



DWSD and GLWA Combined Sewer Operations

*July 8, 2016 Rain
Event Preliminary
Update*



Agenda

- Introductions
- Rainfall
- Local System
- Regional System
- Moving Forward

Introductions

Palencia Mobley, P.E.

Deputy Director and Chief Engineer

Detroit Water and Sewerage Department

Suzanne Coffey, P.E.

Chief Planning Officer and Interim Chief Operating Officer – Wastewater

Great Lakes Water Authority

Rainfall and Climate



Climate Change & Design

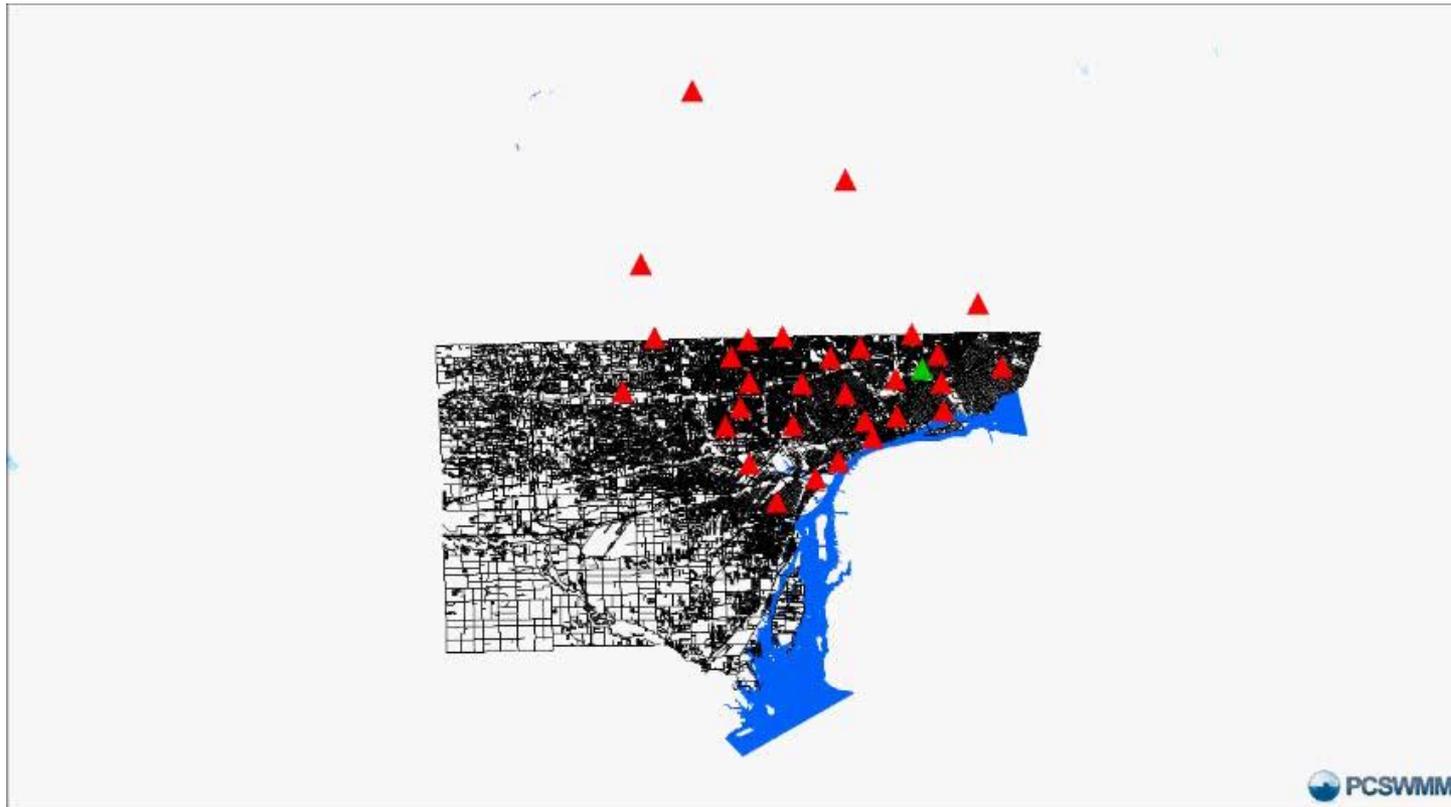
“Statewide across Michigan, the annual frequency of extreme storms has increased by 89 percent in the past 50 years. In southern Michigan, the increase has been 128 percent.”

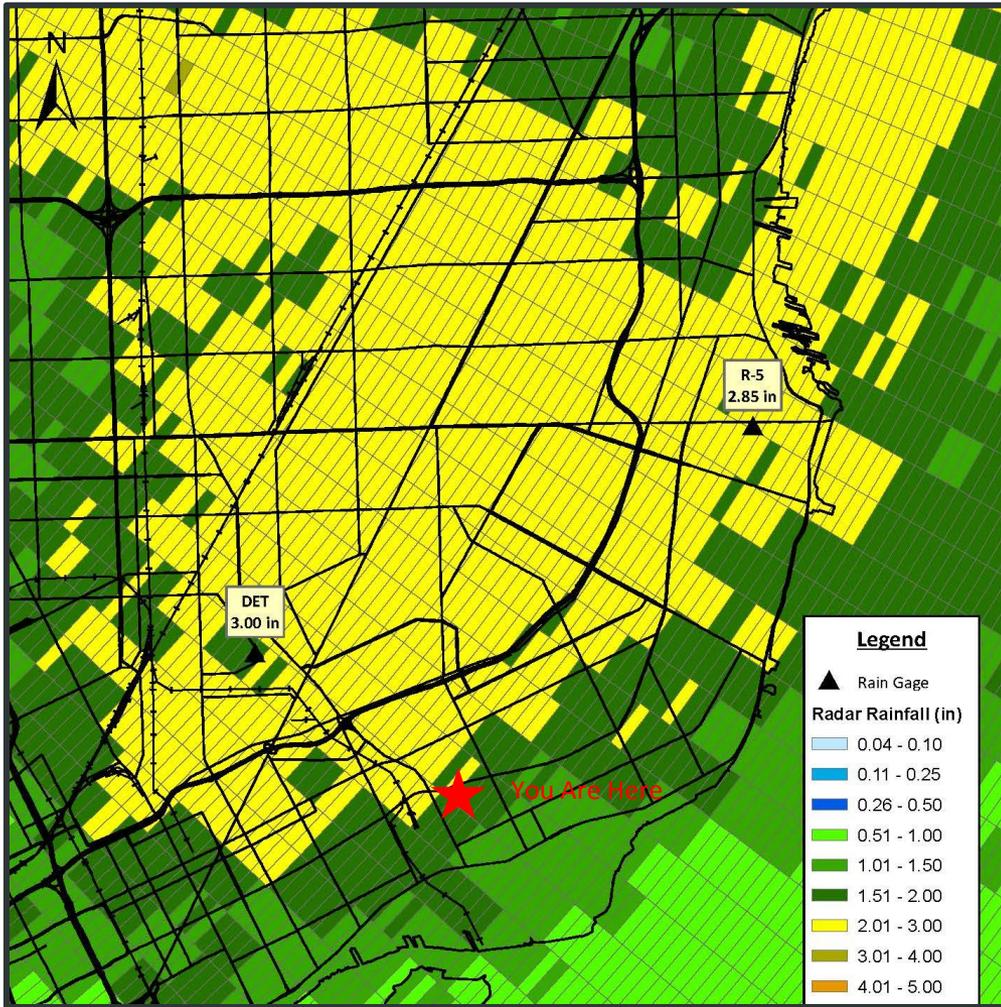
Source: National Resources Defense Council Paper, published 2014

“For Michigan, it was found that the 24-hour, 100-year value was exceeded 71 times, while only 21 exceedances were expected.”

Source: MDOT MS4 Final Report Rainfall Intensity

Rainfall Radar



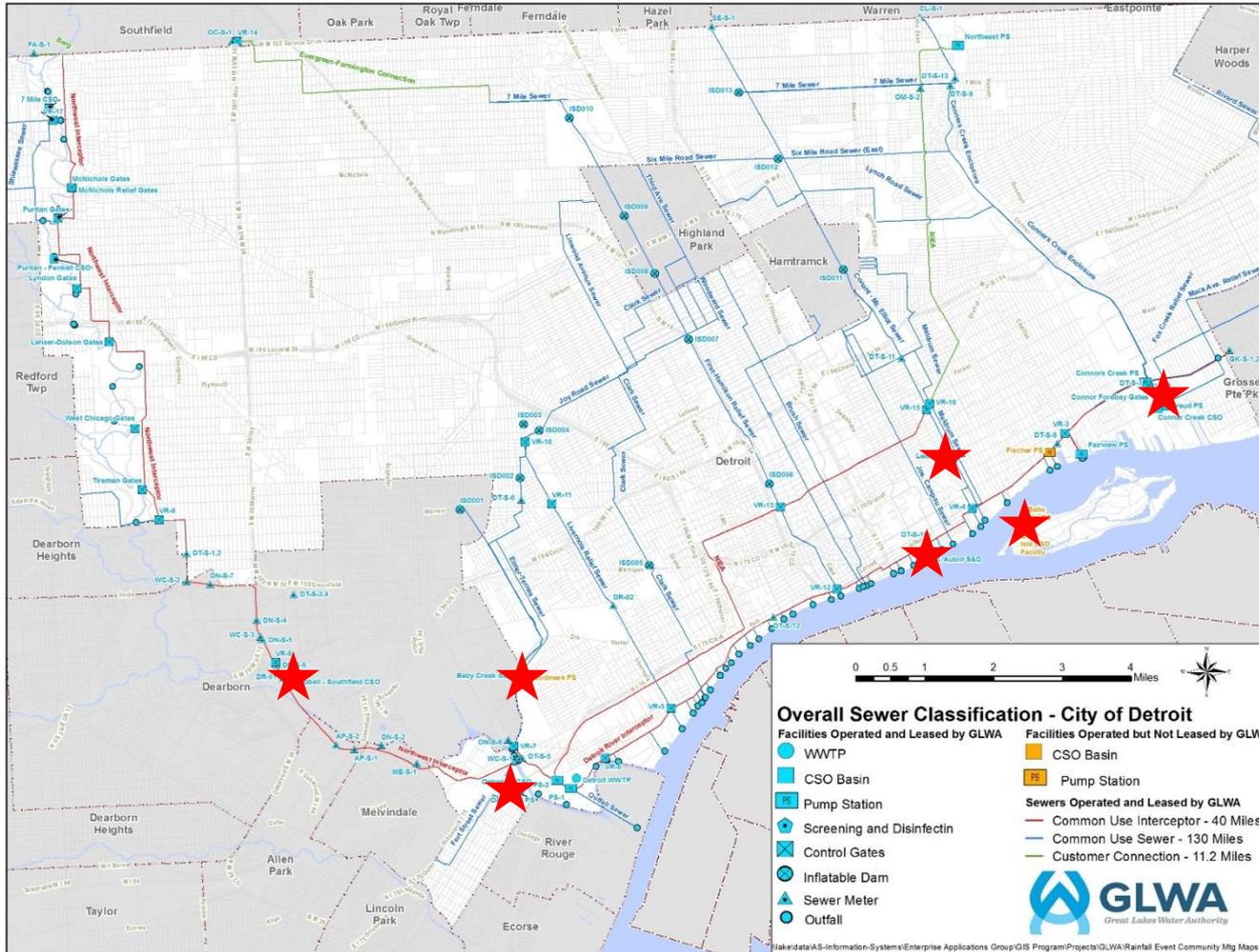


Accumulated Rainfall Totals in Metro Detroit for July 8, 2016

Source: NCDC Radar Rainfall Totals

How the Storm Hit and GLWA's Response

- No severe weather was not predicted by NOAA
- Weather monitoring services provided no advance alerts
- Wet weather facilities are not staffed 24/7
- GLWA's system had widespread alarms from 7 wet weather facilities within 40 minutes
 1. St. Aubin
 2. Oakwood
 3. Belle Isle
 4. Baby Creek
 5. Freud
 6. Hubbell Southfield
 7. Leib
- Staff were immediately dispatched and onsite within 30-40 minutes



Comparing the Storms

Event	Rainfall Total (inches)	Duration (hours)	Rainfall Maximum Hour (inches)
May 25, 2011	3.32	38	1.47
August 11, 2014	4.38	10	1.24
July 8, 2016	2.99	4	2.55

Data from Rain Gauge at City Airport

Comparing the Storms cont'd

Changes as a Result of May 25, 2011

- Data under review

Changes as a Result of August 11, 2014

- Identified facility improvements and operating protocol changes to improve the system's response to wet weather
- A \$22.5M project is in the approved capital improvement plan scheduled to start this fiscal year

Changes as a Result of July 8, 2016

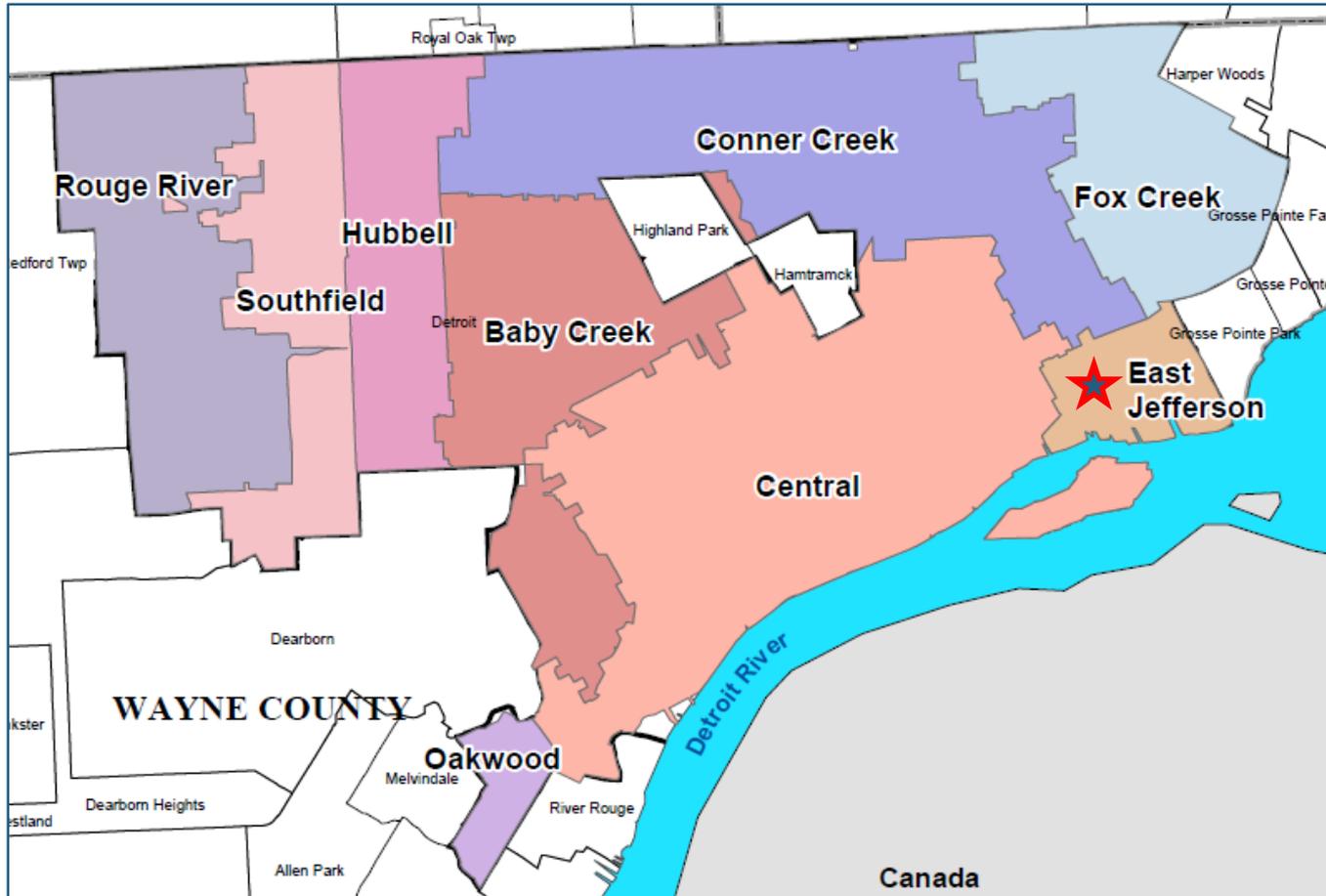
- Presented Later in this Presentation

Local System

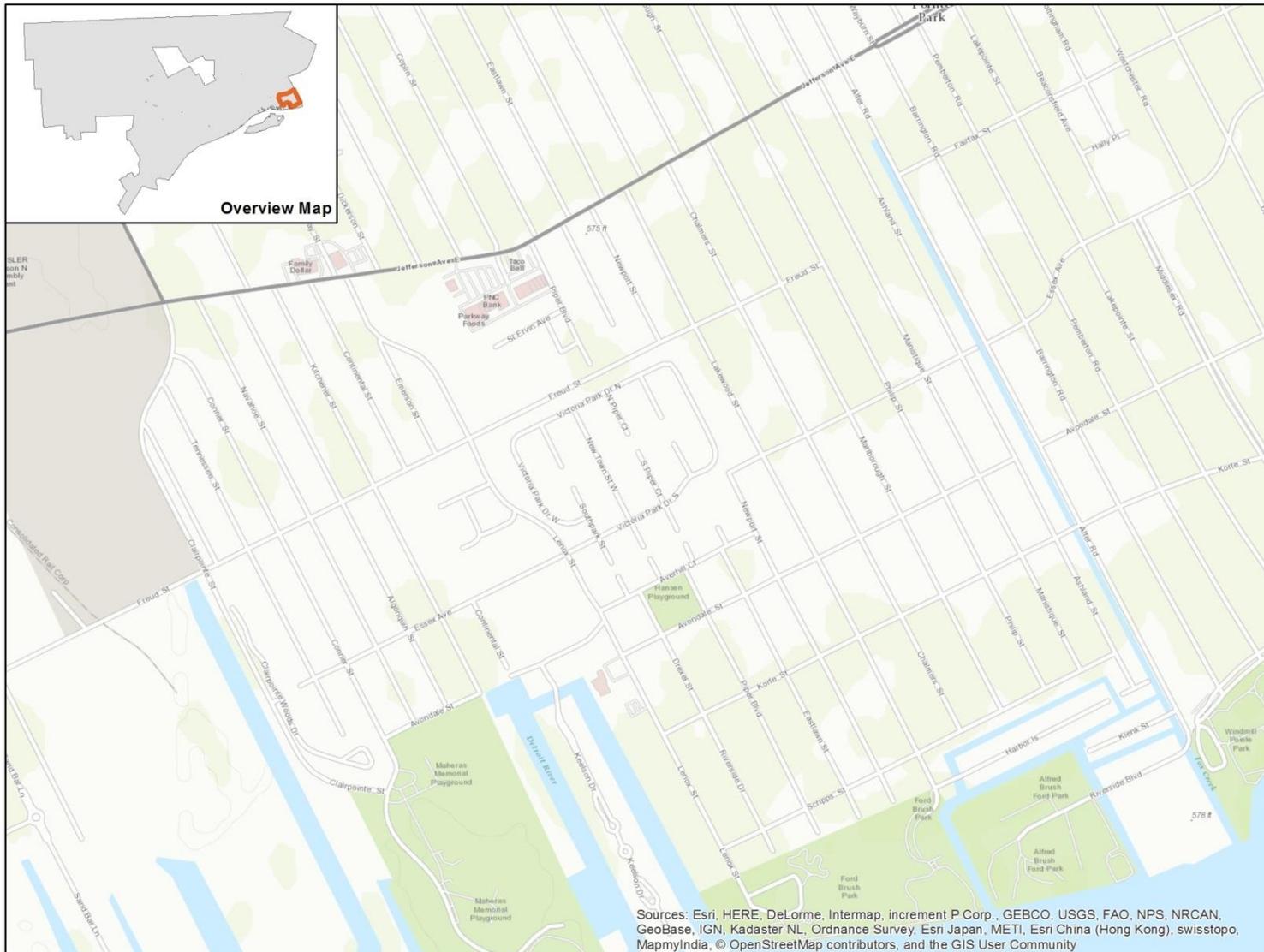
DWSD



City of Detroit Sewer Districts



East Jefferson Sewer District



East Jefferson Sewer District

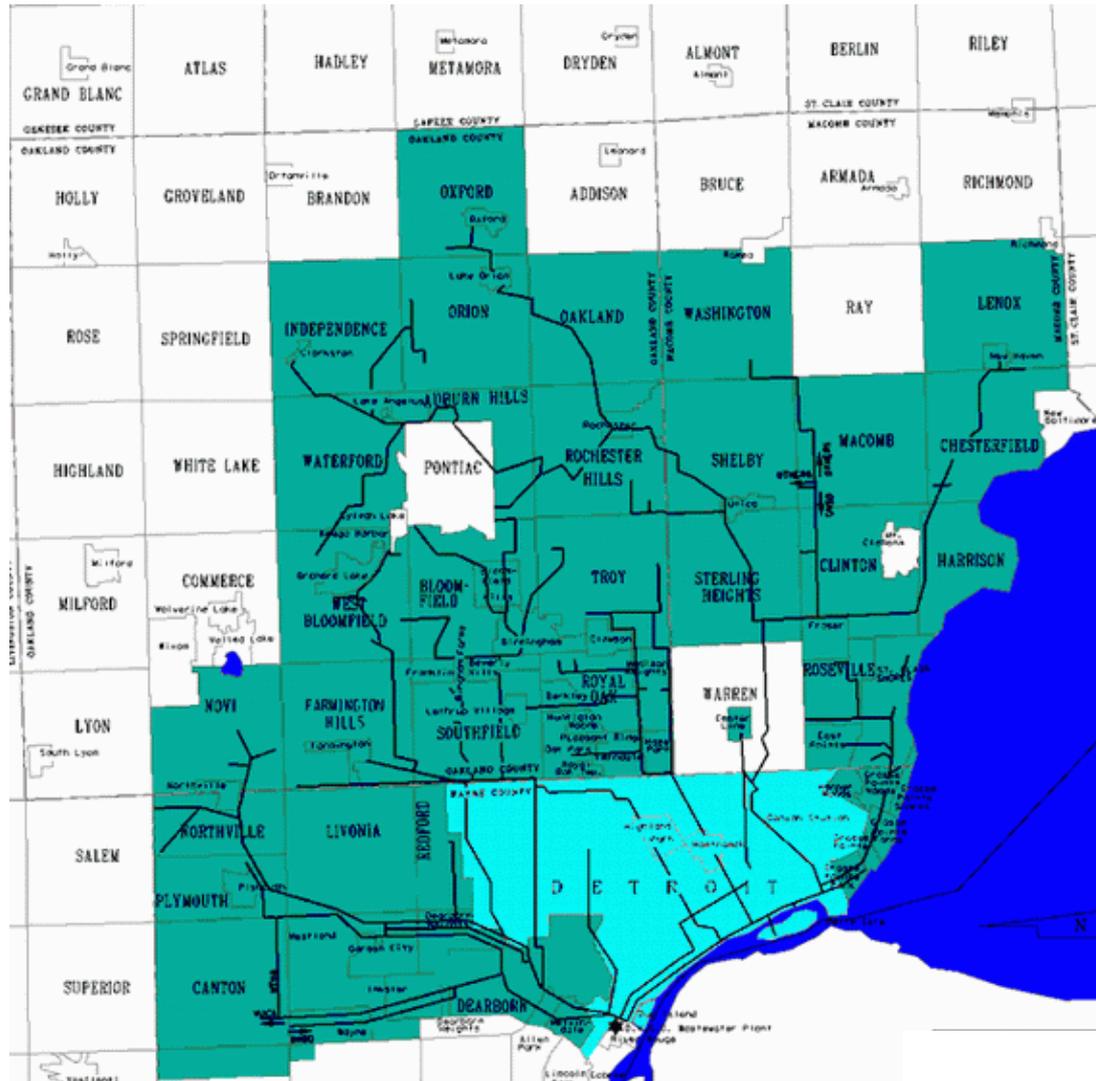


Regional System

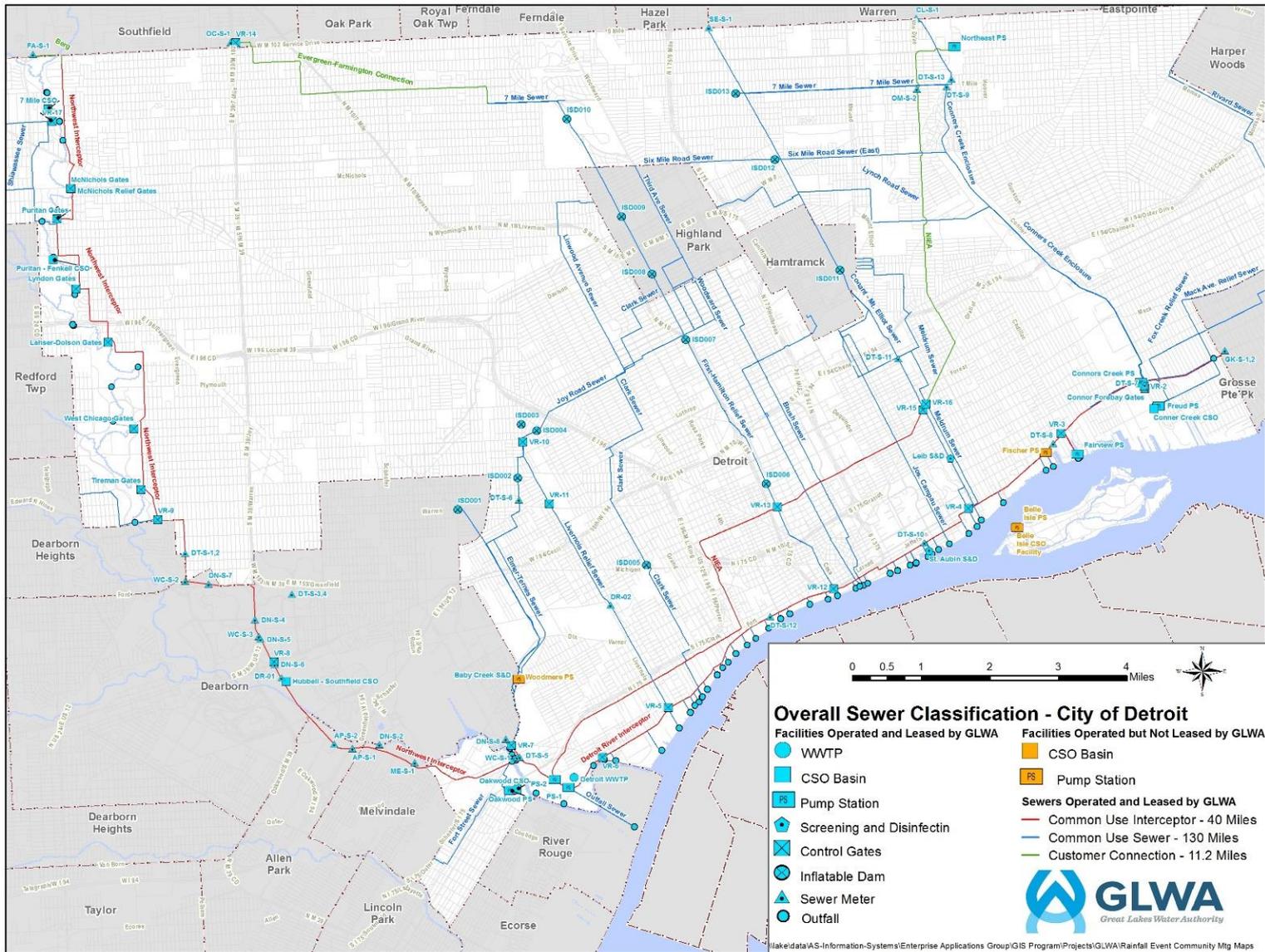
GLWA



Regional Sewer System



Regional Sewer System



Moving Forward

Next Steps



GLWA's Regional System Actions

Short Term

- Further analyze this event
- Optimize automation and remote operations

Mid Term

- Expedite the capital improvement project

Long Term

- Consider increased frequency and intensity of rain events in our Wastewater Master Plan
- The Wastewater Master Plan is a three-year project that will look closely at regional system operations

DWSD's Local System Actions

Short Term

- Further analyze this event
- Green Infrastructure/Incentivizing Stormwater Management (In Process)

Mid Term

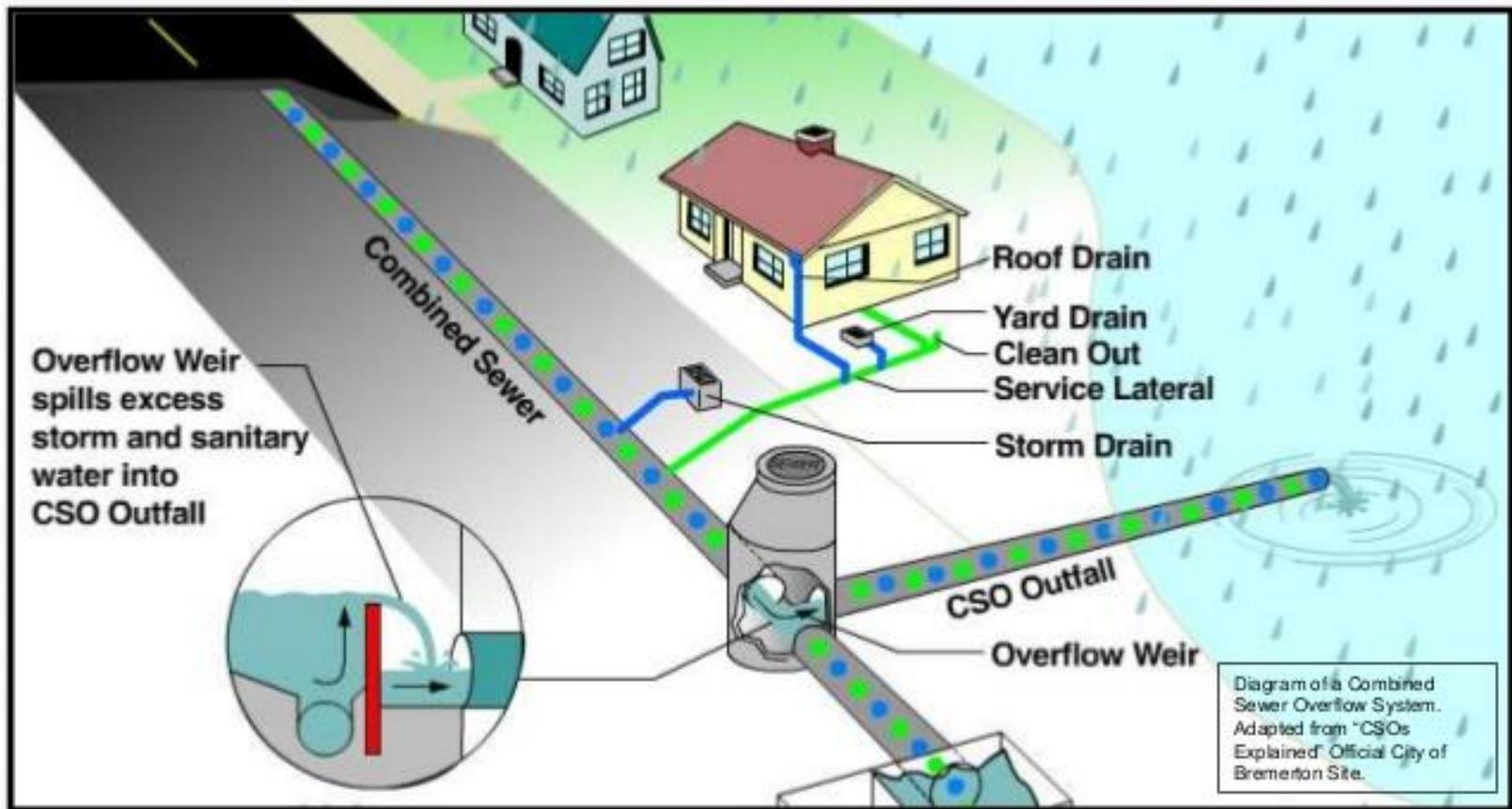
- Developing Contingency Plans, ideas under consideration

Long Term

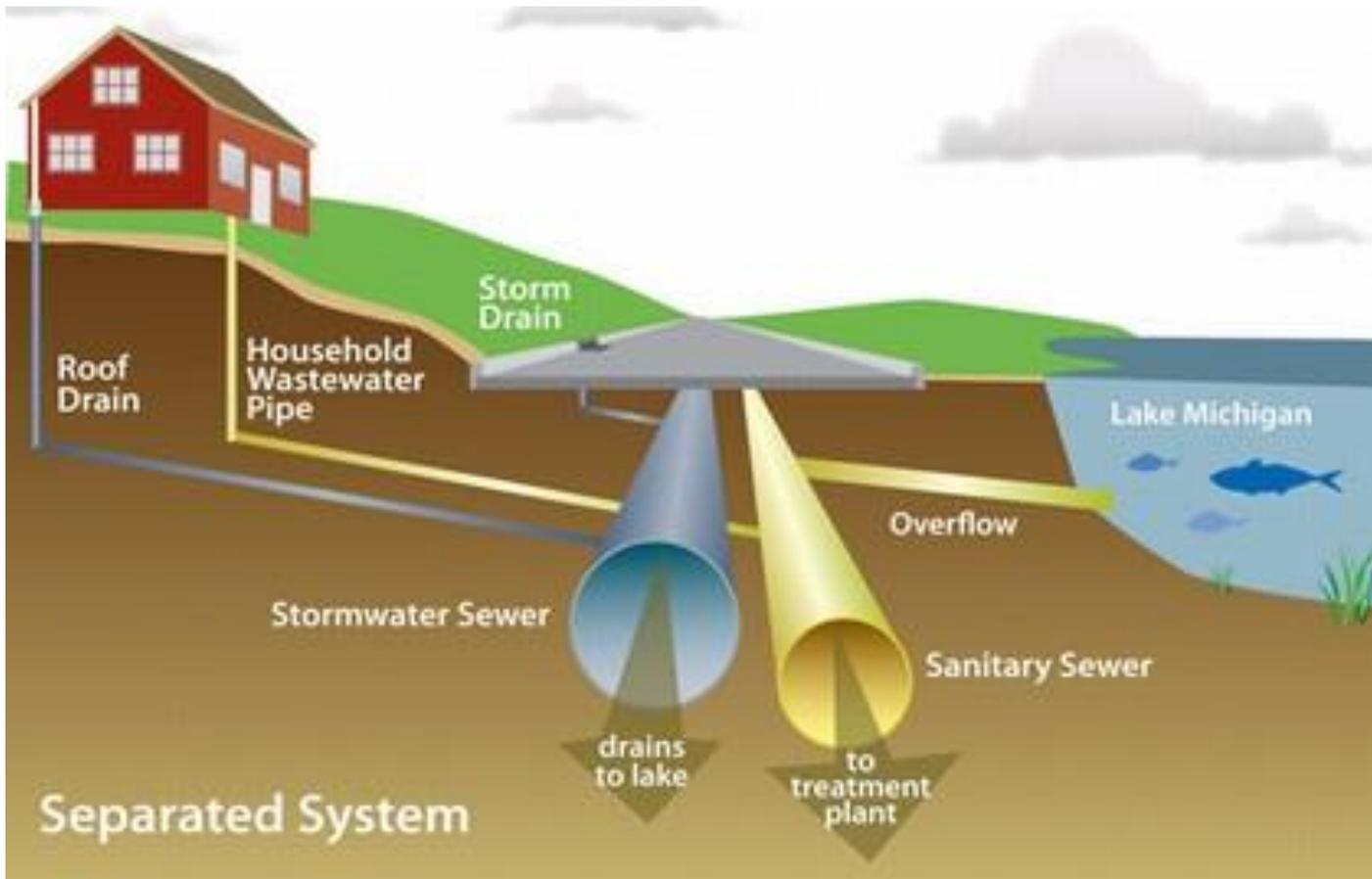
- Local System Capital Improvement Program Request for Proposals



Combined Sewer System



Separated Sewer Systems



Ways to Protect Your Private Property

During an Event

- Avoid using any water in your house (Do not flush toilets)

In the Future

- Flood Insurance vs. Sewer Backup Insurance
- Downspout Disconnection/Rain Barrels/Rain Gardens
- Sewer Check Valves & Sump Pumps

Disconnected Downspouts



Residential Green Infrastructure

Rain Gardens



Rain Barrels





GLWA
Great Lakes Water Authority



DETROIT
Water & Sewerage
Department