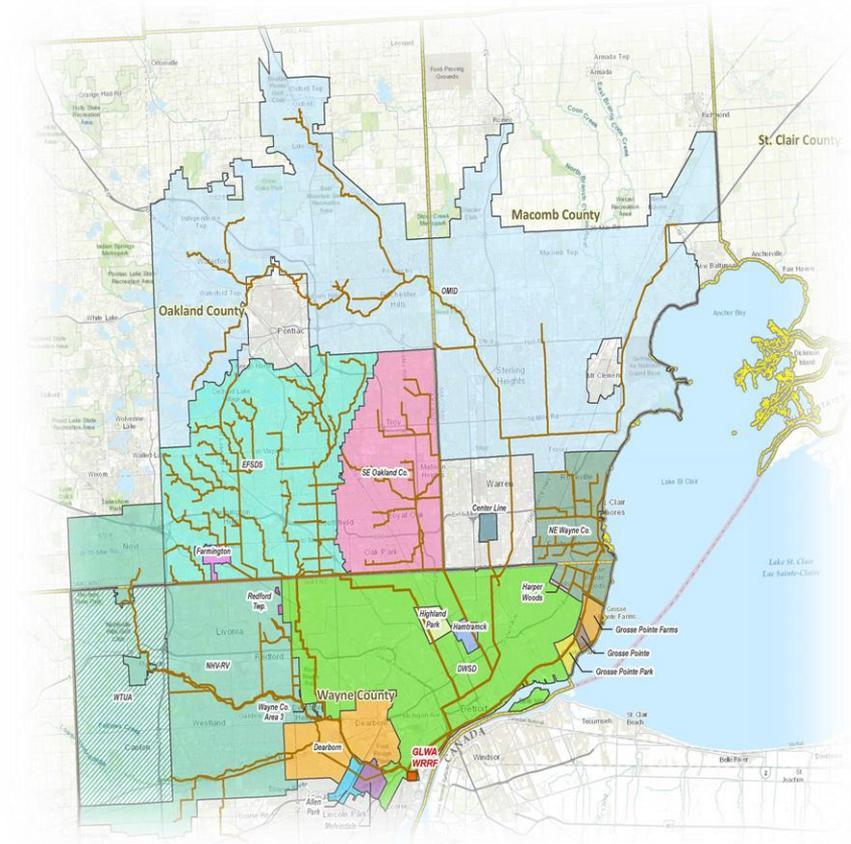
March 27, 2019



**GLWA**  
*Great Lakes Water Authority*

# Agenda

- Member and Stakeholder Involvement
- Progress Highlights
- Regulatory Timeline
- Process to Evaluate Alternatives
- Project Schedule



# Member and Stakeholder Involvement



# 2017 and 2018 Member and Stakeholder Engagement Overview



# Work and Stakeholder Groups

2018

## Interest Groups

- WRRF
- Green Solutions
- Capacity Management
- Regional Operating Plan
- Regulatory Compliance
- Communications

## Work Groups

- Wastewater Analytics Task Force
- Wastewater Best Practices Work Group
- Interim Wet Weather Operating Plan

## Stakeholder Groups

- Model Users Group
- Quick Wins
- Watershed Groups
- MDOT Coordination

2019

## 2019 Work and Stakeholder Groups

- Capacity Management and Incentives Group
- Regional Operating Plan Development Committee
- Regional Collaboration Group (Alternatives)
- WRRF Work Group
- Watershed Groups

# GLWA Members and MDEQ Shaped the Outcomes



21<sup>st</sup> Century Infrastructure Commission



# Progress Highlights

# Major Progress Elements

- Member Surveys
- New Models of the Regional System
- Emerging Recommendations: Collection System

# Member Surveys

## Population Projections

- 2045 SEMCOG Forecast
- 5% increase in GLWA Wastewater Service Area by 2045
- Extrapolated to 2060 by municipality with review by each Member
- Up to 8% increase by 2060

## Flow Projections

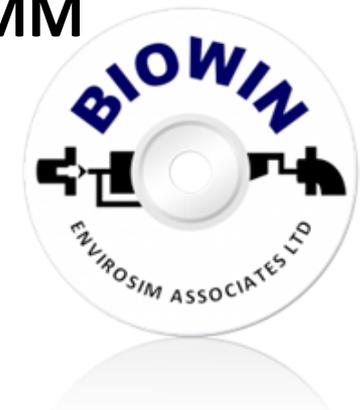
- WRRF has sufficient capacity for projected dry weather sanitary wastewater flow
- Wet weather flows will continue to be the driving force in capital improvements

# Benefits of the New Models

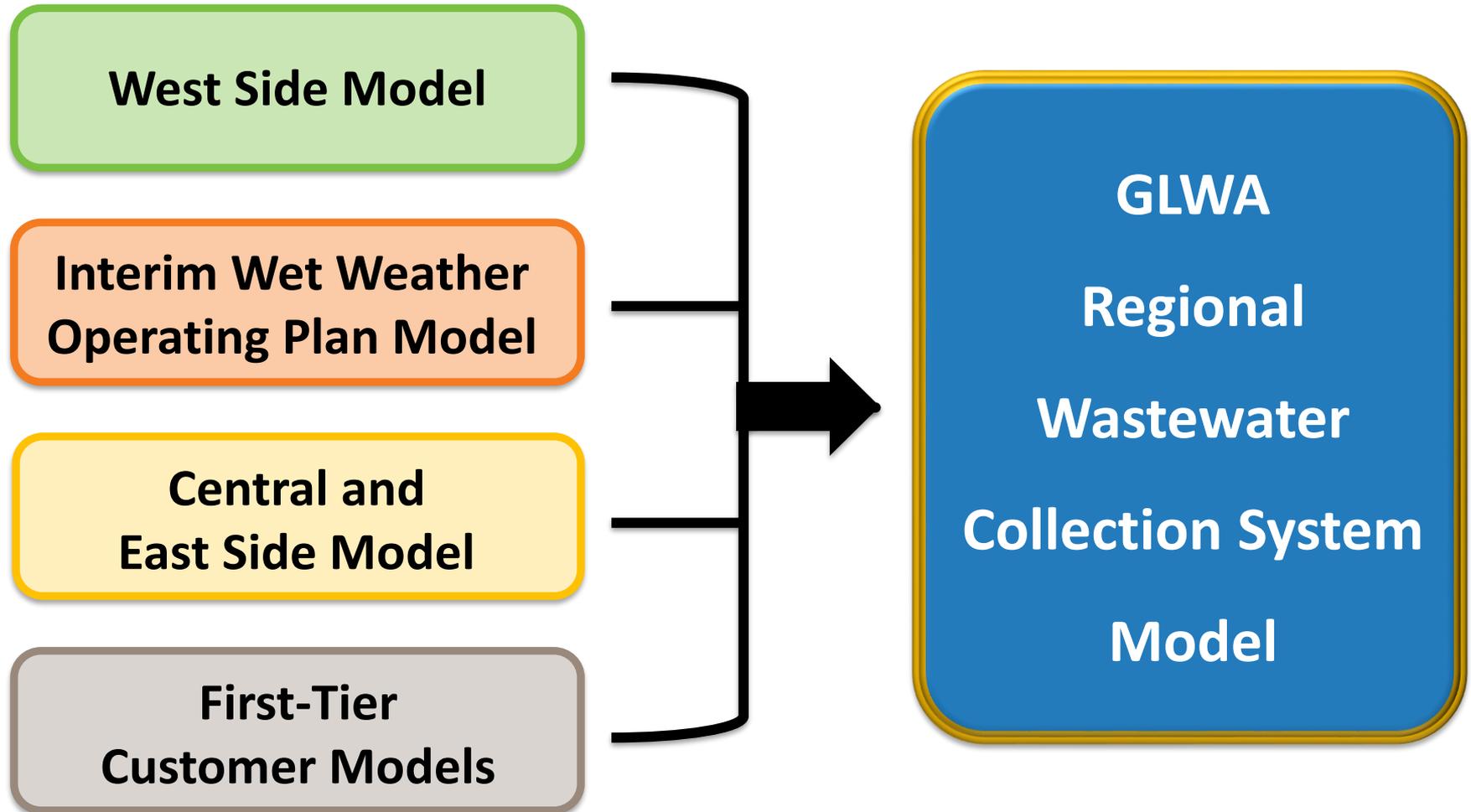
- **Comprehensive** new data for Member collection systems, GLWA system, WRRF, and receiving waters
- **Modeling tools widely used** by other wastewater agencies
- **Detailed** basis to study alternatives in the Master Plan
- **Standardized** tools for GLWA and Member use in future studies



US EPA SWMM



# New Model of the Regional Collection System



# Collection System Emerging Recommendations

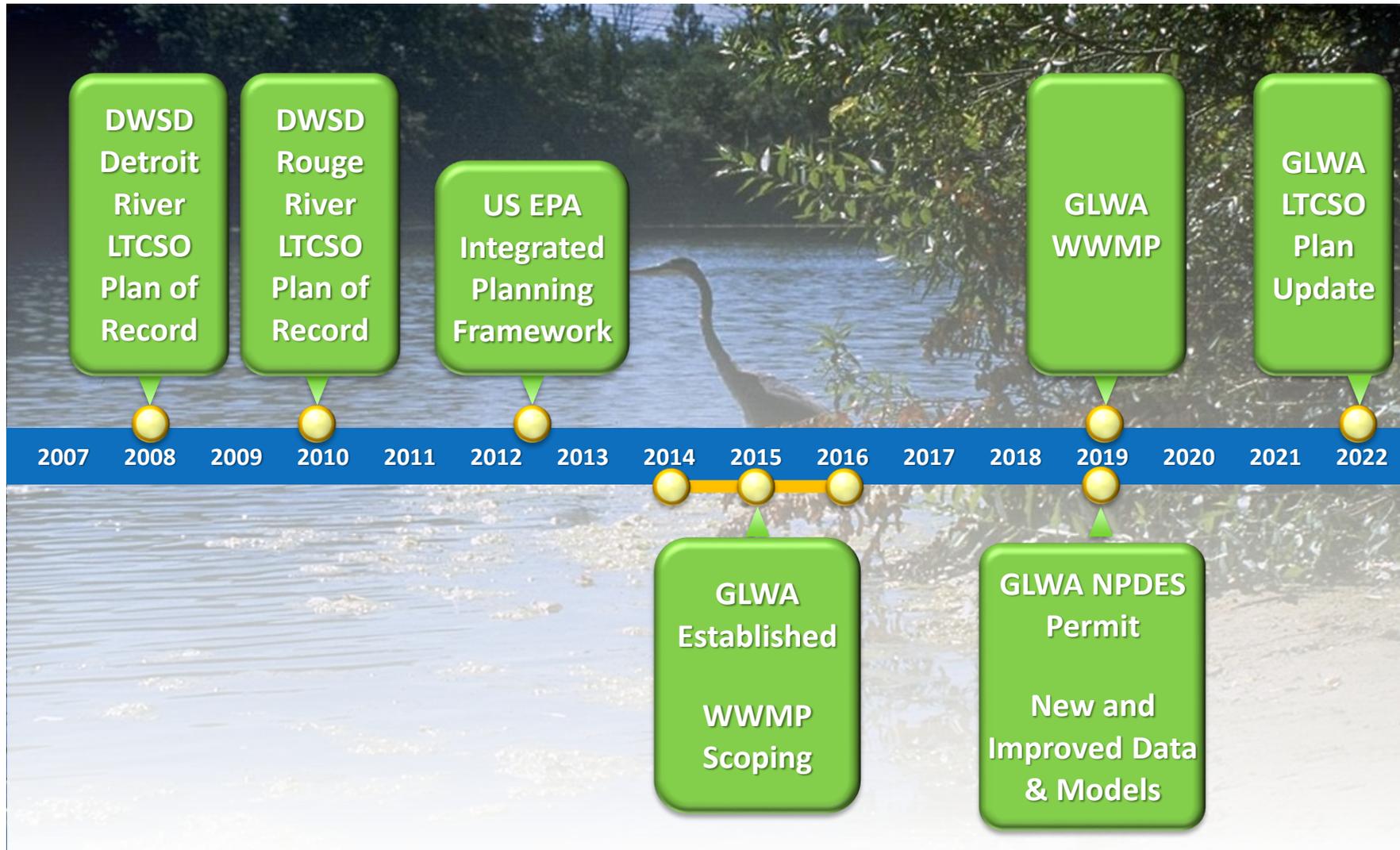
- Prioritize improvements based on receiving water quality needs and Member level of service requirements
- Extensive Member engagement in analyzing alternatives
- Phased approach:

Decade	Priorities
2020 to 2030	System Optimization and Rehabilitation
2030 to 2040	Priority Uncontrolled CSOs
2040 to 2060	Remaining Uncontrolled CSOs



# Regulatory Timeline

# Regulatory Timeline for Wet Weather Controls



# Long Term CSO Control Program

- Draft Permit has Long Term CSO Control Plan due in November 2022
- Identify next steps that will provide substantial incremental water quality improvement
- Combination of operational improvements, rehabilitation, source control and new facilities

PERMIT NO. MI0022802

  
**STATE OF MICHIGAN**  
**DEPARTMENT OF ENVIRONMENTAL QUALITY**

**AUTHORIZATION TO DISCHARGE UNDER THE  
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM**

In compliance with the provisions of the Federal Water Pollution Control Act, 33 U.S.C., Section 1251 *et seq.*, as amended; Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); Part 41, Sewerage Systems, of the NREPA; and Michigan Executive Order 2011-1,

**City of Detroit Water and Sewerage Department**  
735 Randolph  
Detroit, MI 48226

and

**Great Lakes Water Authority**  
735 Randolph  
Detroit, MI 48226

are authorized to discharge from the **Great Lakes Water Authority Water Resource Recovery Facility** located at

9300 W. Jefferson  
Detroit, MI 48209

designated as **GLWA WRRF**

to the receiving water named the Detroit River and the Rouge River, and from combined sewer overflow facilities to the receiving waters named the Detroit River, the Rouge River, and Conner Creek in accordance with effluent limitations, monitoring requirements, and other conditions set forth in this permit.

This permit is based on a complete application submitted on May 25, 2017.

**This permit takes effect on September 1, 2018.** The provisions of this permit are severable. After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term in accordance with applicable laws and rules. On its effective date, this permit shall supersede National Pollutant Discharge Elimination System (NPDES) Permit No. MI0022802 (expiring October 1, 2017).

This permit and the authorization to discharge shall expire at midnight on **October 1, 2022**. In order to receive authorization to discharge beyond the date of expiration, the permittees shall submit an application that contains such information, forms, and fees as are required by the Michigan Department of Environmental Quality (Department) by **April 4, 2022**.

Issued **DRAFT**

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Christine Alexander, Manager  
Permits Section  
Water Resources Division



# Process to Evaluate Alternatives

# GLWA Wet Weather Solutions

Where are the opportunities for GSI and cost-effective sewer separation?

**Green,  
Separation  
and Source  
Control**

How can a regional operating plan with real time control optimize use of existing facilities?

**RTC and  
Regional  
Operations**

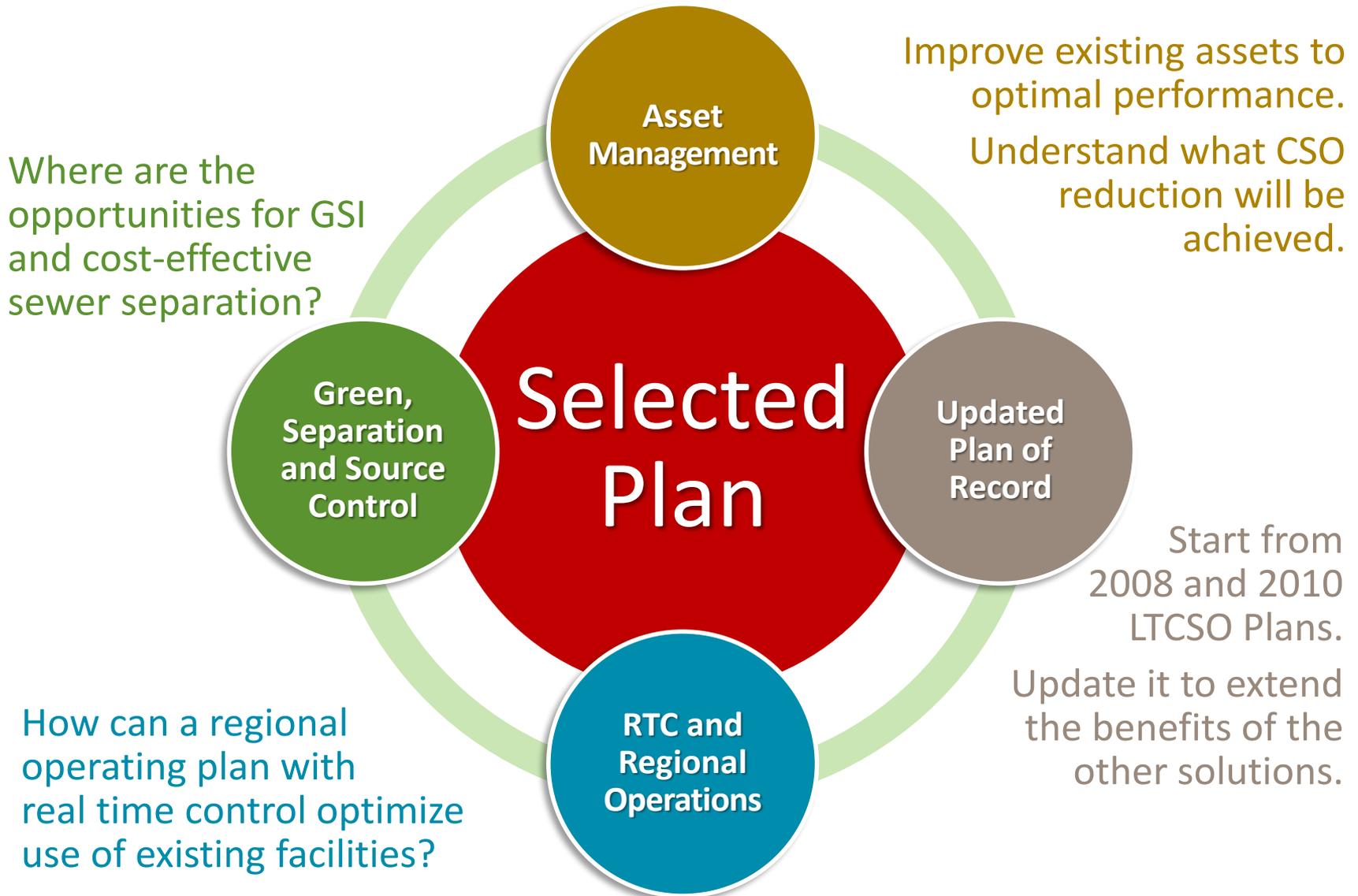
**Asset  
Management**

Improve existing assets to optimal performance.  
Understand what CSO reduction will be achieved.

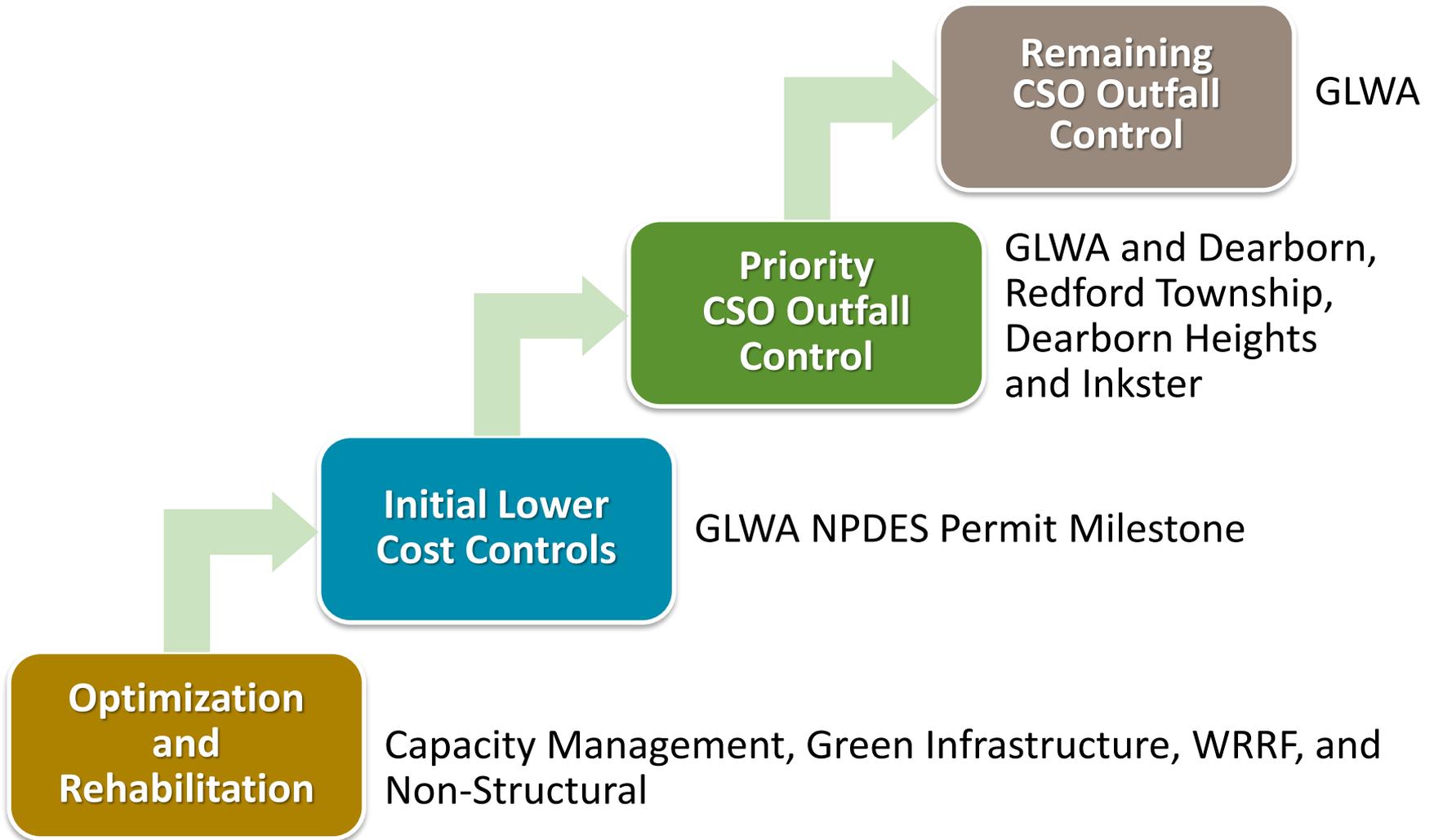
**Updated  
Plan of  
Record**

Start from 2008 and 2010 LTCSO Plans.  
Update it to extend the benefits of the other solutions.

# GLWA Wet Weather Solutions



# Alternatives Will be Created by Themes

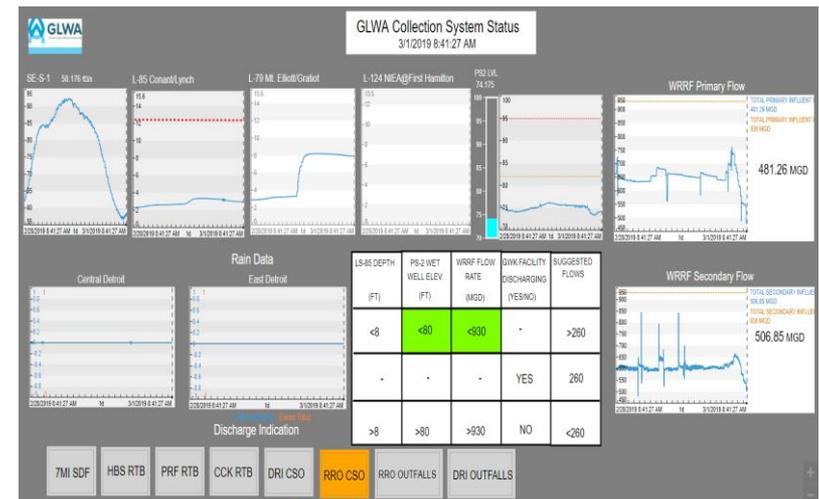
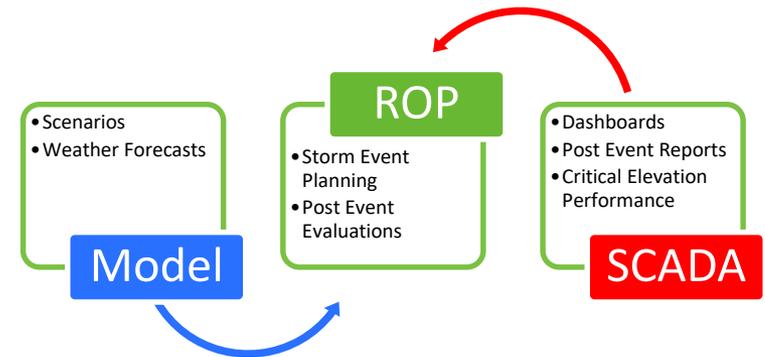


# Regional Alternatives Scoring Matrix



# Regional Operating Plan

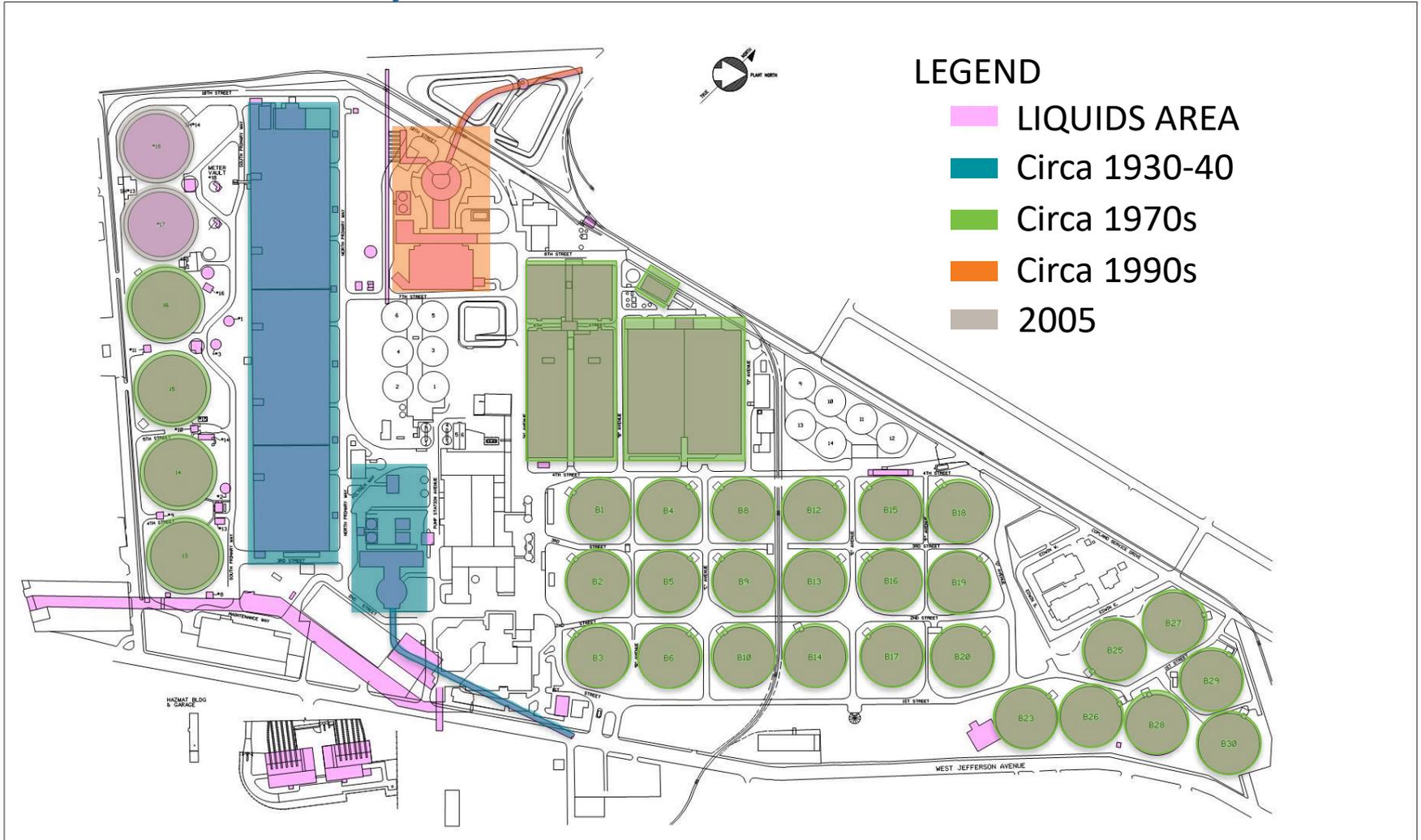
- Links operating plans of GLWA and its Members with Real Time Control technology
- Establishes “Critical Elevations” in the regional system to protect for basement flooding and overflows
- Collaborative processes for performance analysis by GLWA, Members and MDEQ



# Water Resource Recovery Facility

- One of the largest wastewater treatment facilities in the world
- Constructed and improved in stages over the last 90 years
- Detailed evaluation of each pumping and treatment process
- Developed new model of the treatment processes
- Developed new model of the plant hydraulics

# WRRF History



WASTEWATER DESIGN GROUP - WWTP		2016 NEEDS ASSESSMENT FOR THE GLWA WWTP	FILE NO.	FIGURE
		LIQUIDS AREA SITE PLAN	SCALE N.T.S.	DATE SEPTEMBER 2016

# WRRF Emerging Recommendations

- Upgrade existing assets to increase redundancy and reliability
- More process optimization to reduce power and chemical use
- Phased approach:

Decade	Priorities
2020 to 2030	Pumping and Liquid Treatment
2030 to 2040	Biosolids
2040 to 2050	New Disinfection



# Project Schedule

# Project Schedule

Months in 2019	Activity
March to June	Alternatives and Scoring Matrix
June	Cost Projections
July	Projects Review with CIP Group
September	Review of Drafts/Board Briefing
October	Final Master Plan Report



# Discussion