



# GLWA Resiliency Implementation Board Of Directors Update

9/27/2023 | Navid Mehram, P.E.

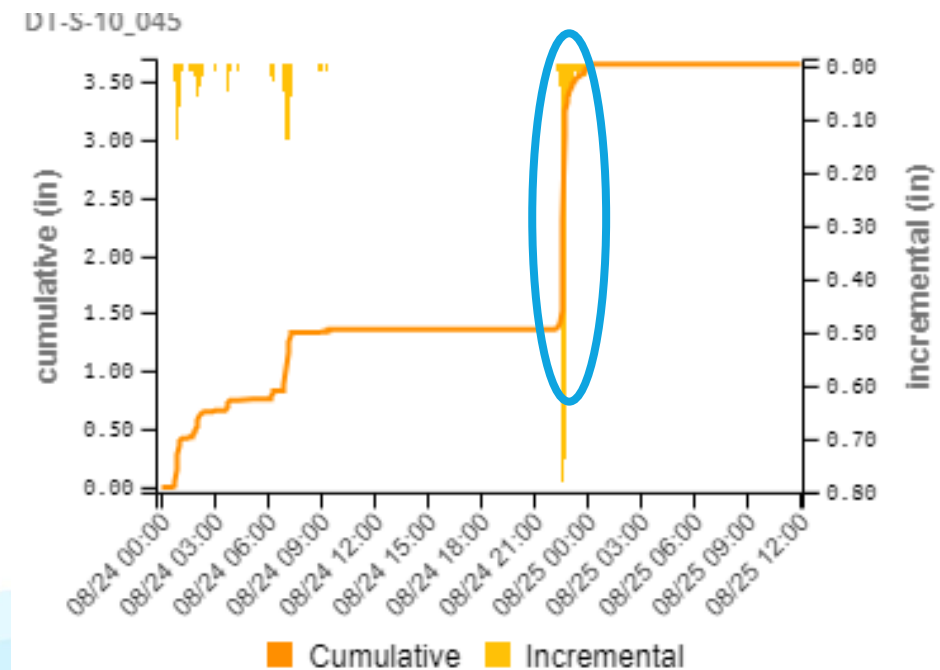
# Exceptional System Performance During the August 24/25, 2023, Rain Event

On August 24/25 the Eastern tributary area experienced precipitation intensity ranged from 1-2 inches over two hours with certain areas receiving a total of 1.5-2.5 inches over a 24-hour period. **The Conner Creek, Freud Pump station conveyed a peak flow of 4.13 Billion Gallons Per Day (BGD), Freud operating 7 of 8 pumps and Conner Creek operated 5 of 8 pumps.** To illustrate the magnitude of this challenge, the Freud pumpstation wet wells rose from 56 ft to 77 ft (21 ft) in 13 minutes.

## GLWA System Wet Weather Comparable to Olympic Pool

### Olympic Pool

- Total volume of 660,000 gallons
- Eastside system conveyed (183 MG) in one hour equivalent to filling 277 Olympic pools.
- The WRRF treated (73 MG) in one hour equivalent to 110 Olympic pools.



# Useful Information to Decrease Flood Risk

## Protecting Our Homes & Businesses from the Impacts of Flooding

As spring turns to summer in Michigan, and the impacts of climate change continue to raise the risk of severe rain events, there are a variety of things that we can all do to help protect our homes and businesses from flooding.



### PREPARE

#### Help Prevent Basement Back-Ups and Flooding

- Clean your gutters if you can safely do so (get help if needed).
- Move any items that are blocking the exits of your downspouts.
- Remove downspouts from your home's underground storm pipes and redirect them onto your lawn at least three feet away from the house.
- If you see a catch basin covered in trash, remove the trash and debris to help avoid clogging up the storm water collection system.
- Clean debris and leaves from in front of your property to reduce catch basins from clogging.

### PREVENT

#### Be Proactive to Protect Items in Your Basement

- Don't keep valuables in the basement.
- Use shelves to store items to keep them above the basement floor.
- Store items in plastic tubs with lids.
- Consult with a licensed plumber and HVAC company to:
  - Replace hot water tanks with a tankless water system that can be elevated and placed on the wall.
  - Install backflow preventors on your sewer line.
  - Disconnect your downspouts from underground storm pipes and redirect storm runoff onto your lawn (at least three feet away from your home).
  - Have your furnace inspected and see if it can be raised up.
  - Place your washer/dryer on an elevated platform



### PROTECT

#### Know Your Insurance Policy

- Insurance policies do not cover all water damage. Review your policy carefully to look for exclusions.

#### Basement Sewer & Drain Backups

- Backup of sewers and drains are generally not covered under a standard homeowners/renters' insurance policy.
- To make sure you are adequately covered, seek a special sewer backup endorsement or, in some cases, a separate policy.

#### Flooding

- Most businesses, homeowners and renters' insurance policies do not cover flood damage. Because of this, a separate policy is almost always necessary.
- Any homeowner, renter or business owner in a participating community can purchase flood insurance to protect their property through the National Flood Insurance Program (including for secondary/vacation homes and investment properties) *\*This includes properties that are not adjacent to streams, rivers, or large water bodies.*
- Alternatively, homeowners, renters and business owners can purchase flood insurance from agents and commercial insurance companies.



#### What is Generally Covered by Flood Insurance

- Buildings and foundation
- Electrical and plumbing
- Mechanical equipment (Central air, furnaces & water heaters)
- Debris removal
- Contents (clothing, furniture washer/dryers, and electronic equipment, if the insured purchases contents/personal property coverage)



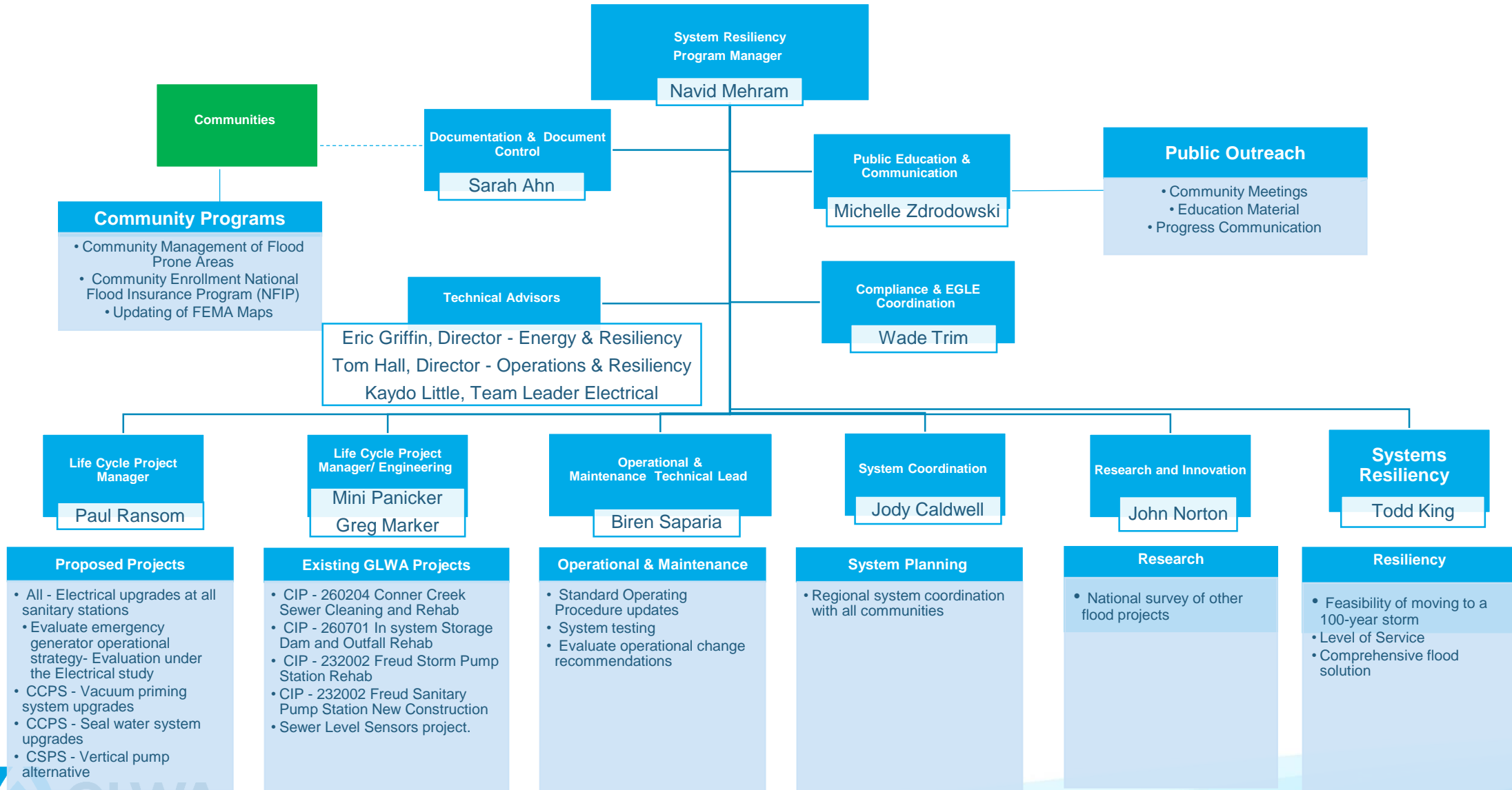
#### What is Generally Excluded by Flood Insurance

- Mold and bacteria
- Currency, precious metals, and valuable papers
- Property and belongings physically outside of the building
- Landscaping
- Decks

- To learn more about the NFIP and buying a policy, [click here](#).
- We also recommend you contact your insurance agent or broker for their professional advice.

According to the Federal Emergency Management Agency (FEMA) just one inch of water can cause \$25,000 of damage to your home. See how much a flood could cost you with this [FEMA Flood Risk Tool](#).

# Resiliency Delivery Team



# 2301499 – Sewage Pump Stations Power Reliability Study

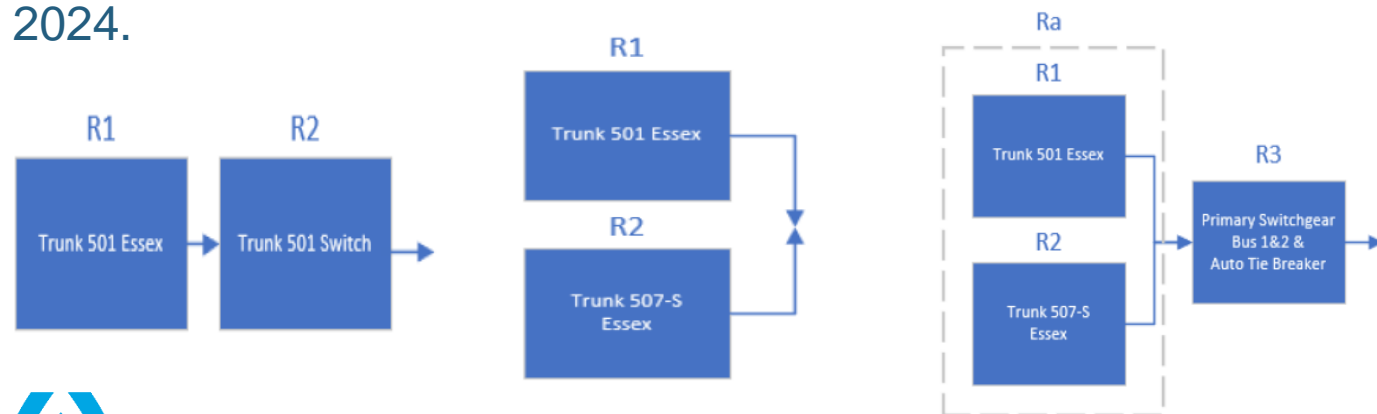
Thorough study/analysis of the existing reliability of the power systems for each pumping station.

Power systems include utility feed(s), transformers, switchgear, generators, motors, and everything else in between.

Reliability block diagram to be generated for each pumping station.

Utilize data to understand possible system weaknesses and to develop strategies to enhance reliability/resiliency in those areas.

Study and results to be completed by Brown & Caldwell by June 2024.



Wastewater Pump Station	Pumpage Number, Service, Capacity (each)	Utility Services	Emergency Generator Number @ Voltage, Size (each)
<b>Belle Isle</b>	2, Sanitary, 12 MGD 3, Storm, 23 MGD	1 @ 7.2 KV, 1000 KVA	1 @ 480 V, 750 KW
<b>Bluehill</b>	2, Sanitary, 6 MGD 1, Storm, 114 MGD 3, Storm, 253 MGD	2 @ 13.2 KV, 5 MVA	3 @ 2400V, 2 MW
<b>Conner</b>	1, Sanitary, 39 MGD 1, Sanitary, 48 MGD 2, Sanitary, 71 MGD 8, Storm, 318 MGD	2 @ 24 KV, 10 MVA	4 @ 4800 V, 2 MW
<b>Fairview</b>	7, Sanitary, 40 MGD 1, Sanitary, 2 MGD	2 @ 24 KV, 2.5 MVA	1 @ 480 V, 1.25 MW
<b>Fischer</b>	2, Sanitary, 5.6 MGD 1, Sanitary, 1.6 MGD	1 @ 7.2 KV, 112.5 KVA	1 @ 480 V, 150 KW
<b>Freud</b>	1, Sanitary, 20 MGD 1, Sanitary, 12 MGD 8, Storm, 280 MGD	3 @ 24/13.2 KV, 6 MVA	4 @ 4160 V, 2 MW
<b>Northeast</b>	3, Sanitary, 96 MGD 1, Sanitary, 65 MGD	2 @ 23 KV, 5 MVA	3 @ 4160 V, 2 MW
<b>Oakwood</b>	4, Sanitary, 6.4 MGD 2, Storm, 97 MGD 6, Storm, 177 MGD	2 @ 120 KV, 15 MVA	None @ 4800 V
<b>Woodmere</b>	2, Sanitary, 5 MGD 3, Storm, 165 MGD	2 @ 24 KV, 2 MVA	None @ 2400 V

# Conner Creek PS

## Seal Water and Vacuum System

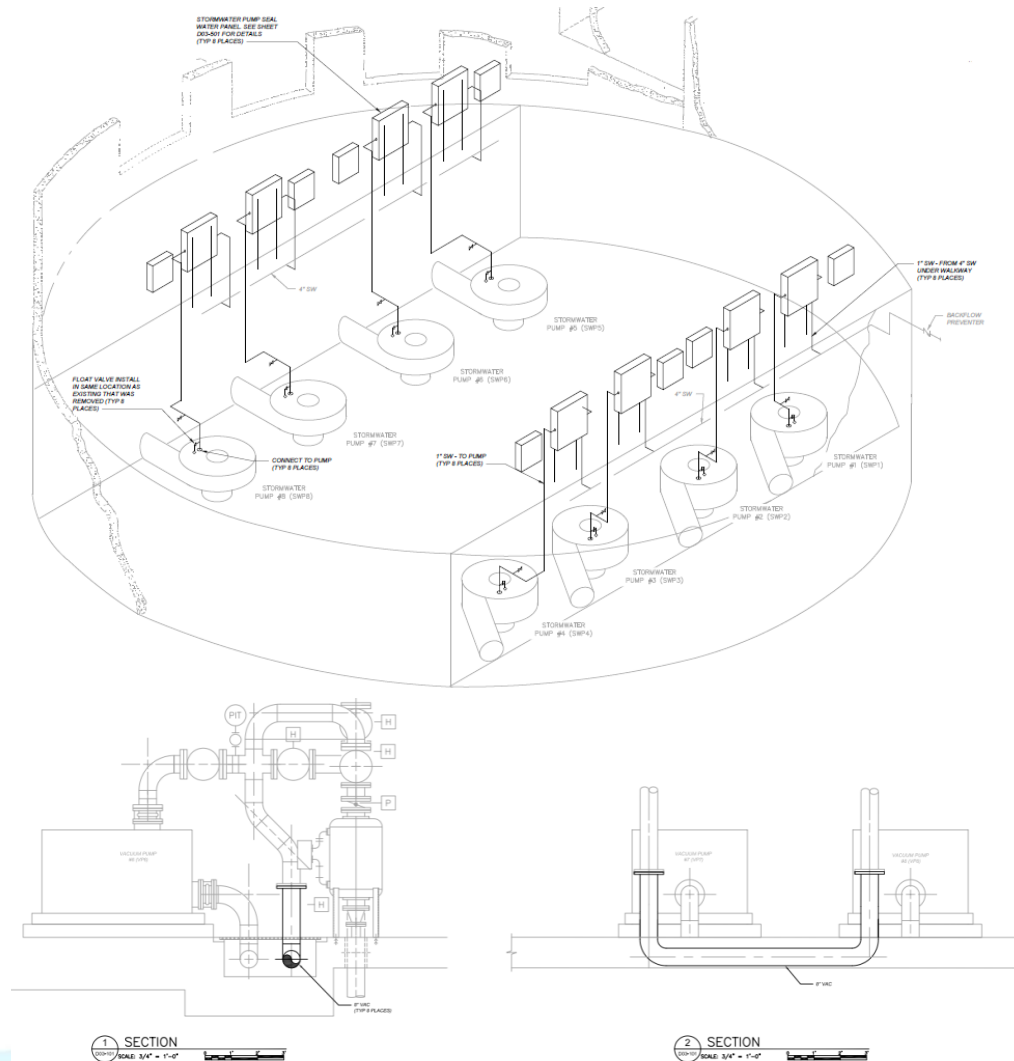
New seal water design will:

- Provide seal water to multiple pumps.
- Eliminate the 250-gallon seal water tank restriction.
- Allow for automated lubrication of the storm pump packing/seal.
- Allow for automated testing and alarms of the seal water system.

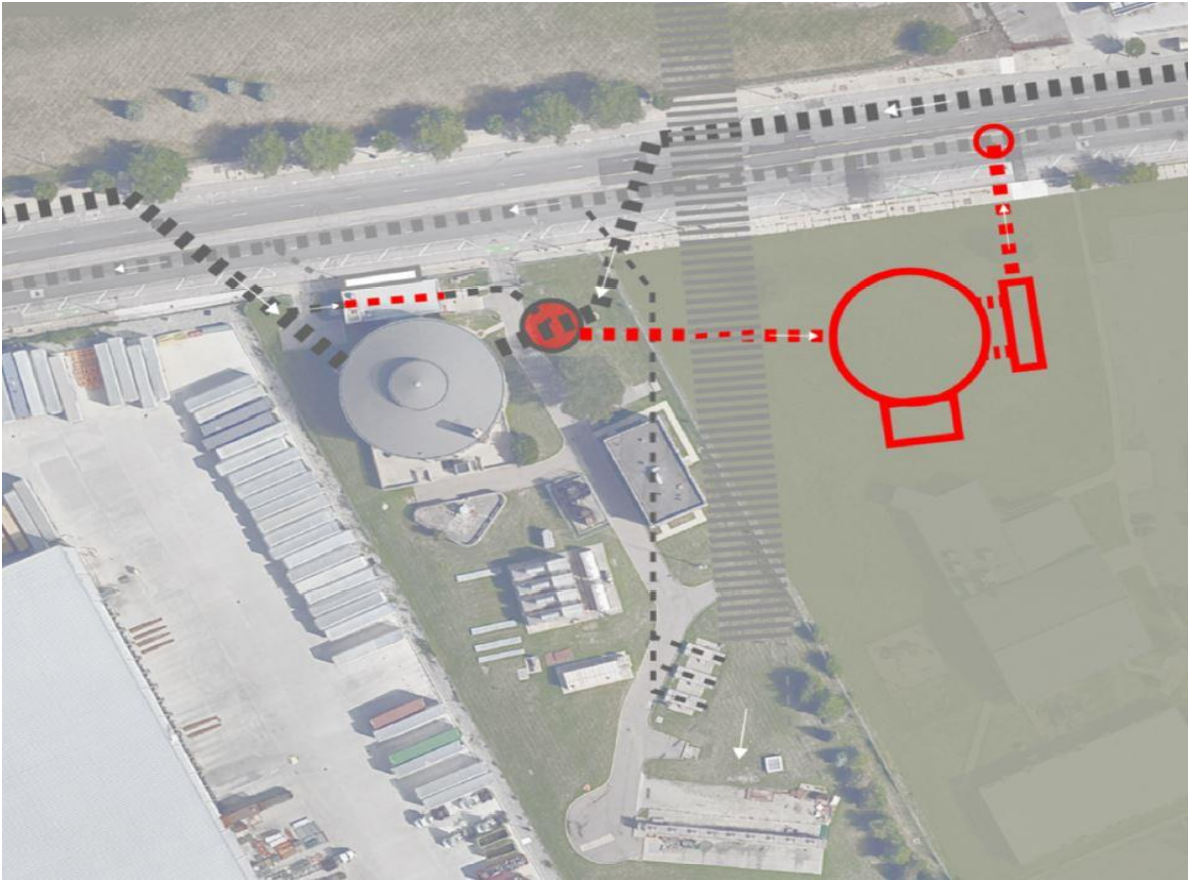
Reconfiguration of the existing vacuum priming system will:

- Reduce the complexity of the system.
- Allow for faster priming times by utilizing two vacuum pumps to prime a single storm pump.

Addition of a water level sensor to the vacuum priming system will provide additional assurance to the operator that the storm pump is fully primed.



# Conner Creek Alternative Analysis

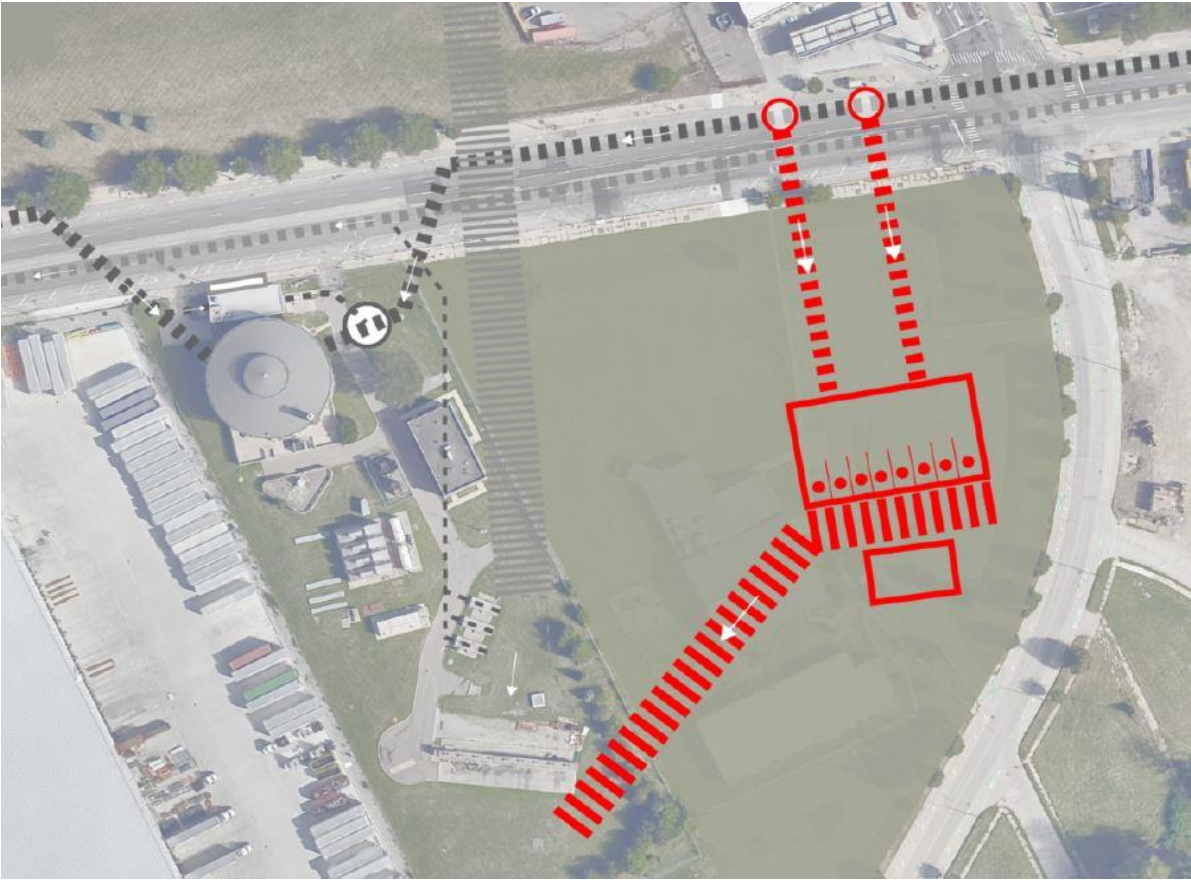


**New Sanitary Pump Station Layout**

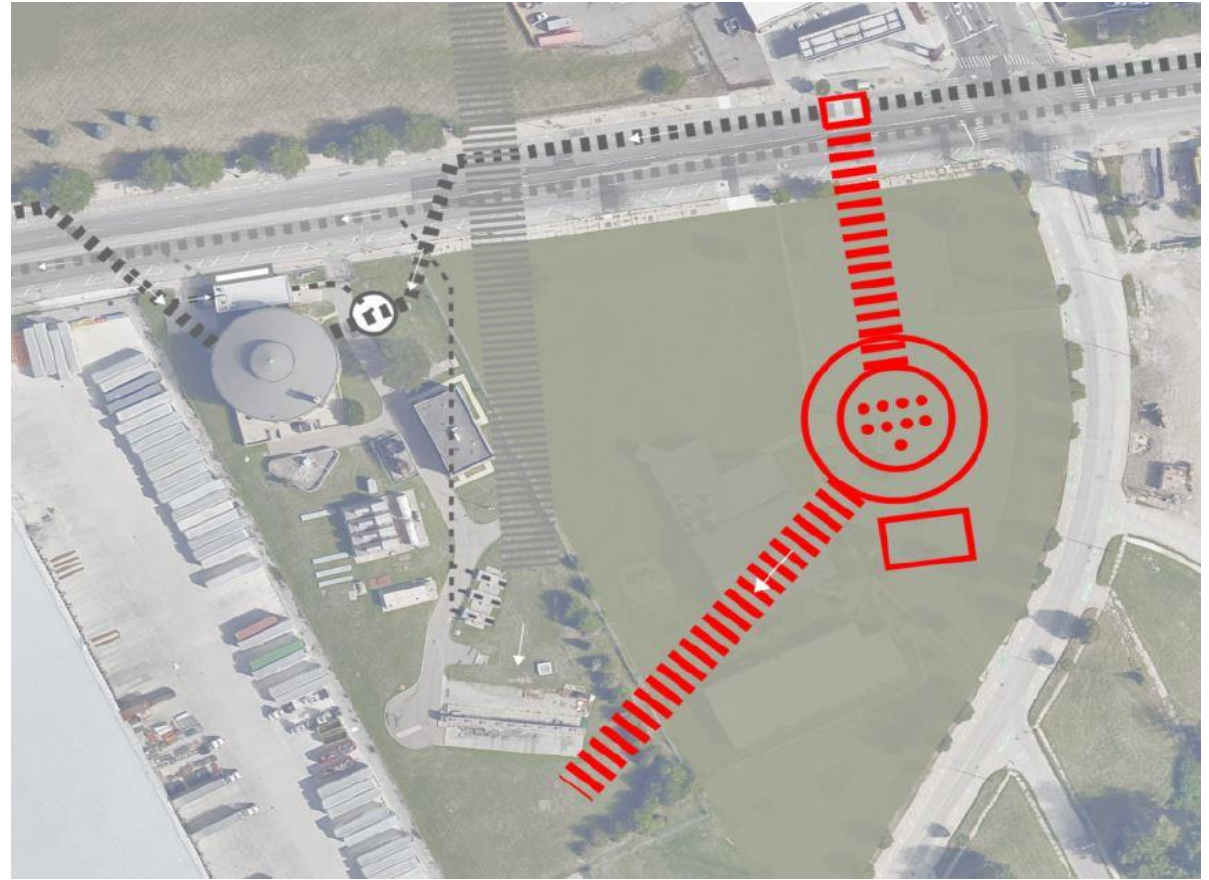


**Replace 2 Storm Pumps**

# Conner Creek Alternative Analysis



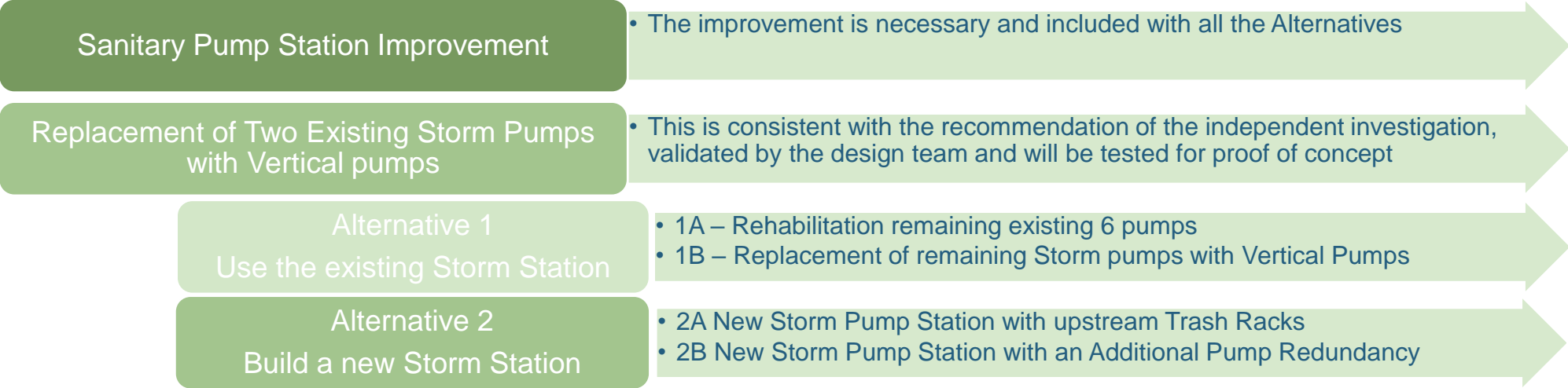
Alternative 2A



Alternative 2B

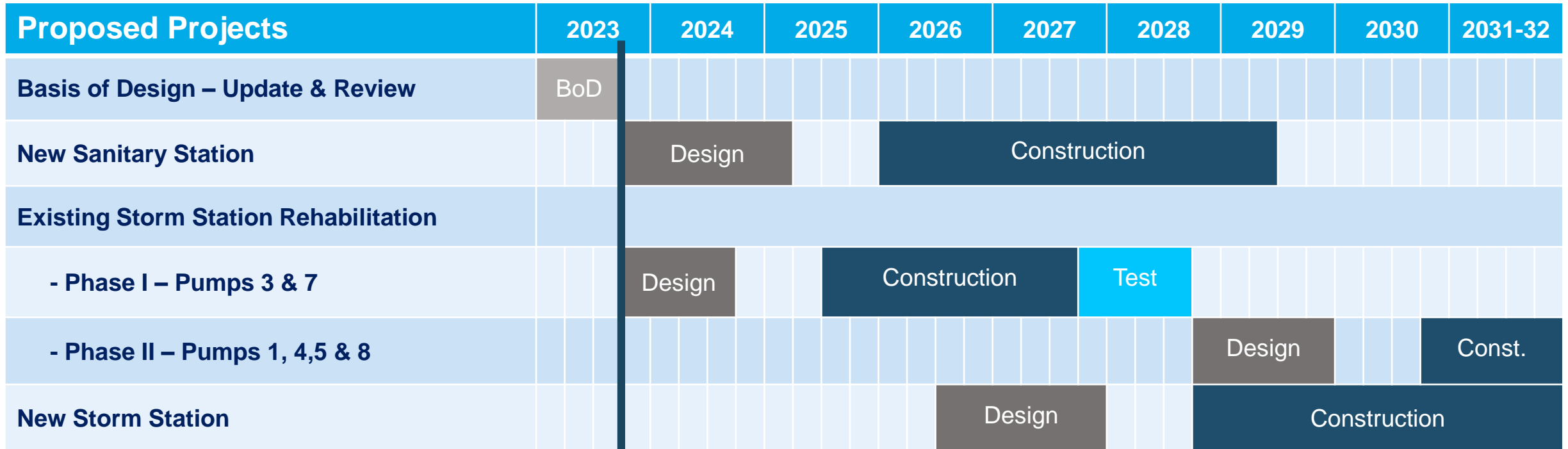



# Conner Creek Alternative Analysis



	Replace 2 Storm Pumps + New Sanitary Pump Station + Alternative 1A	Replace 2 Storm Pumps + New Sanitary Pump Station + Alternative 1B	New Sanitary Pump Station + Alternative 2A	New Sanitary Pump Station + Alternative 2B
TOTAL CONSTRUCTION COST	\$ 253,925,455	\$ 293,619,982	\$ 475,005,847	\$ 421,559,087
Annual O&M	\$ 2,014,216	\$ 1,787,059	\$ 1,490,476	\$ 1,459,412
Annual Repair and Replacement Costs	\$ 5,050,062	\$ 4,712,231	\$ 4,034,403	\$ 3,709,649
<b>20-Year Net Present Value</b>	<b>\$ 395,211,001</b>	<b>\$ 423,605,782</b>	<b>\$ 585,503,431</b>	<b>\$ 524,940,293</b>

# Conner Pump Station Design/Construction Road Map



We are here 

- Revised Basis of Design – Critical Path

- Workshops: May – July
- Review: August – September



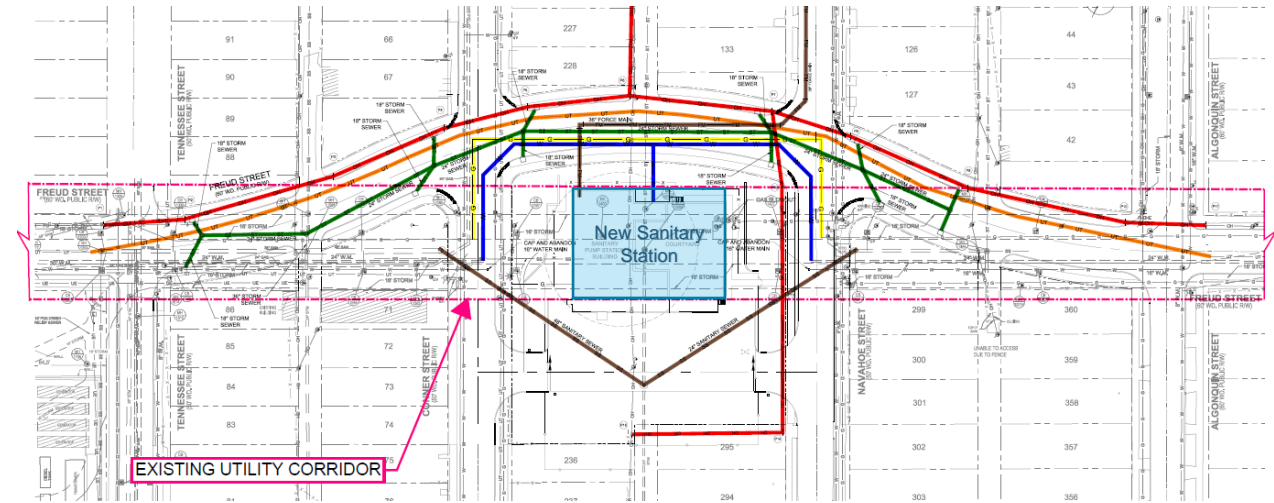
# 2204605 - Freud SPS Improvement

Project was posted on Bonfire for solicitation of bids.

- Request for Bid (RFB) posted on 08/23/23
- Pre-Bid Meeting is scheduled for 09/14/23.
- Site Tour is scheduled for 09/20/23.
- All questions are due by 10/11/23.
- Bids are due on 11/08/23.

ROW vacating process is ongoing.

- Utilities will be relocated to the new ROW.
  - AT&T
  - DTE – Electric
  - DTE – Gas
  - DWSD
- Route of relocated utilities has been established.
- Utilities have placed a “hold” on the process.
- In coordination with City of Detroit, GLWA is working to remove the utility holds.



# Existing GLWA Projects

- **CIP - 260701 In System Storage Devices (ISD), Valve Remotes (VR), and Outfall Infrastructure Elements Rehab**
  - **Outfall Infrastructure Project**
    - The Contractor mobilized to 10 outfalls locations.
    - The regulator expansion is complete for B-10 and B-17 outfalls.
    - Additional dry weather flow connection to Detroit River Interceptor (DRI) construction is complete for B-05.
    - New backwater gate structure construction is complete for B-29, B-33 ,and B-40 outfalls.
  - **ISDs and VRs Project**
    - Special Inspection and Leak Testing is complete for all ISDs. Control vault HVAC and mechanical material procurement are complete for all ISDs.
    - Gates and Actuator procurement is ongoing for all VR locations.
    - Installations will start beginning of next year.

# Existing GLWA Projects Continued

- **CIP - 260204 Conner Creek Sewer Cleaning and Rehab**
  - Grouting, rebar coating, and spot repairs have restarted under the cemetery and airport.
  - Debris removal continues in the double barrel South of Harper and Conner street.
  - Debris removal Work between Conner CSO and Conner PS is ongoing.
  - 1,000 tons of debris were removed from the sewers in July (4,700 total to date).
  - 47,000 tons were forecast for the project, amounts more on the scale of 10,000 to 12,000 tons are anticipated for removal in the project.
  - Slip lining between six and seven mile is scheduled to begin this fall.
  - City Airport has announced an expansion for taxiways on the west side of the airport.
  - Wastewater Engineering, Water Engineering, System Resiliency, through the Utility Review and Permits (URAP) group are coordinating our review work with the City airport designer and staff.

# System Resiliency

- **Water Resource Development Act (WRDA) Effort**
  - GLWA meeting with US Army Corps of Engineers (USACE) on a weekly basis to work through scope, schedule, and budget issues regarding the Planning Assistance to States (PAS) and General Investigation (GI) Studies.
  - Funding for GI is pending congressional action.

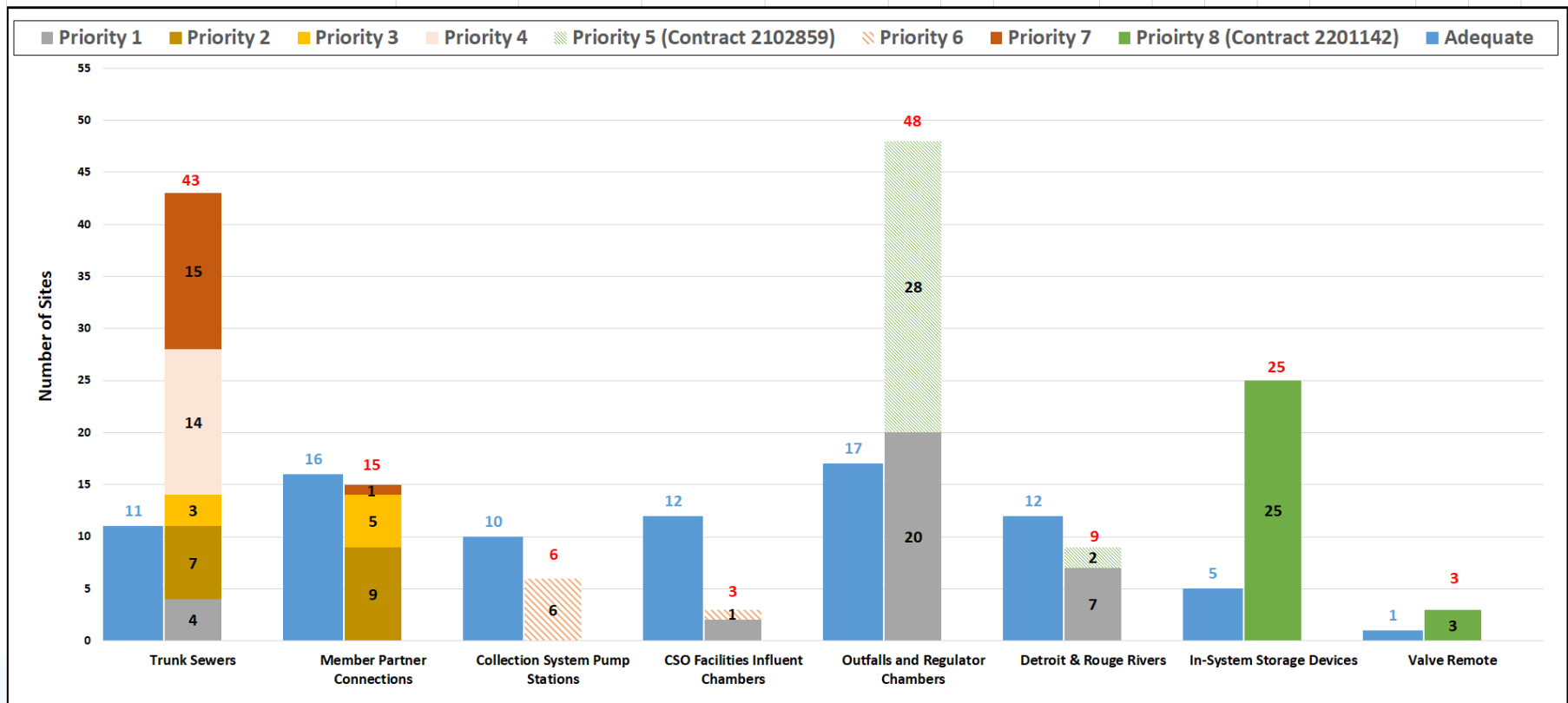
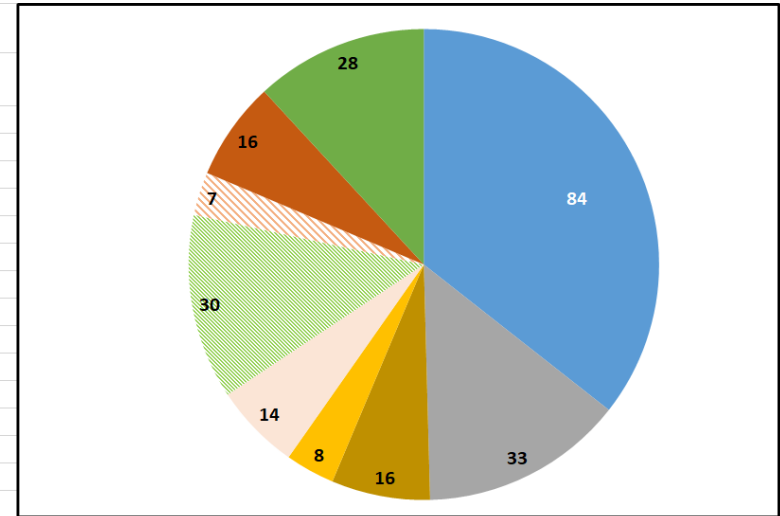
GLWA continues to review the sewer system instrumentation and make corrections in a phased approach.

GLWA released around \$2.9M for revisions to nearly 67 sites. This will complete Priority 1, 2, 3 & 4 sites.

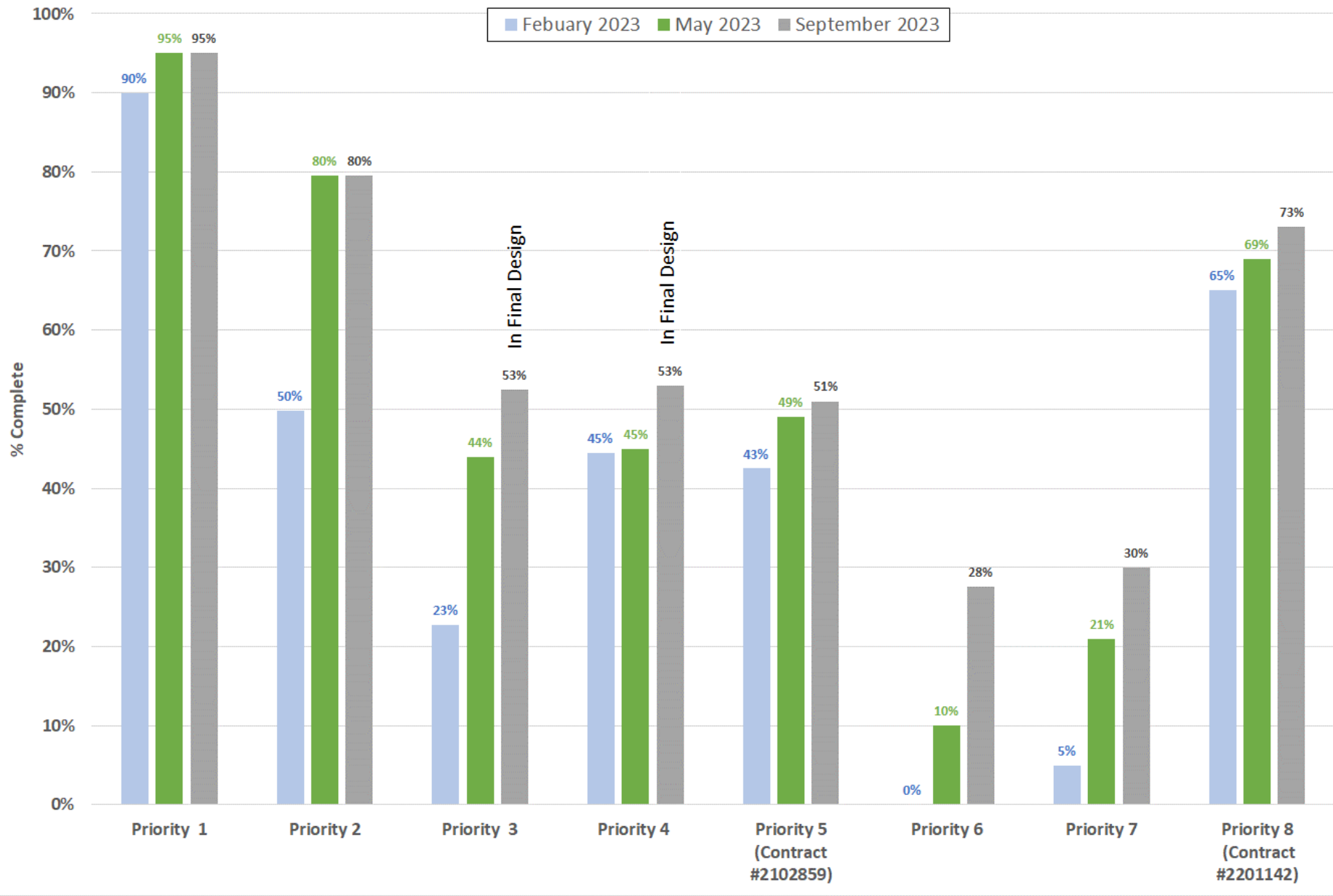
Priority 7 sites – Field inspection completed and currently in conceptual design phase.



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



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





# GLWA Resiliency Effort Timeline

Flood Mitigation & Resiliency Planning Meeting with Member Partners

March 29, 2023

2021 Rain Event  
June 25 & 26, 2021

2021 Rain Event  
July 16, 2021

GLWA Completed Power Conversion from PLD to DTE Freud PS  
March 23, 2022

GLWA Submitted to EGLE Extreme Rain Event Standard Operating Procedure  
March 24, 2022

AECOM Independent Investigation Report Completed  
June 20, 2022

Updated on the Legislation for Funding the Flood Study  
July 30, 2022

GLWA Board of Directors Approved In-System Storage Devices & Remote Valve Rehab \$15,943,539  
August 24, 2022

February 2023  
GLWA Re-Initiated East, West & Central Meetings

May, 2023  
GLWA Board Update

GLWA Admin. Initiated Internal Investigation  
June 28, 2021

GLWA Commissioned East Side Sanitary Stations Power Monitoring  
July 19 - 29, 2021

GLWA Completed Power Conversion from PLD to DTE for Woodmere & Baby Creek Facility  
May 17, 2022

August 11, 2022  
GLWA & DWSD Toured MWRD's Tunnel & Reservoir Project

September, 2022  
GLWA Board Update

January 18, 2023  
Letter of intent submitted to Army Corp to initiate the Planning Assistance to State (PAS) process ahead of the WARDA funding

September, 2023  
GLWA Board Update

GLWA Board of Directors Initiated an Independent Investigation  
July 28, 2021

GLWA Completed Power Conversion from PLD to DTE for Bluehill PS  
March 24, 2022

June 22, 2022  
GLWA Board of Directors Approved Conner Creek Sewer Rehab \$49,576,196

December 13, 2022

Authorized Start of Design for Vacuum Priming & Seal Water System & Physical Model of the Vertical Pumps at Conner



Thank you