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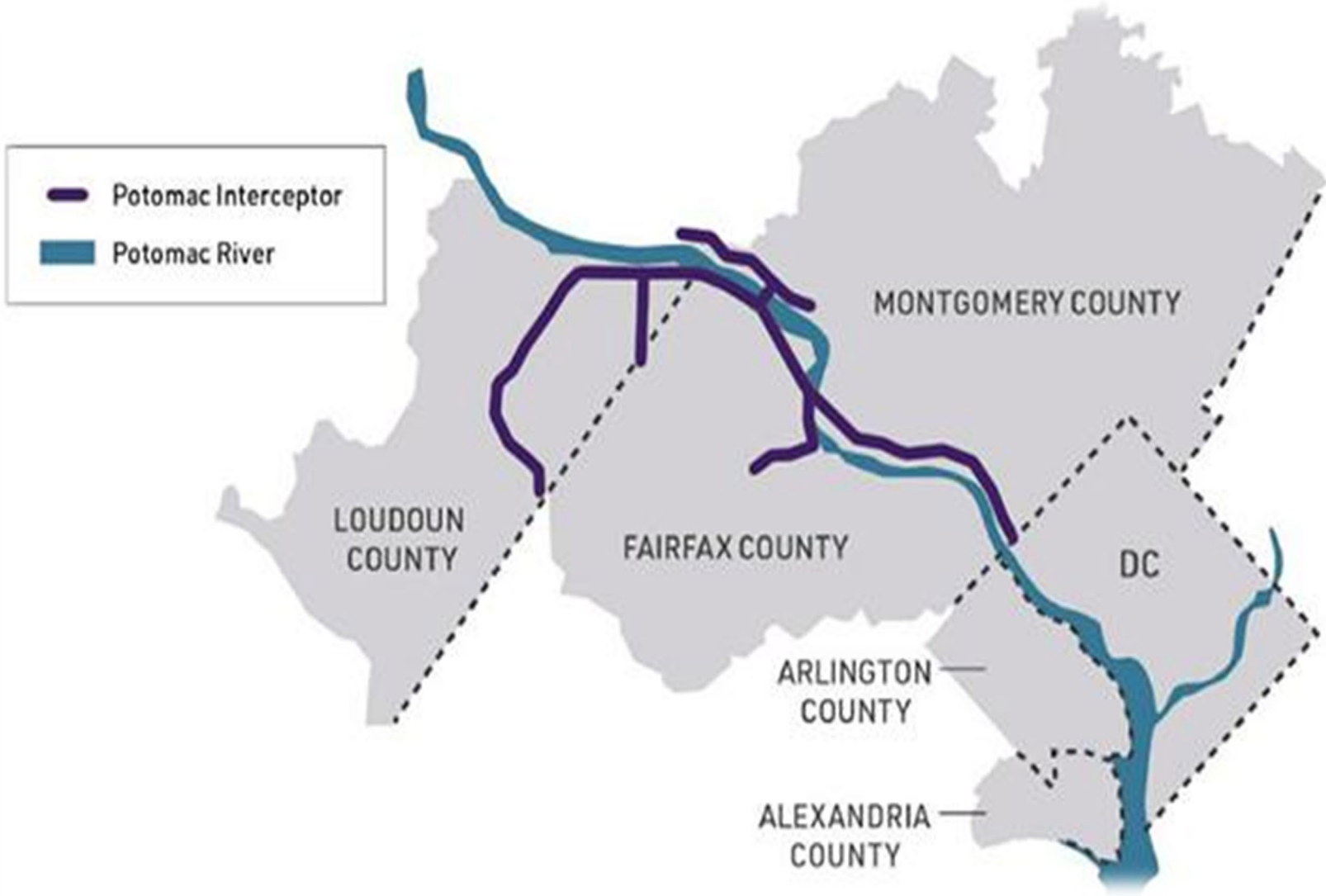
Resiliency Team Progress
GLWA Board of Directors

March 2026 | Navid Mehram, P.E.

Potomac Interceptor Collapse: History and Impact



Potomac Interceptor

- Constructed in the early 1960s
- 54 Miles Long (¼ of GLWA system)
- 30" to 96" RCP (collapsed pipe is 72" ID)
- Carries approximately 60 MGD DWF
- In early stages of the 10-year, $625 million assessment/repair program

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RCP - Reinforced concrete pipe
MGD - Million Gallons Per Day
DWF - Dry weather flow

Potomac Interceptor Collapse: History and Impact

Sewer Collapse

- Downstream debris dam/pipe blockage
- Surcharge caused internal pressure
- Compromised section of 72" pipe collapsed
- Over 300 million gallons of untreated flow estimated to date
- Over $20 million in repair costs estimated to date

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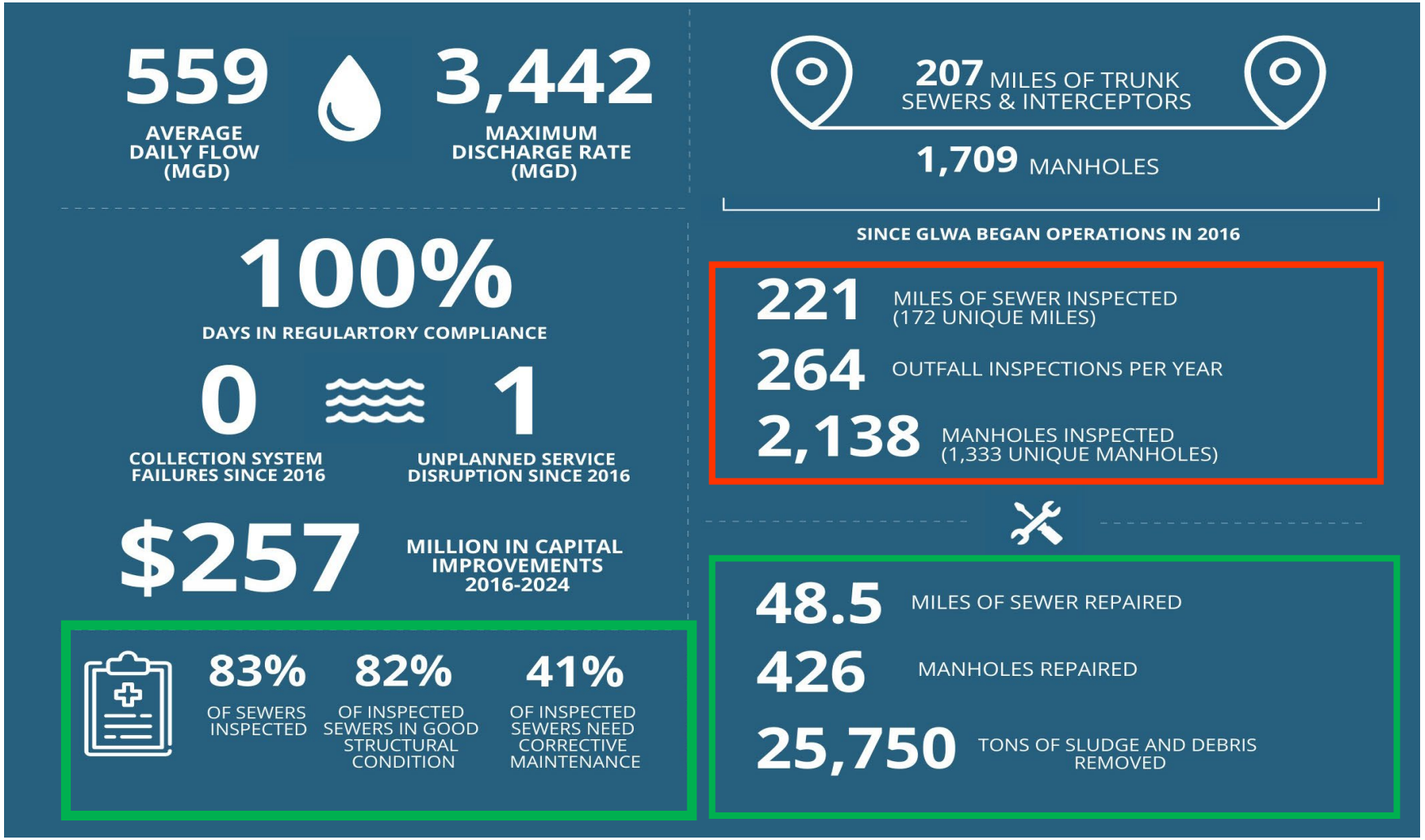
GLWA System Overview and Infrastructure Summary



GLWA Perspective

- Length of DRI and NWI combined ~30 miles
- GLWA sewers are larger and older
- $115 million invested in DRI rehab
- $20 million invested in NWI rehab + $87 million new sewer tunnel

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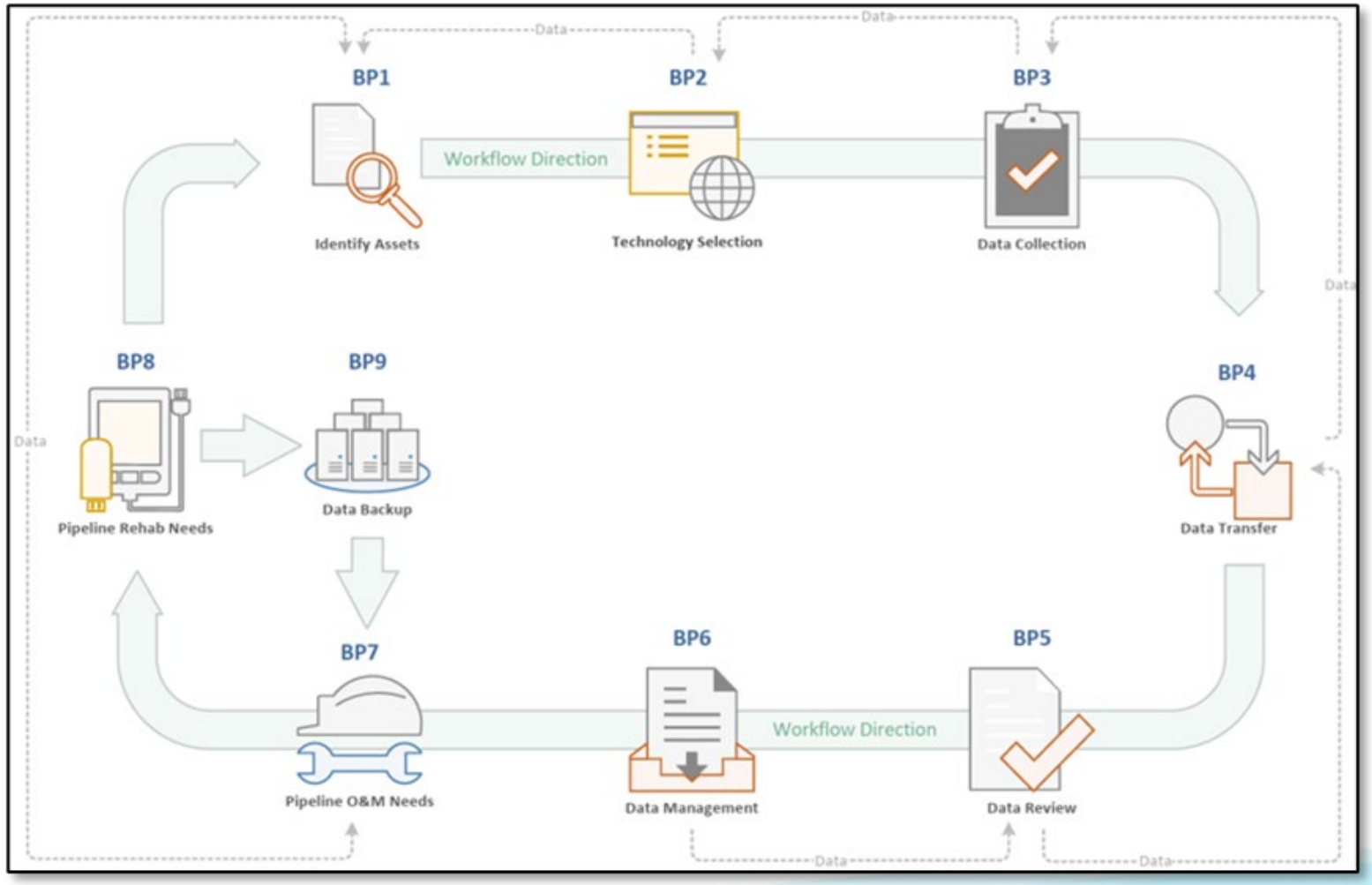
DRI - Detroit River Interceptor
NWI – Northwest Interceptor

GLWA Future Inspection Program/Linear System Integrity Program

- Joint effort between Planning and Conveyance Teams
- Development stage nearing completion
- Implementation is in early stages
- Goal for updated condition and risk scores in early FY27
- Fill data gaps by FY28
- Recurring inspections on 5/10/20 year cycles based on risk



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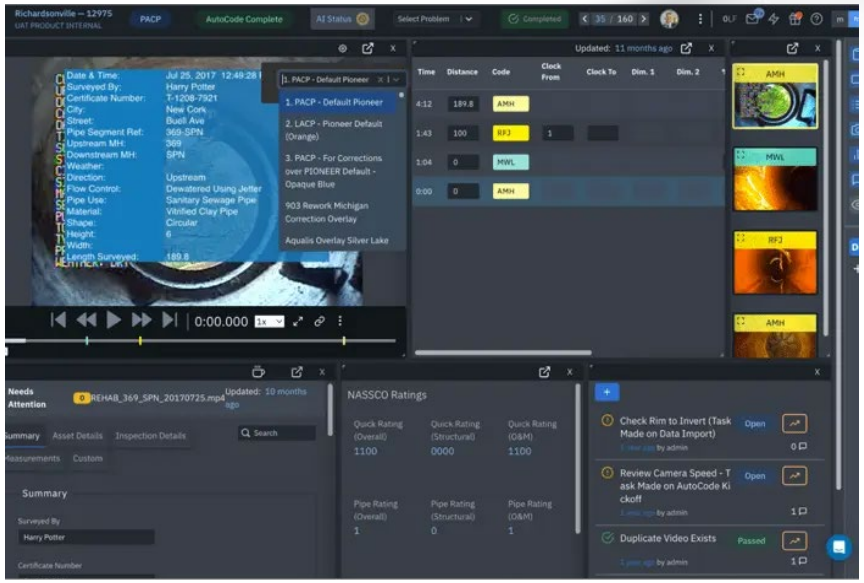
GLWA Future Inspection Program/Linear System Integrity Program

- Leverage technology advancements and AI for inspection and assessment
- Execute repairs in 3 categories:
  - Emergency Response
  - Urgent Action (1-5 years)
  - Capital Improvement (5-10 years)
- Self-perform small-scale inspections between 5-year cycles



Independent Investigation of 2021 Flooding Status of 33 Recommendations

19 of the measures have been **completed**	**12** of the measures are currently **in progress**	**2** of the measures have not started
88% short term, 46% of the medium term, 45% of the long term.	**8** will be completed **in the Regional Flood Mitigation Study** USACE.	The items not started are dependent on the completion of the projects currently in progress.

USACE - US Army Corps of Engineers

Executive Summary - Short Term Measures

Project Milestone	Project Status			
	Not Started	In Progress	Completed	Notes
Short Term Measures				
General Recommendation				
Pump availability during storm events.				GLWA completed monitoring the system closely to ensure no more than 1 pump is out of service at each station.
Pump Stations				
Testing of the Vacuum Priming System.				
Pump sequence testing.				
Operational documentation and communication.				This effort is complete. Several standard operating procedures (SOPs) have been implemented with some minor modifications.
Electric Equipment				
Power conversion from Public Lighting Department to DTE.				
Back up generator measures.				This measure is complete, and recommendations are being evaluated for implementation.
Confirm that the power supply for each DTE can support the entire station.				This review is incorporated into the larger electrical resiliency project.
Mechanical Equipment				
Conner Pumpstation Seal Water System.				This work has been completed.
Vacuum Priming System upgrade.				Start up and commissioning.

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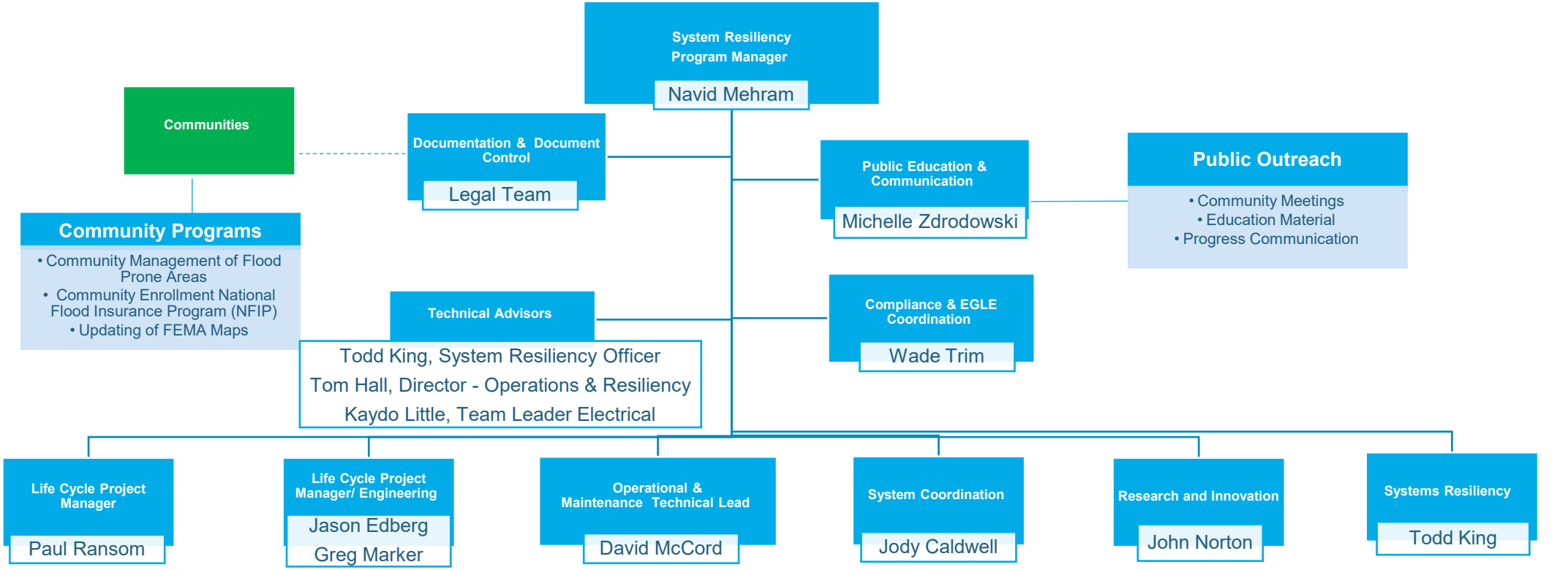
Executive Summary - Medium Term Measures

Project Milestone	Project Status			
	Not Started	In Progress	Completed	Notes
Medium Term Measures				
General Recommendation				
Prioritization of the Wastewater Capital Improvement Planning (CIP) projects.				This task is complete and will remain ongoing.
Evaluation of future rainfall beyond the Atlas 14.				This task will be captured within Water Resource Development Act with USACE.
Take into consideration other climate change factors into the design.				This task will be captured within Water Resource Development Act with USACE.
Pump Station				
Continue with the Freud Pump Station projects.				Construction taking place.
Electrical Equipment				
Upsize the transformers at each facility to run the entire facility.				This review is incorporated in the larger electrical resiliency project and has been completed.
Electrical reliability study for Freud and Conner Pump Stations.				
Mechanical Equipment				
Complete other scenarios as proposed through the Clemson Engineering scale model.				
Review the idea of vertical pumps for the Conner Storm Station.				
Operational Measures				
Inspection and monitor the Intake Flow Conditioning (IFC) in both the Conner and Freud Pump Stations.				This item is pending the improvements to Freud and Conner Pump Stations.
Review of previous studies.				GLWA completed the review of prior studies as new projects progressed.
Studies				
Level of service.				This task will be captured within Water Resource Development Act with USACE.
Dynamic System Operations Study				This task will be captured within Water Resource Development Act with USACE.
Stormwater/Wastewater Master Plan				This task will be captured within Water Resource Development Act with USACE.

Executive Summary - Long Term Measures

Project Milestone	Project Status			
	Not Started	In Progress	Completed	Notes
Long Term Measures				
General Recommendation				
Feasibility of moving to a 100-year storm.				This task will be captured within Water Resource Development Act with (USACE).
Local government program for voluntary purchase of flood prone areas.				
Local government public outreach campaign for flood risk and purchasing flood insurance.				
National research of other large-scale flood reduction projects.				This task will be captured within Water Resource Development Act with (USACE).
Pump Stations				
Medium-term solutions are not successful.				The project team has incorporated this into the Conner Storm project schedule.
Further automation of the pumping stations.				Steps are being taken toward this effort. An example includes the seal water system for the Conner Pump Station.
Regional System Coordination				
Review of the member partners' optional strategy to find alternative operations.				GLWA started discussion around the Regional Operational Plan. Additionally, GLWA is coordinating with Member Partners during major storm events.
Local government engagement in the National Flood Insurance Program (NFIP).				
Local government should consider updating the flood maps.				
GLWA community outreach.				Regular cadence has been established.
Community flood collection data to provide guidance into modeling validation.				This task will be captured within Water Resource Development Act with USACE.

Resiliency Delivery Team



Proposed Projects

- All - Electrical upgrades at all sanitary stations
  - Evaluate emergency generator operational strategy- Evaluation under the Electrical study
- CCPS - Vacuum priming system upgrades
- CCPS - Seal water system upgrades
- CCPS - Vertical pump alternative
- Pumpstation Level Sensor

Existing GLWA Projects

- CIP - 260204 Conner Creek Sewer Cleaning and Rehab
- CIP - 260701 In system Storage Dam and Outfall Rehab
- CIP - 232002 Freud Storm Pump Station Rehab
- CIP - 232002 Freud Sanitary Pump Station New Construction
- Sewer Level Sensors project.

Operational & Maintenance

- Standard Operating Procedure updates
- System testing
- Evaluate operational change recommendations

System Planning

- Regional system coordination with all communities

Research

- National survey of other flood projects

Resiliency

- Feasibility of moving to a 100-year storm
- Level of Service
- Comprehensive flood solution

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Pump Station Standard Operational Procedures Updates

A quick-reference guide for each pump station that primarily includes:

- **Pump Station Description:** Location, tributary sewers, and system context
- **Pumping Capacity:** Number of pumps, manufacturer, and rated capacity
- **Pump Performance:** Pump curves and optimal operating range
- **Instrumentation:** Level sensors and key monitoring equipment
- **Operation:** ON/OFF set points
- **Power Supply:** Primary power feed and backup provisions

Storm Pump	Set Points	
	Elevation (Detroit)	
	ON	OFF
Lead (P4)	75	67
Lag 1 (P1)	76	68
Lag 2 (P2)	77	69
Standby (P3)	78	70

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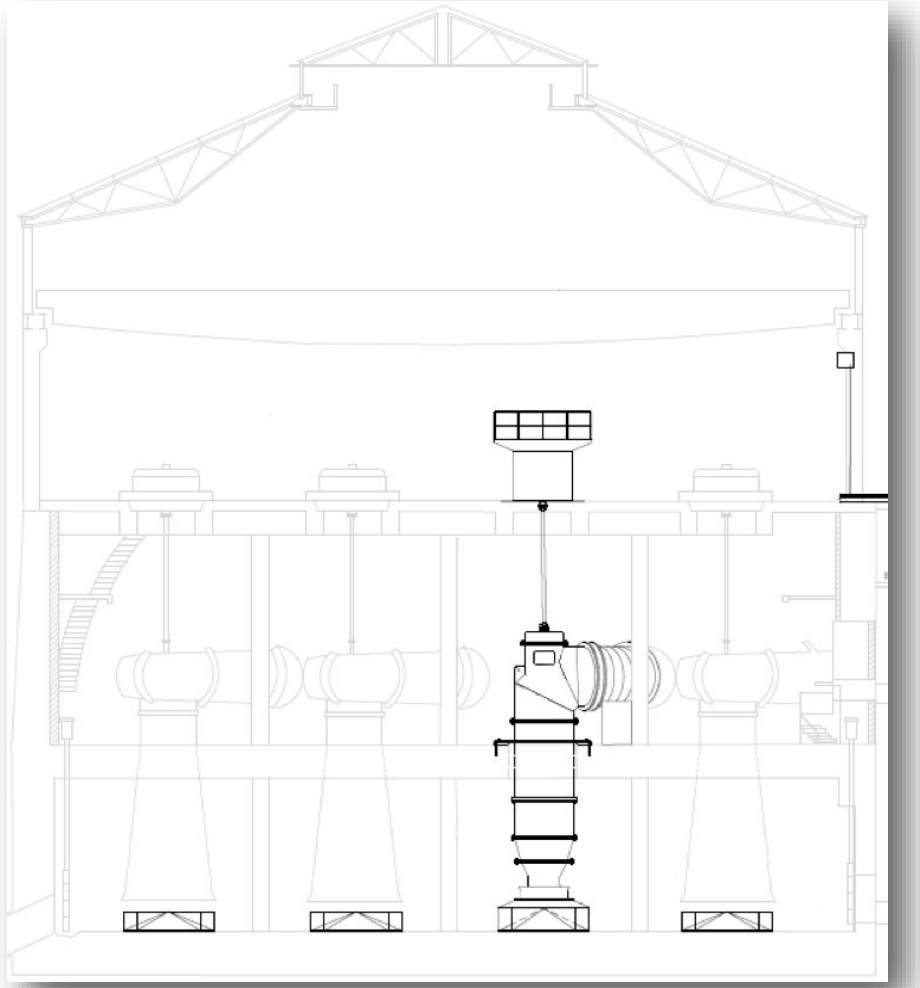
Conner Creek Pump Station – Pump Replacement Design

- 02/15/24 – 60% Design Workshop
- 05/15/24 – 90% Design Workshop
- 06/21/24 – 100% Design Submittal
- 08/09/24 – Issue for Bid Design Complete
- 10/23/24 – Project Posted on Bonfire
- 01/10/25 – Bid Submissions Due
- 03/26/25 – Contract SCN-0000586 Awarded
  - Kokosing Industrial, Inc.
  - $35,360,000
- 04/07/25 – Notice to Proceed
- 04/29/25 – Pre-Construction Conference
- 05/12/25 – Begin Submittal Process
- 10/09/25 – Install Access Drive
- 02/18/26 – Install Sheet Piling for Isolation Gates
- *11/02/26 – Complete West Isolation Gate*
- *01/11/27 – Complete East Isolation Gate*
- *06/18/27 – Pump #3 Delivery*
- *07/05/27 – Pump #7 Delivery*
- *09/10/27 – Milestone #1 – Pump #3 Acceptance*
- *08/26/28 – Substantial Completion*
- *12/16/28 – Final Completion*

We are here



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Conner Creek Pump Station – Sanitary Pump Station Design

- 04/17/24 – 30% Design Workshop
- 09/18/24 – 60% Design Workshop
- 02/14/25 – 90% Design Submittal
- 02/19/25 – Hydraulic Analysis Witness Test
- 03/10/25 – PPR Submission
- 03/14/25 – 90% Design Workshop
- 06/02/25 – Instrumentation Design Update
- 07/31/25 – PPR Meeting
- 08/20/25 – PPR Follow-up Meeting
- 11/01/25 – CWSRF ITA Submission
- *04/10/26 – 100% Design Submittal*
- *05/08/26 – 100% Design Workshop*
- *09/30/26 – Advertisement for Bid*
- *12/23/26 – Bid Submissions Due*
- *04/05/27 – Notice to Proceed*
- *01/13/31 – Substantial Completion*
- *04/25/31 – Final Completion*

We are here

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ITA – Intent to Apply
PPR – Preliminary Plan Review
CWSRF – Clean Water State Revolving Fund

Freud Pump Station – Improvement

07/05/24 – Right-of-Way Vacation & Dedication Approval
07/15/24 – Notice to Proceed Date
09/16/24 – Traffic Circulation Study Complete
10/21/24 – Rezoning Application Submitted
11/21/24 – CPC Rezoning Public Hearing
12/02/24 – Structure Abatement & Demolition Complete
01/16/25 – CPC Rezoning Public Hearing
02/10/25 – Freud Street Closure
04/07/25 – Building Permit Issued
05/23/25 – Building Permit Rescinded
06/05/25 – CPC Rezoning Meeting
06/11/25 – Begin DRI Structure Construction
07/17/25 – CPC Rezoning Meeting – Approval
07/29/25 – All Utility Relocations Complete
02/26/26 – Navahoe Force Main Construction Complete
03/10/26 – City Council Meeting – Refer to PED Committee
04/01/26 – Complete DRI Structure Construction
04/30/26 – PED Committee Public Hearing
05/26/26 – City Council Meeting
06/16/26 – Rezoning Amendment Effective

We are here

GLWA Open House

Meeting Dates & Time:

5:30 – 7:30 pm *(Drop in)*

03/18/26
05/20/26
09/16/26
11/18/26

Overview Map:

Meeting Location:

Eastlake Baptist Church
12400 E. Jefferson Ave.
Detroit, MI 48215

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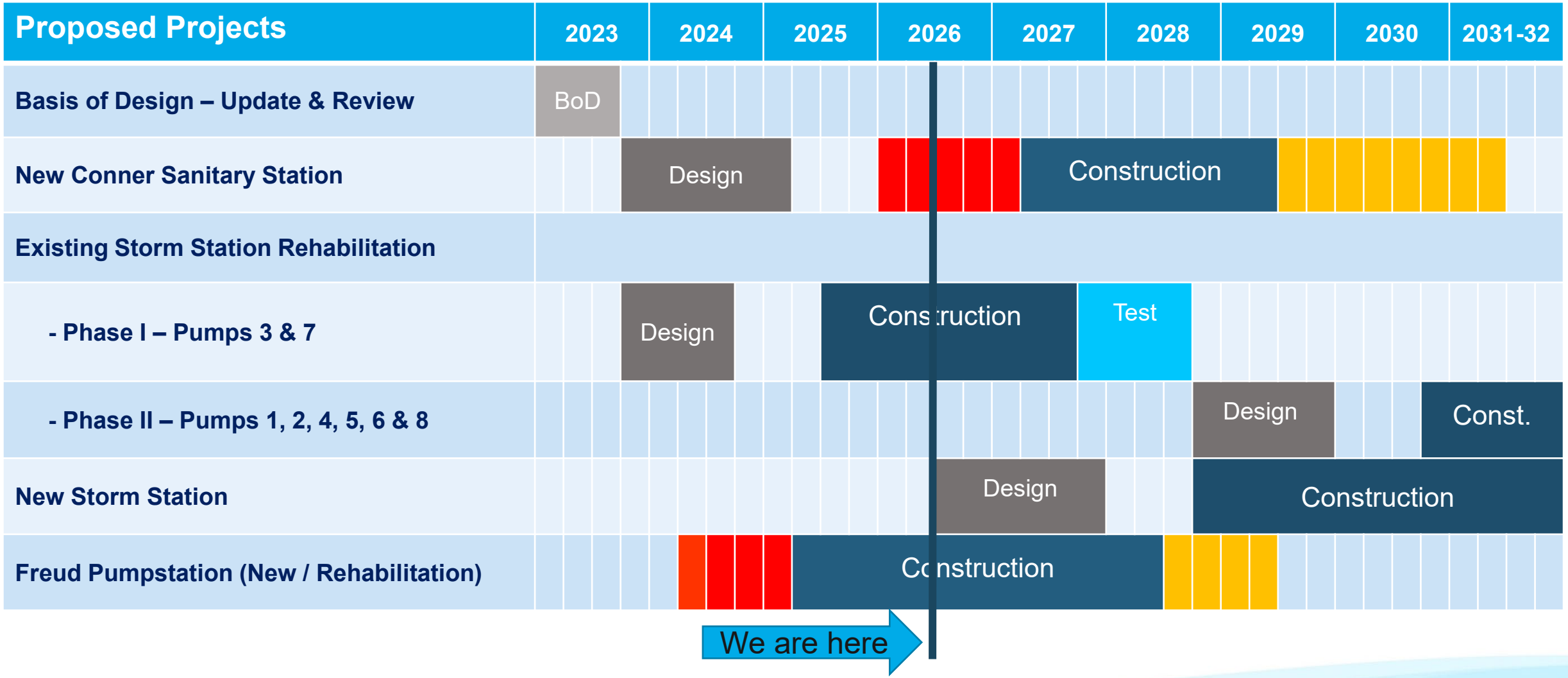
CPC – City Planning Commission
DRI – Detroit River Interceptor
PED – Planning & Economic Development

Conner Pump Station Design/Construction Road Map



- Revised Basis of Design – Critical Path
  - Workshops: May – July
  - Review: August – September

Existing GLWA Projects

CIP - 260701 In System Storage Devices (ISD), Valve Remotes (VR), and Outfall Infrastructure Elements Rehab

- **Outfall Infrastructure Project (93% complete through January)**
  - Structural improvements and modifications to the regulators are nearly complete at all Detroit River and Rouge River outfalls.
  - Backwater gate fabrication and installation is complete.
  - Instrumentation and controls are being installed throughout, with 45 of 55 sites having been tested and approved by GLWA.
  - A change order was approved by the GLWA Board of Directors in January to extend the final completion date to June 2026.

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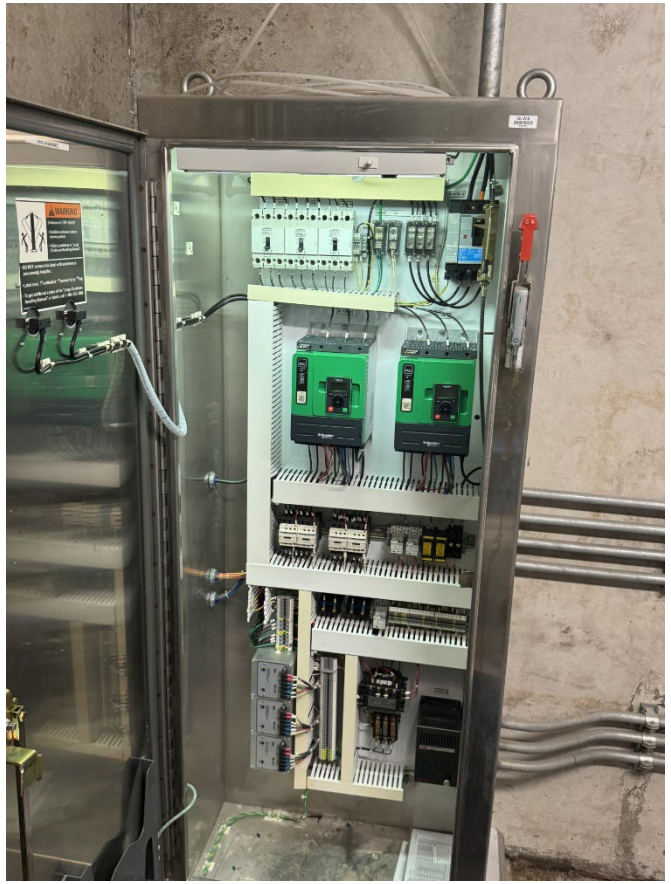
Existing GLWA Projects

CIP - 260701 In System Storage Devices (ISD), Valve Remotes (VR), and Outfall Infrastructure Elements Rehab

- **ISDs and VRs Project (77% complete through January)**
  - ISD equipment installation is complete.
  - Improvements at B (outfall) sites are complete.
  - Engineer-directed repairs to the inflatable dams are complete.
  - Equipment startup and testing by the contractor and GLWA staff is ongoing.
  - Replacement of several VR gates is behind schedule due to supplier issues.
  - The final completion was scheduled for February 2026. However, the project is tracking behind schedule.



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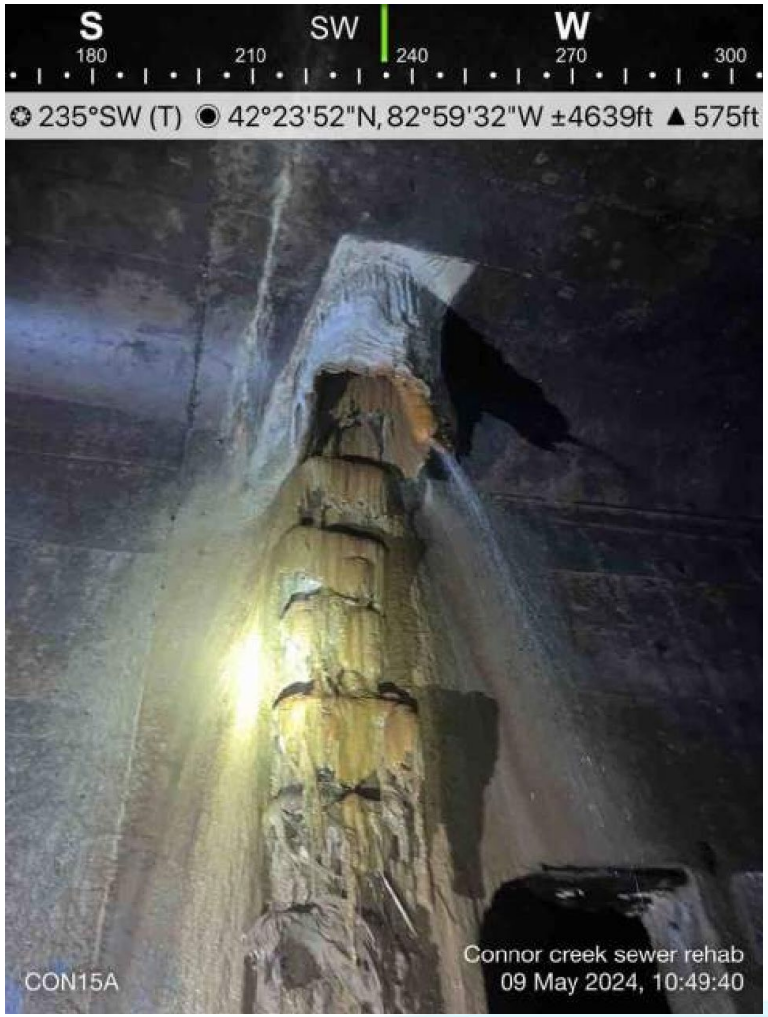
Existing GLWA Projects Continued

- **CIP - 260204 Conner Creek Sewer Cleaning and Rehab – 90% complete**
  - All original project work (cleaning and repairs) will be complete by the end of April.
  - Post construction CCTV and warranty inspection of the completed work will occur through June.
  - The project has added corrections for deficiencies in GLWA's manholes inside the city airport. They are anticipated to be performed from July to October. Design is ongoing for modifications downstream of Conner CSO bar screens to allow the facility to perform maintenance debris removal easier in the future.



City airport MH from sewer with 2+ft of minerals (typical)

CCTV – Closed-Circuit Television
CSO – Combined Sewer Overflow

The Eight Recommendations That Will Be Included in the Southeast Michigan Flood Resiliency Study

1. Level of Service
2. Dynamic System Operations Study
3. Stormwater/Wastewater Master Plan
4. Feasibility of Moving to a 100-year storm
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6. Consideration of climate change factors
7. National research of other large-scale flood reduction projects
8. Community flood collection data to provide guidance into modeling validation

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Southeast Michigan Flood Resiliency Study

- GLWA's Office of Resiliency is teaming with the United States Army Corps of Engineers (USACE) to perform a General Investigation Study.
- USACE has been funded from the President's approved budget for $500K for FY 24 and $600K for FY 25 and $1.2 M for FY26/27.
- GLWA will match USACE funding efforts on a 50/50 basis with in-kind services.
- GLWA has selected LimnoTech to provide the in-kind contribution services for the study.
- The current scope has been revised to be approximately $5 million over 4 years based on national direction to USACE from the Administration.
- The USACE Vertical Team has approved the study's scope, schedule and budget.
- Awaiting final approval from the Assistant Secretary of the Army for Civil Works.

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SOUTHEAST MICHIGAN FLOOD RISK MANAGEMENT STUDY UPDATE

USACE Detroit District
Great Lakes Water Authority

U.S. ARMY

US Army Corps of Engineers®

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Southeast Michigan Flood Resiliency Study – MAJOR MILESTONES

- ✓ USACE and GLWA have executed a Feasibility Cost Sharing Agreement (FCSA)
- ✓ Received USACE funding to begin the Southeast Michigan Flooding Study
- ✓ Member Partner Stormwater Management Models (SWMM) have been received by GLWA and are being integrated into a comprehensive regional model.
- ✓ Extreme weather predictions are being developed by University of Wisconsin
- ✓ Potential "early works" projects will be identified for potential funding under Section 219.
- ❑ The Chief's report will NOT be submitted to Congress <u>requesting construction authorization & appropriations.</u>
- ❑ Engineering/design and construction follows, pending availability of funds.

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CURRENT STUDY TIMELINE (REQUESTED SCHEDULE & BUDGET)

WE ARE HERE

6 Months
$390,000

3.5 years
$4,610,000

9 Months
$795,000

1 year 11 months
$2,126,000

4 Months
$139,000

SCOPING → ALTERNATIVE EVALUATION AND ANALYSIS → FEASIBILITY LEVEL ANALYSIS → CHIEF'S REPORT

Feasibility Cost Sharing Agreement (FCSA) signed Jul 2024

1

ALTERNATIVES MILESTONE MEETING (AMM)
USACEHQ alignment on scope
Jan 2025

SCOPE APPROVAL
Study scope, schedule, and budget must be approved by the Assistant Secretary of the Army for Civil Works
Re-routed for approval Dec 2025

Final Array of **Recommended Projects** spun off into other existing USACE authorities for **Design & Implementation** or additional study

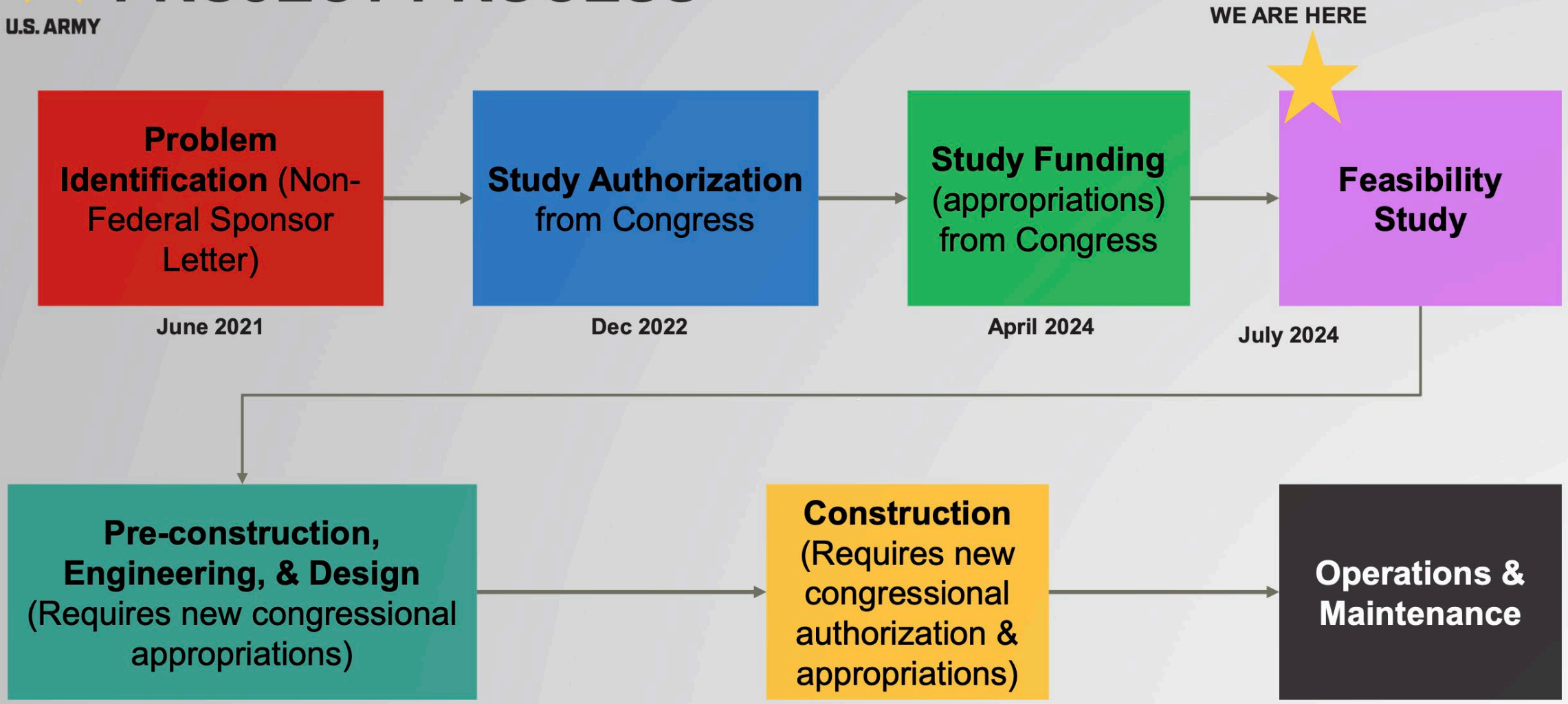
MAR 2025 – OCT 2026
INITIAL ALTERNATIVES
- ★ "Future Without Project" H&H modeling
- ★ FWOP Economic modeling
- ★ Hydrometeorological "resilience" modeling
- Targeted technical reviews
- Develop initial array of alternatives
- Public engagement/stakeholder workshops

NOV 2026 – FEB 2028
FOCUSED ALTERNATIVES
- H&H alternatives modeling
- Economic alternatives modeling
- Public/stakeholder engagement

MAR 2028 – JUL 2028
FINAL ARRAY OF ALTERNATIVES
- Final H&H FWP modeling iteration
- Detailed cost estimates on final alternatives
- Alternative comparison & screening to identify *Final Array of Alternatives*
- Targeted technical reviews of modeling & reports

PROJECT PROCESS

U.S. ARMY



The Eight Recommendations That Will Be Included in the Southeast Michigan Flood Resiliency Study

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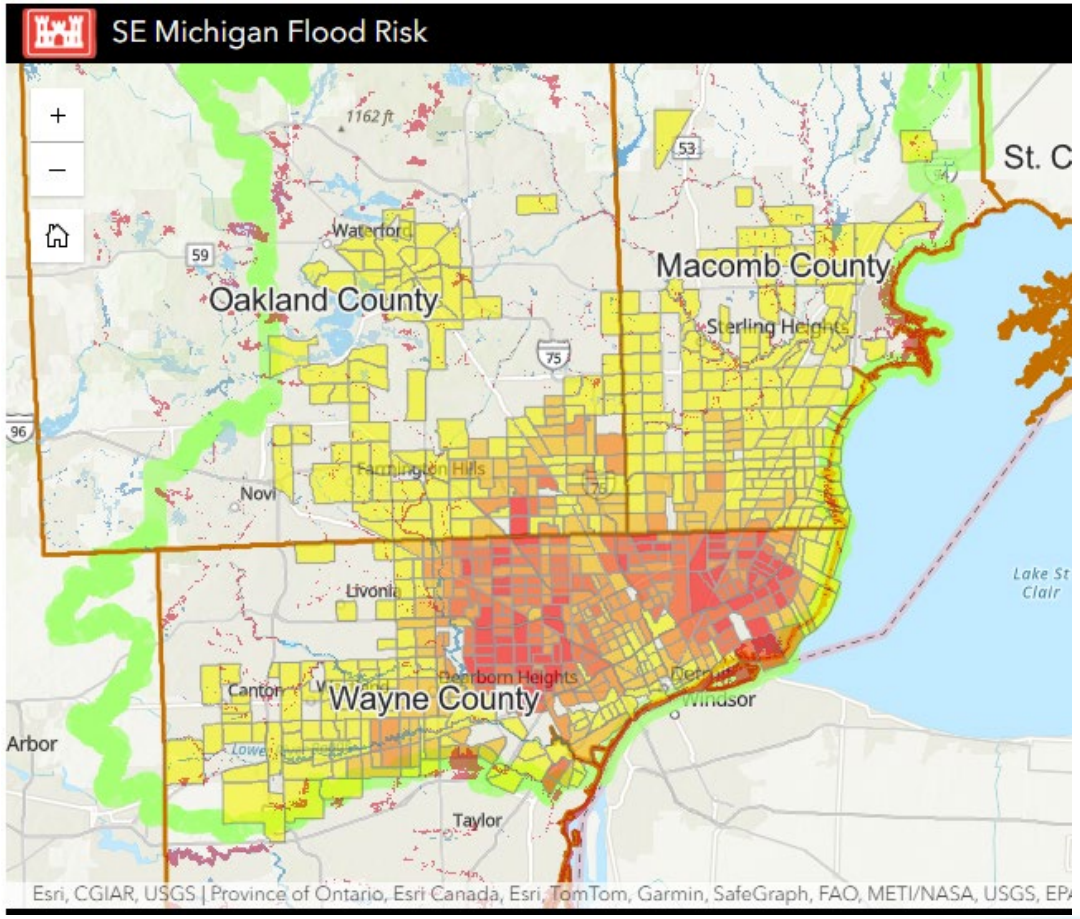

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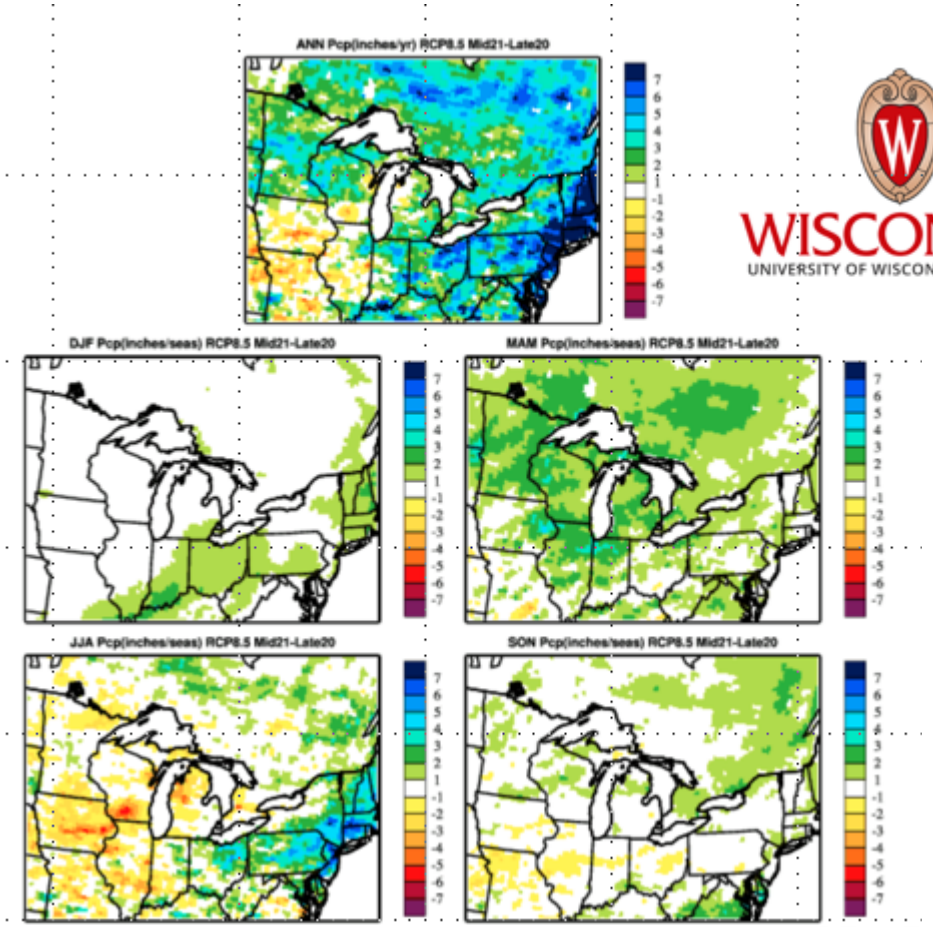

WISCONSIN
UNIVERSITY OF WISCONSIN-MADISON

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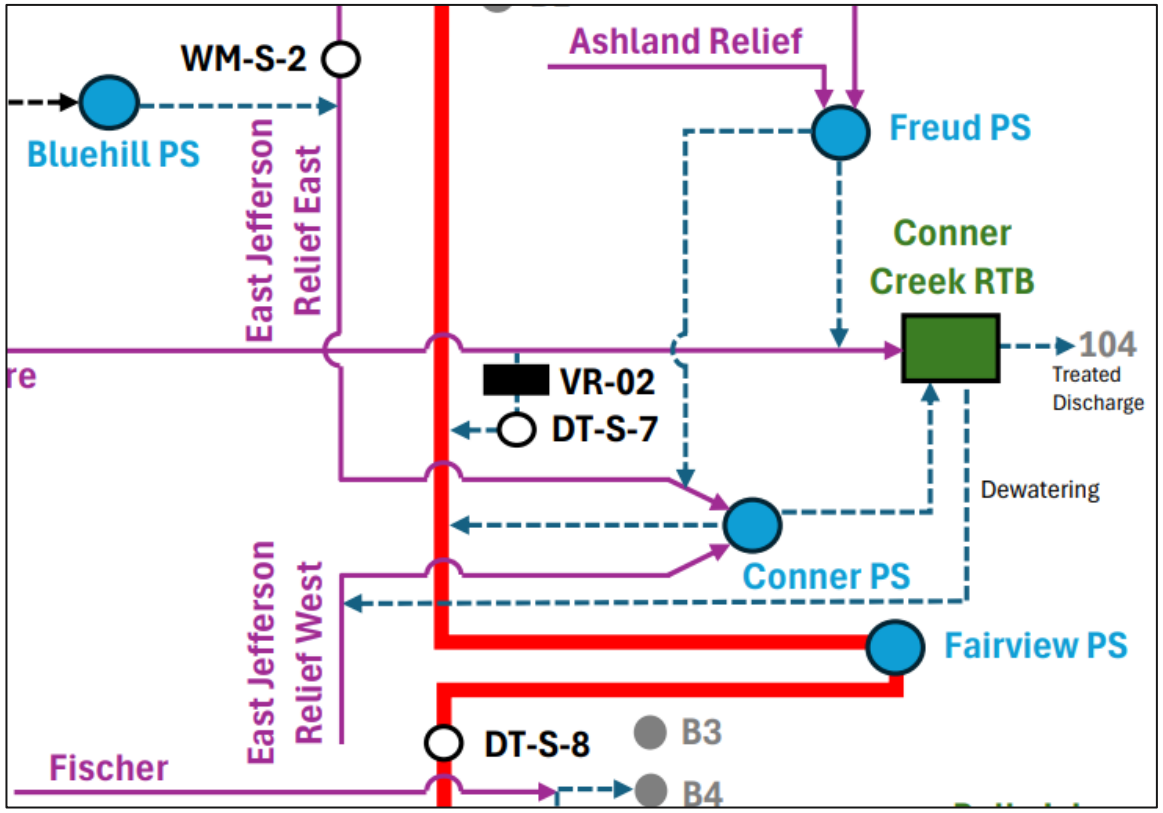

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Source: Tunnel and Reservoir Plan (TARP) | MWRD

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Southeast Michigan Flood Resiliency Study

Project website:

https://www.lrd.usace.army.mil/semifloodstudy/

Other initiatives:

- The Southeast Michigan Council of Governments (SEMCOG) Flooding Task Force
- The National Fish and Wildlife Foundation (NFWF)

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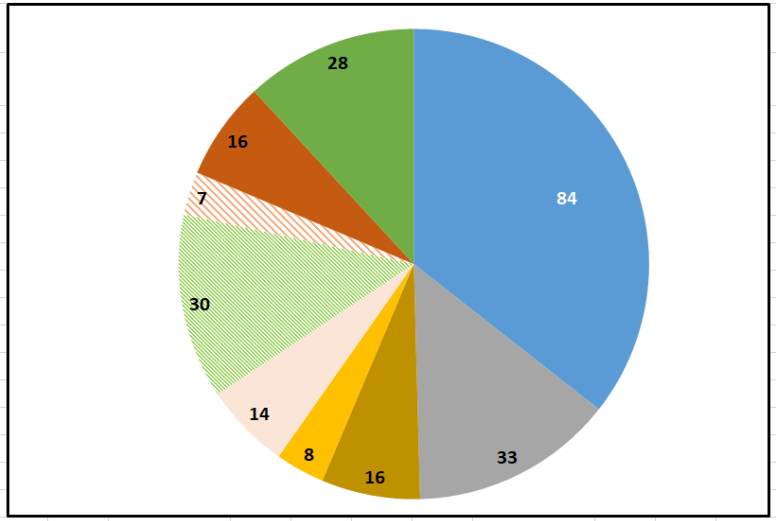
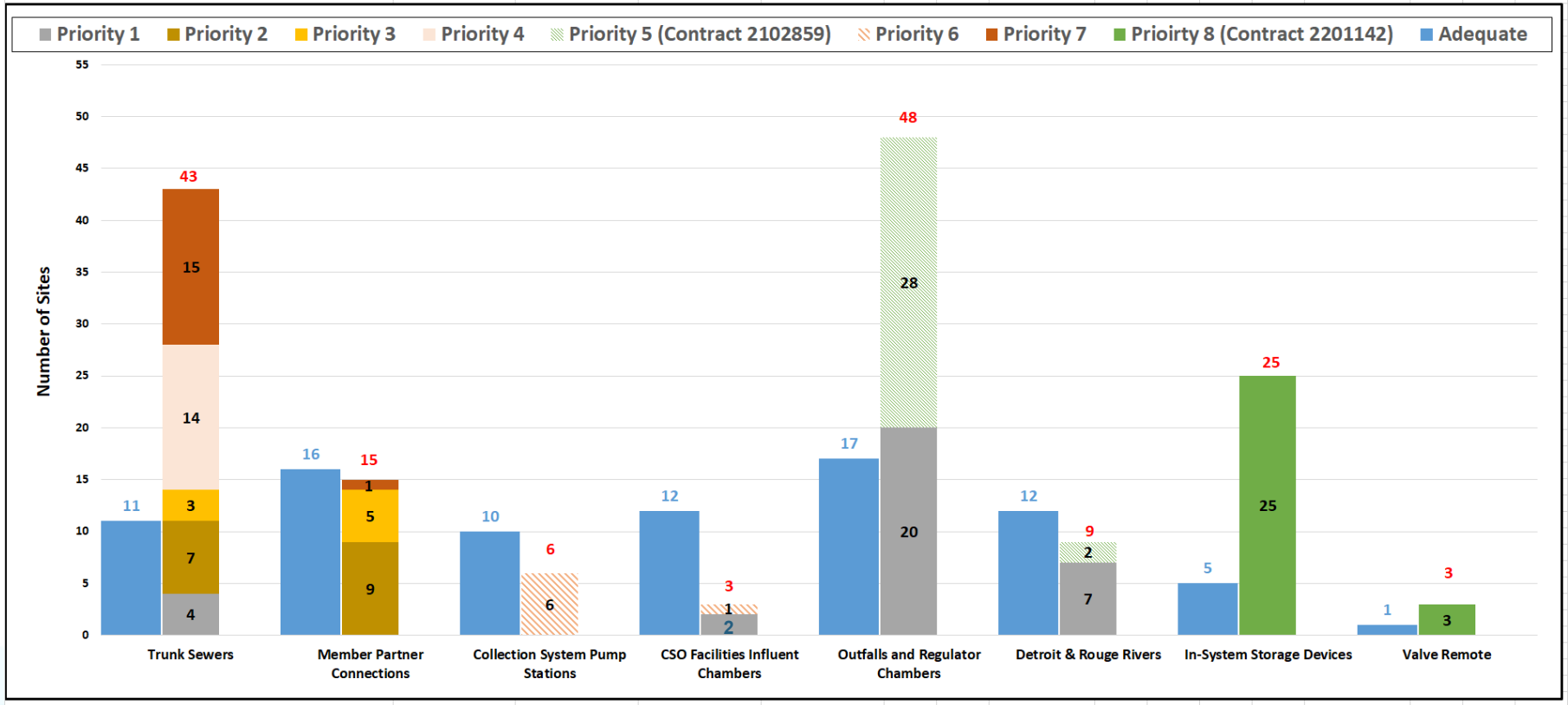
- GLWA continues to review the sewer system instrumentation and make corrections in a phased approach.
- GLWA released around $3.55M for revisions to nearly 87 sites. This will complete Priority 1, 2, 3, 4, & 7 sites.

Baseline Conditions

Engineering Services for GLWA Collection System Level Sensors and Precipitation Gauges Program (TOES 30T 2200729)

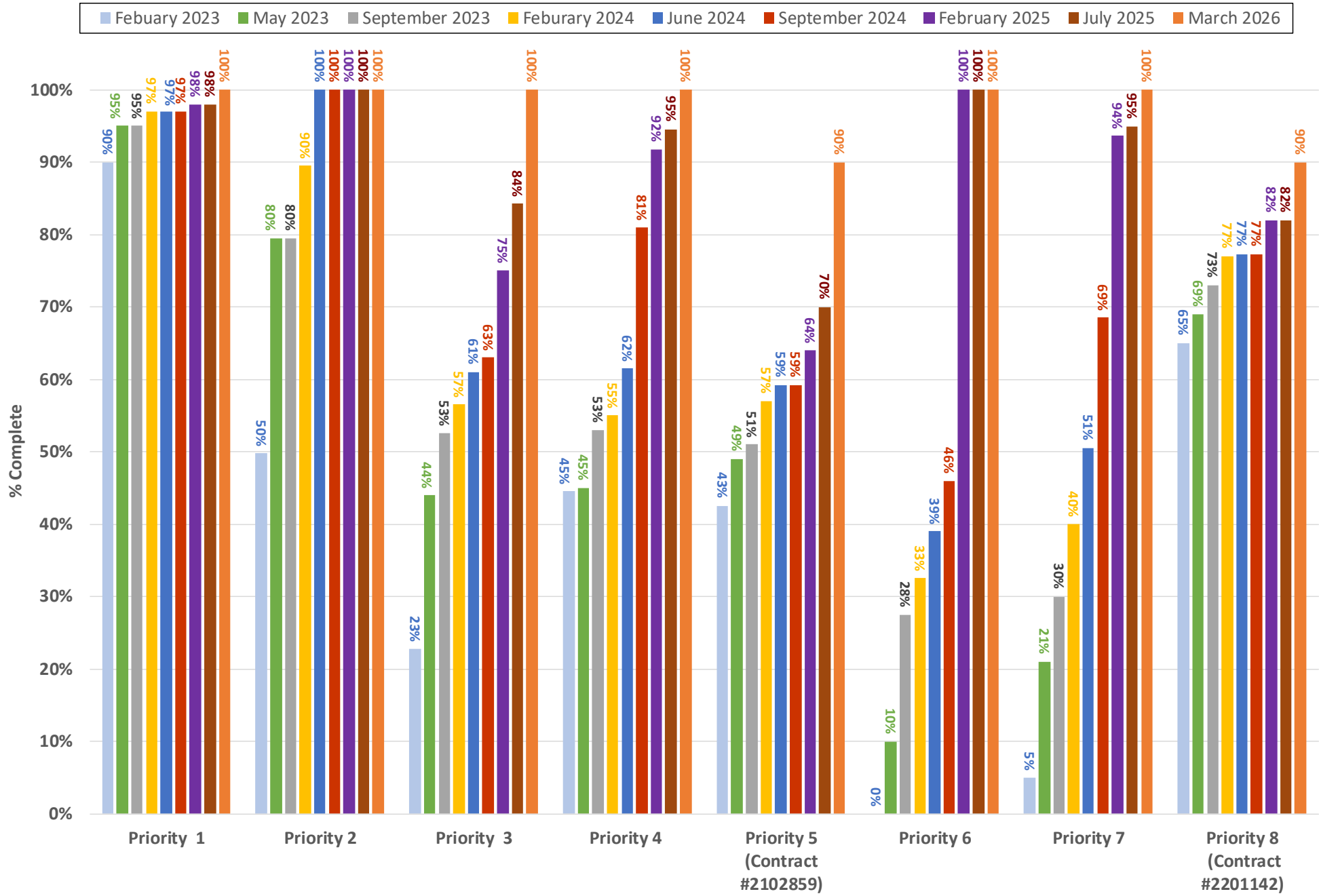
Level Sensor Group	Priority #	No. of Sites (some sites may include multiple sensors)		
		Adequate Installation	Need Improvement (or New Installation)	Total
Trunk Sewers				
Original L-Series	1, 4, 7	7	24	31
10 L-Sites Surveyed in 2022	1, 2	2	8	10
Sewage Meters (DT-S-00)	1, 4, 7	2	8	10
Hydraulic Viewers	3	0	3	3
Member Partner Connections				
Existing Flow Meters	3, 7	16	6	22
9 Additional Sites (L-Sites & Flow Meters)	2	0	9	9
Collection System Pump Stations	6	10	6	16
CSO Facilities Influent Chambers	6	12	3	15
Outfalls and Regulator Chambers (Contract #2102859)	1, 5	17	48	65
River (Detroit & Rouge) Level Sensors	1, 5	12	9	21
In-System Storage Devices (Contract #2201142)	Other Contracts	5	25	30
Valve Remote (Contract #2201142)	Other Contracts	1	3	4
TOTAL		**84**	**152**	**236**





Progress to Date

Engineering Services for GLWA Collection System Level Sensors and Precipitation Gauges Program (TOES 30T 2200729)



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Thank you

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