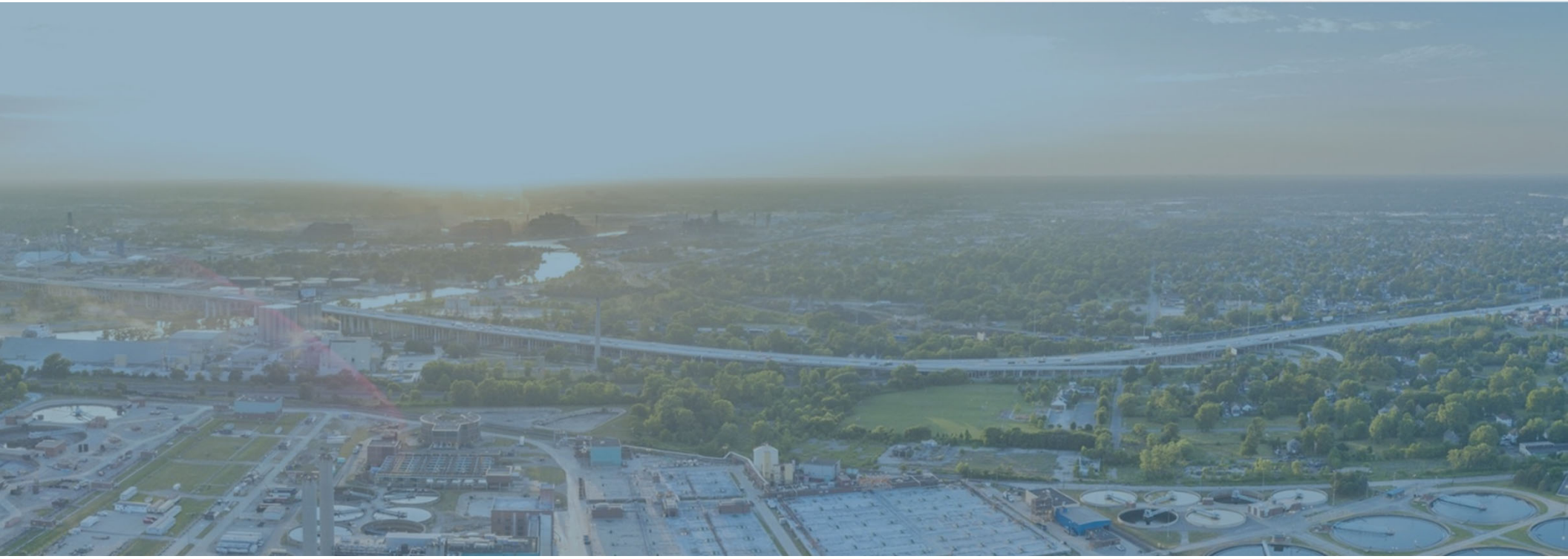
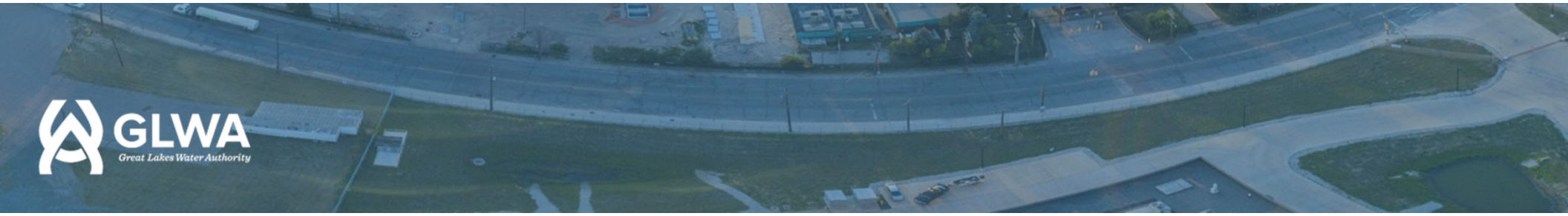


WRRF Rehabilitation of Screened Final Effluent Pump Station

CIP 261008 | Contract 2000970

November 13, 2024, Operations and Resources Committee

Navid Mehram, Wastewater COO



Executive Summary

Rehabilitation of Screened Final Effluent Building

- The existing Screened Final Effluent (SFE) pump station is nearly 50 years old and in poor condition.
- The station has eight pumps with a total capacity of 135 million gallons per day (MGD), but the current usage is only ~25 MGD due to efficiency improvements and decommissioning of eight (8) incinerators.
- This project will replace the SFE pump station with equipment that matches the forecasted demand.
- The SFE will have additional treatment so that it can support additional plant processes reducing dependency on potable water improving overall resiliency.

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Project History

- Solicitation Energy Audit (2016)
  - Energy Report
  - Energy Conservation Measures
  - Project selection
- Award of Design development & 60% Design (2020)
  - Development of a Basis of Design report
  - Complete 60% design
  - Establish performance measure
  - Provide a Lump Sump Price

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SFE Rehabilitation Purpose

Equipment Rehabilitation

Replace aging equipment

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System Resilience

Backup critical plant utilities

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SFE Rehabilitation Purposes

Equipment Rehabilitation

- The existing system is in poor condition and maintenance needs have increased.
- Four pumps were installed in 1973.
- Two pumps were installed in 1980.
- Two pumps were installed in 1998 and the older pumps were rebuilt.
- Oversized pumps are inefficient and increase pressure on piping.

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System Resilience

- This project will improve the quality of the SFE, enabling it to act as a source of carrier water for chemical treatment and seal water for pump operations.
- A past potable water outage highlighted the risks associated with relying solely on potable water for Wastewater Operations.

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SFE Project Scope

Pump Station Rehabilitation

- Replace pump station
- Right-size pump station
- Improve maintenance & operability
- Increase reliability

Resilience

- SFE Treatment for process water
- Sulfur dioxide (SO2) carrier water
- Sodium Hypochlorite (NaOH / caustic) source

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Scope | SFE Pump Station Rehabilitation

- Six vertical turbine pumps
  - Reduced power use
  - Lower operating pressure
  - 60 MGD capacity (historic usage ~25 MGD)
- Space for two future pumps (if needed)
- Booster pumps to supply high-pressure SFE to incinerators
- Proposed location: north of current SFE pump station

Current SFE pump

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Existing SFE Pumpstation

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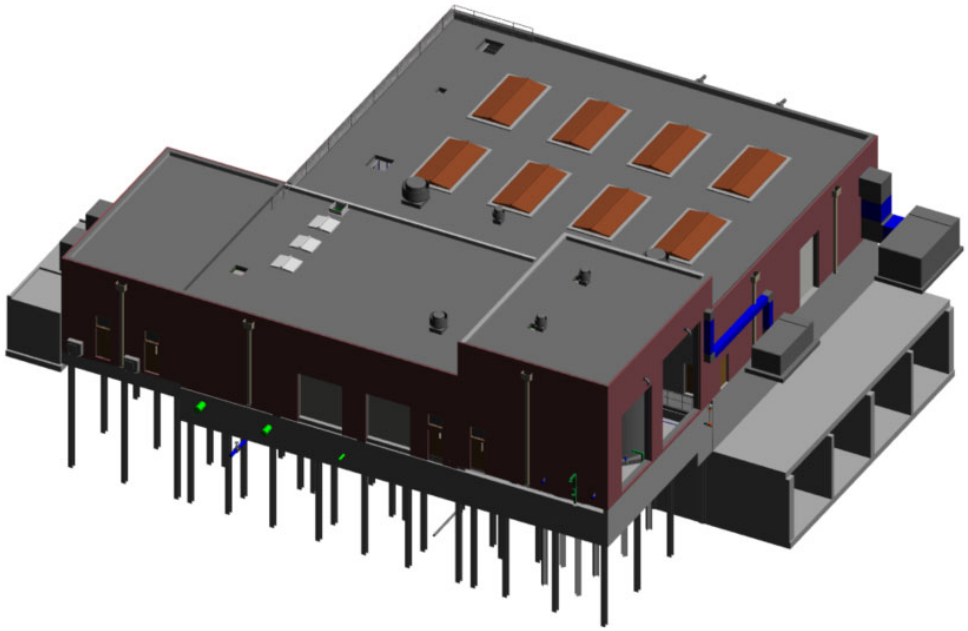
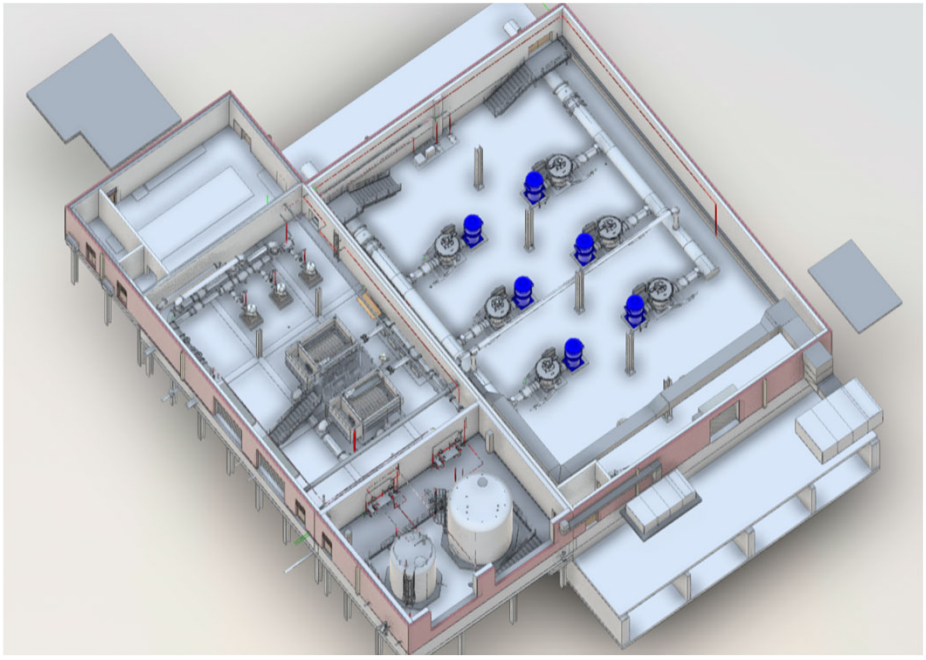
Proposed SFE Pumpstation





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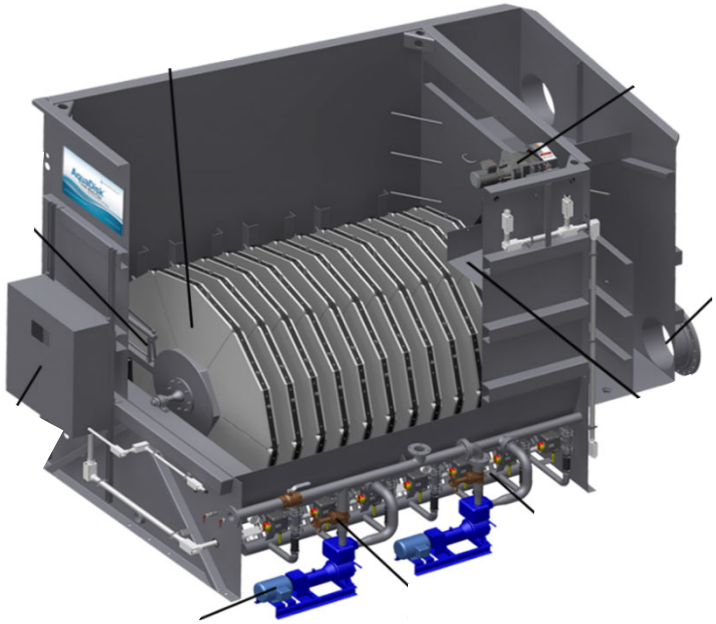
Scope | Resilience I of II

SFE Treatment

- Two cloth disc filters with automatic backwash
- 100,000-gallon storage tank
- New distribution pumps



Future disk filter

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Scope | Resilience II of II

- Sulfur Dioxide (SO2) Carrier Water
  - Connection to Detroit River Outflow (DRO) application point
  - New pumps and strainer
- Sodium Hypochlorite (NaOH / caustic) Backup
  - New pumps will feed existing chlorine solution line allowing for both dry and wet weather operations to maintain disinfection through sodium hypochlorite.

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Screened Final Effluent Rehab
Timeline and Costs

Builder	NORESCO (with subcontractors)
Designer	Jacobs Engineering (contract with NORESCO)
Phase 1	$3.9M (60% design)
Phase 2 Amendment	$100.4M (100% design & construction)
Additional Duration	40 Months (from April 2025 to July 2028)
Total	**$104.3M**

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Questions????

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