

The background image shows a large-scale construction project. In the foreground, a large yellow CAT excavator is positioned on a pile of dirt. To its left, another excavator is visible, working on a deep trench. A large concrete pipe is being lowered into the trench. The site is marked with orange and white traffic barrels. In the background, there are fields and a clear sky.

# Capital Projects Update

November 16, 2023

Lisa Coleman, Director of Engineering

Madison Metropolitan Sewerage District

A decorative white wavy line graphic located at the bottom of the slide.



# Capital Improvements Plan (CIP)

- Estimated \$45M on projects in 2024
  - Treatment plant \$12M
  - Interceptors \$19M
  - Pumping stations and force mains \$14M
- Slides that follow are a snapshot of current work in construction, design, and planning



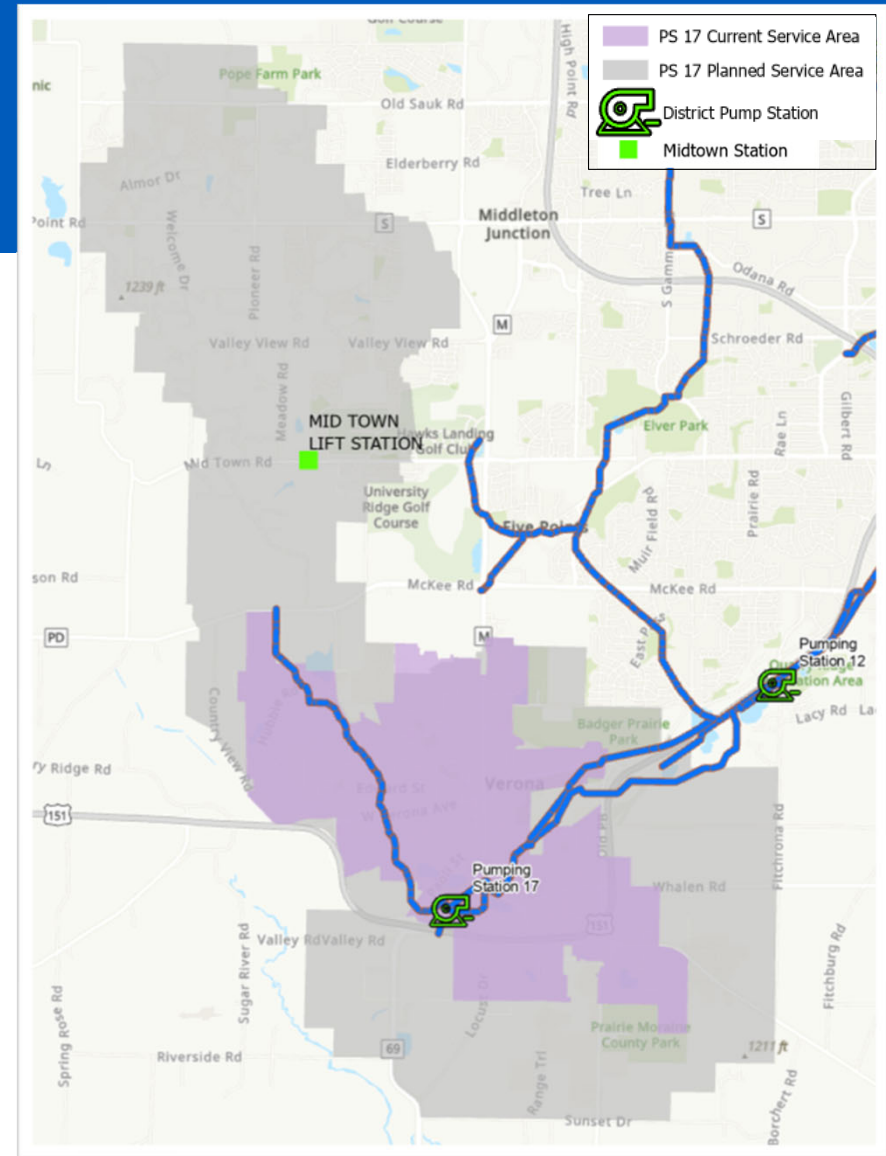
# Under Construction

- Pump Station 17 Force Main Relief Phase 2 (\$12.0 M - \$880K from City of Verona)
- Pumping Station 13 and Pumping Station 14 Rehab (\$10.8 M)
- Pumping Station 4 Rehabilitation (\$7.1M)
- 2021 Treatment Plant HVAC Improvement Project (\$2.45 M)
- Lower Badger Mill Creek Interceptor Phase 5 (\$1.9 M)
- Maintenance Facility Solar Expansion (\$378K)



# Pumping Station 17 – Planned Service Area

- Anticipated future service area shown in gray
- Mid Town lift station – temporary + reaching capacity
- Current Capacity Limitations being addressed by District projects:
  - LBMCI Connection (2 projects)
  - PS 17
  - PS 17 FM





# Pumping Station 17 Force Main Relief Phase 2

## Scope

8000 ft of 24-inch force main, 3300 ft of interceptor. Tunnel below 151/PB. Partner with City of Verona on paved trail and sewer work with Town of Verona. Connect Phase 1 to Nine Springs Valley Interceptor (to PS 12)

## Schedule and Status

- Construction beginning this month
- Jan start USH 151, work westerly initially
- Substantial completion 5/2025, Final 8/2025

## Contractor

Minger Construction Co., Inc.

## Budget

Total Project Cost: \$12 M (increased from \$10.5M)

Original Contract \$9,376,630

(\$880K City/Town of Verona) **Madison Metropolitan Sewerage District**





**SELECTED IMPROVEMENTS  
MADE POSSIBLE BY  
MADISON METROPOLITAN SEWERAGE DISTRICT, DANE COUNTY, CITY OF VERONA,  
TOWN OF VERONA, ICE AGE TRAIL, & FRIENDS OF BADGER MILL CREEK ENVIRONMENTAL CORRIDOR**





# Pumping Station 13 and 14 Rehabilitation

## Scope

Pumps, venturi meter, major electrical and control equipment, HVAC replacement, new generator and diesel tank, wet well repairs, building and site work

## Schedule and Status

- Construction began in Oct 2020
- Substantially Complete in 1/31/23- in service
- Final payment/Acceptance Dec 23/Jan 24

## Contractor

CD Smith Construction

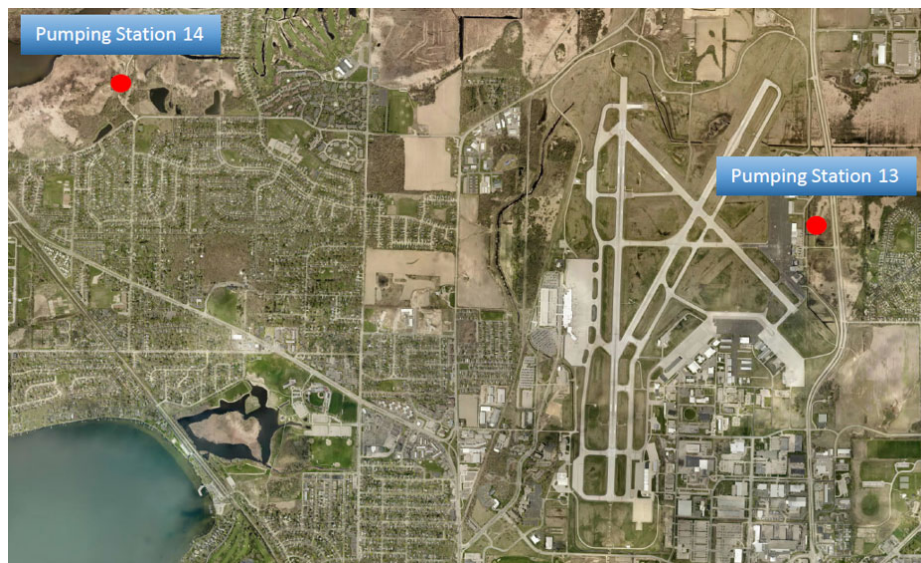
## Budget

Total Project Cost: \$10.8 M (Decreased from \$11.4M)

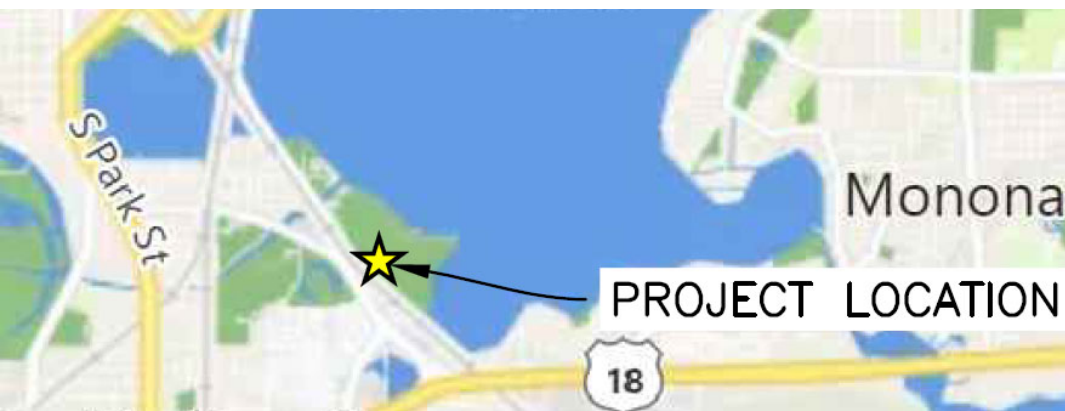
Original Contract \$9,276,979

22 Change orders -\$56K (- 0.6%)

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## Pumping Station 4 Rehabilitation

### Scope

Pumps, motor control center, instrumentation and controls, HVAC work, new generator, building and site work including correcting drainage issue.

### Schedule and Status

- Notice to proceed in Jan 2023
- Orig Substantial completion 6/2024 final 8/2024
- Now anticipating March 2025/May 2025 (supply chain issues – in particular MCC)

### Contractor

J.F. Ahern Co.

### Budget

Expected Total Project Cost: \$5.1 M (less than \$7.1M in CIP)

Original Contract \$3,883,000

1 CO to date (-\$44 K)

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## Lower Badger Mill Creek Interceptor Phase 5

### Scope

3500 ft of 30" interceptor, 10 manholes. Coordinated with Ardent Glen development

### Schedule and Status

- Began construction Oct 2023 ~30% complete
- Coordinated with Ardent Glen development/PD
- Substantial completion anticipated June 2024

### Contractor

Integrity Grading and Excavating

### Budget

Total Project Cost: \$1.9 M (Increased from \$1.4M)  
(includes Phase 5A to correct pipe sag - complete)

Original Contract \$1,206,447

0 change orders to date

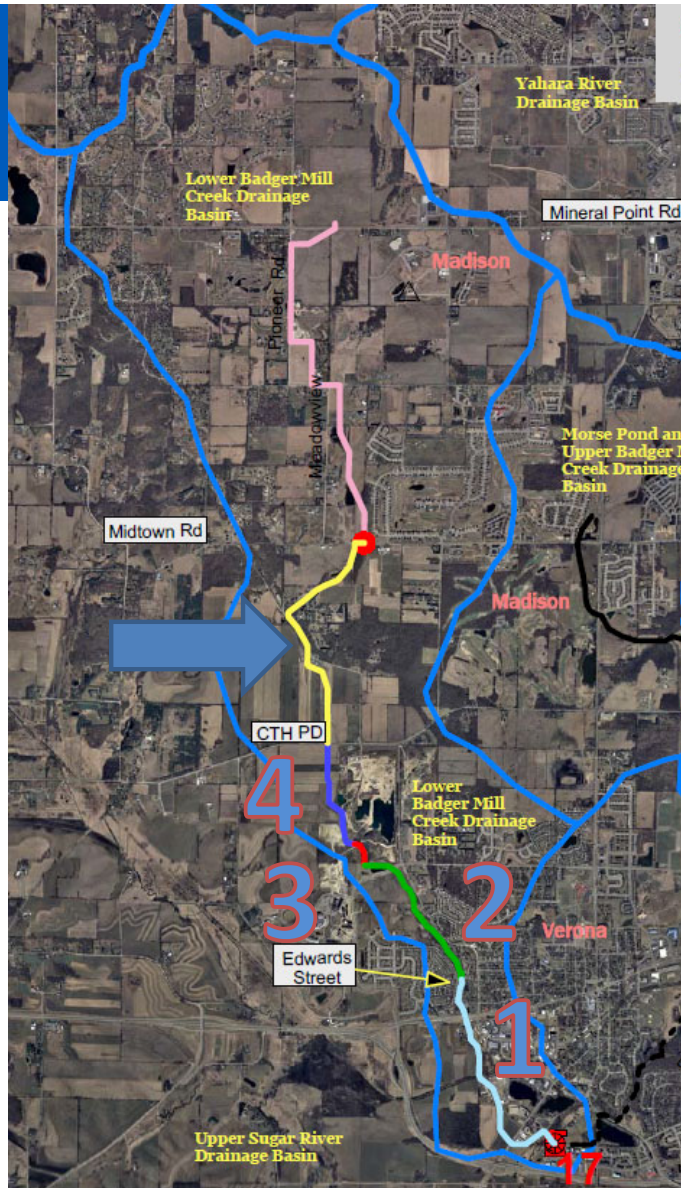
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# What has already been built?

- Phase 1 – 2006
- Phase 2 – 2008
- Phase 3 – 2014.
- Phase 4 – 2018
- Phase 5 & 6 – PD to Midtown  
the missing link.



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## Lower Badger Mill Creek Phase 5





# In Design

- Liquid Processing Improvements Phase 2 (5 projects - \$51M)
- Electrical Service Equipment Replacement – (\$13.7 M)
- NEI-Waunakee Extension Capacity Improvements Ph 1 (\$12M)
- West Interceptor Shorewood Relief – Phase 3 (\$7.6M)
- Pump Station 17 Firm Capacity Improvements (\$8.1M)
- Flow Splitter Improvements – (\$5M)
- Lower Badger Mill Interceptor Phase 6 (\$4.9M)
- SEI Relocation at Yahara River + Rehab on US 51 (Ph 1) \$850K + \$1.3M)

# Liquid Processing Improvements Phase 2

## Scope

Second part of implementation of the Liquid Processing Facility plan. Aeration system and primary treatment infrastructure replacement.

## 5 Separate Projects in the CIP

- East primary influent channel air piping
- Low Dissolved Oxygen (Partial plant)
- Low Dissolved Oxygen (Full plant)
- West Blowers and Switchgear Replacement
- East Blowers and Switchgear Replacement

Design year 2050

## Budget

Total Project Cost: \$51 M (all 5 projects)





# Liquid Processing Phase 2

## Schedule

- Began alternatives analysis in early 2023
- Strand/Brown & Caldwell team
- 2024 continue design
- Construct + operate pilot plant 2025/2026
- Full plant construction ~2028/2029
- Considering fast-tracking blowers/switchgears

## Status

- Considering 5 alternatives for BNR (biological nutrient removal)

Modified UCT – High DO (existing process)

Modified UCT – Low DO

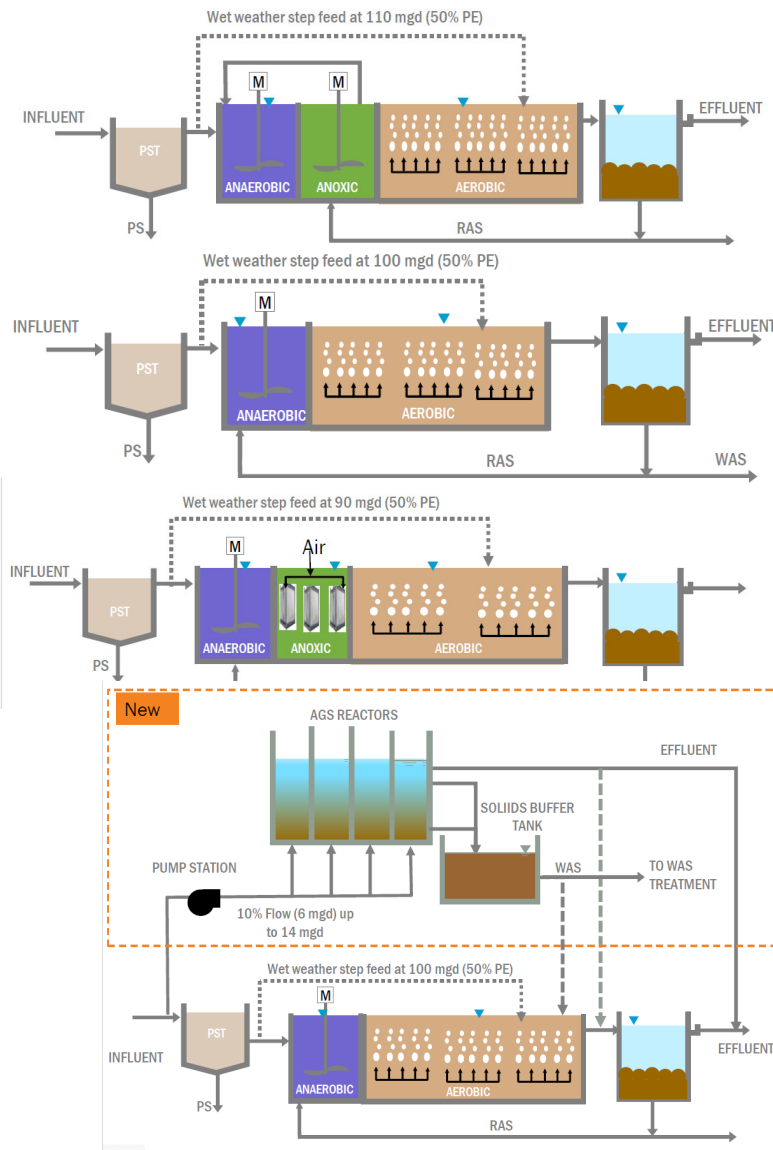
Anaerobic/Aerobic (A/O or A/SND)

Membrane Aerated Biofilm Reactor

A/SND with AquaNereda AGS

- Beginning work on blowers

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# Electrical Service Equipment Replacement

## Scope

Replace equipment that steps down voltage from MG&E substation and feeds electricity to the entire plant. Cables, and Switchgear H1 (15kV), Switchgear S1 (5kV) transformers 1 and 2, and feeder busduct for the incoming electrical service to the plant. Selected alternative eliminates switchgear H1, and replaces switchgear S1 in new building.

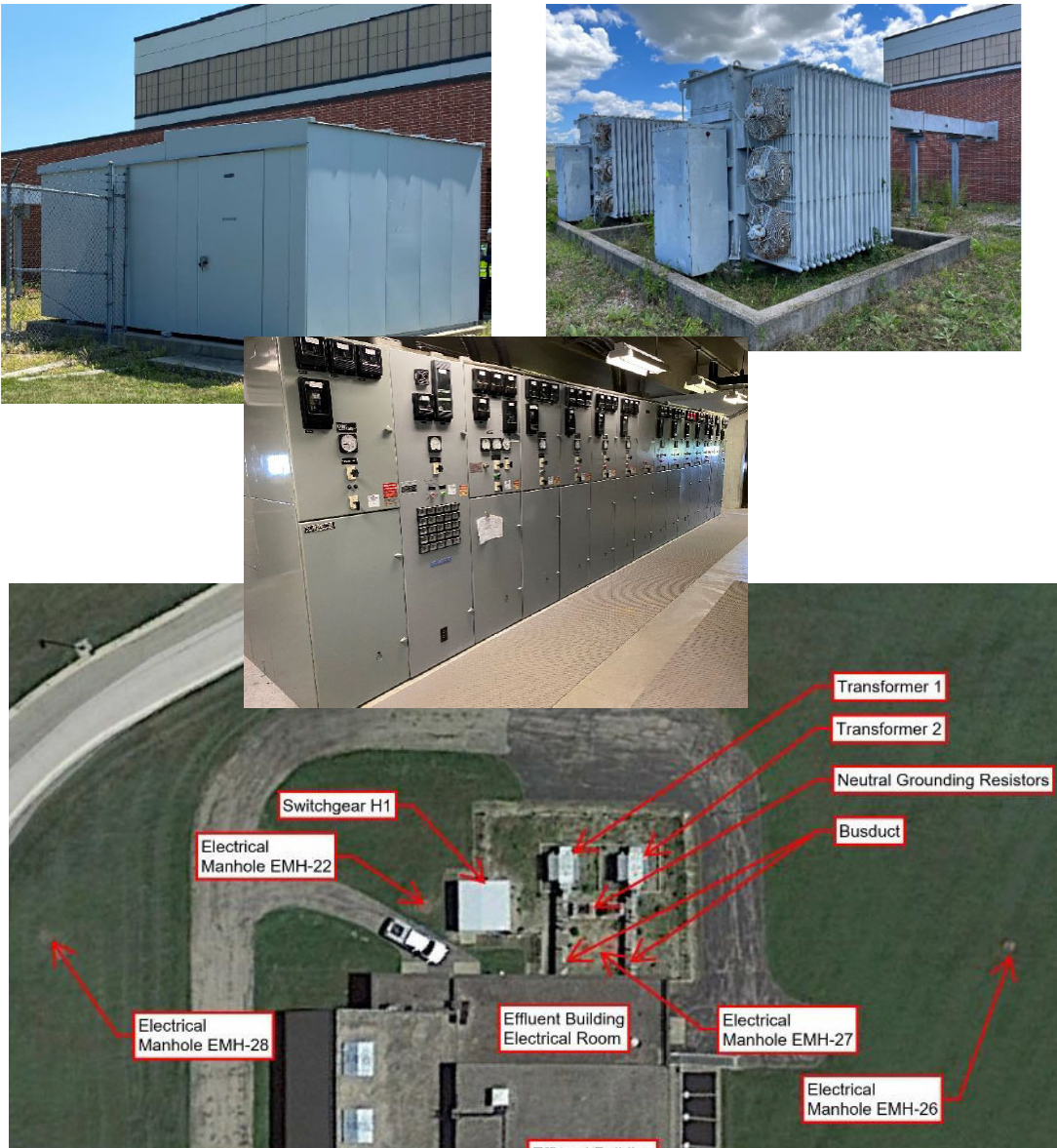
## Schedule and Status

- Design at approx. 50% - Donahue
- Bid Spring 2024
- Switchgear + transformer lead times~20-24 months
- Complete construction mid-2026

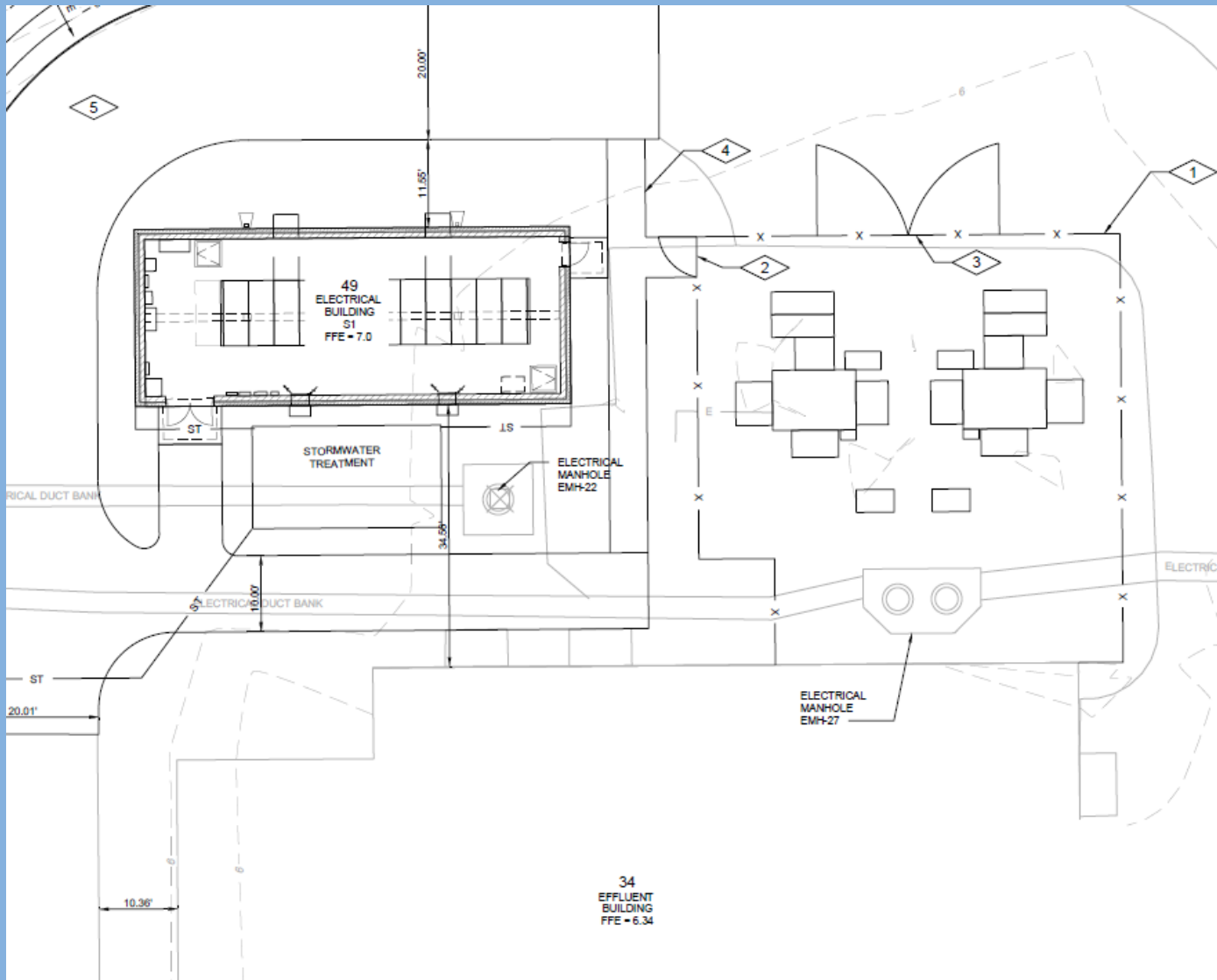
## Budget

Total Project Cost: \$13.7 M

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**Elec Serv  
Replace**

# Northeast Interceptor- Waunakee Extension Capacity Improvements Phase 1

## Scope

Upsize capacity for developing area. Relief sewer from 113/M to Kennedy, replacement sewer north of Kennedy

## Schedule and Status

- Design at approx. 60% - Strand
- Working on easement acquisition
- Bid Spring 2024
- Complete construction mid-2025
- 2 public info meetings so far

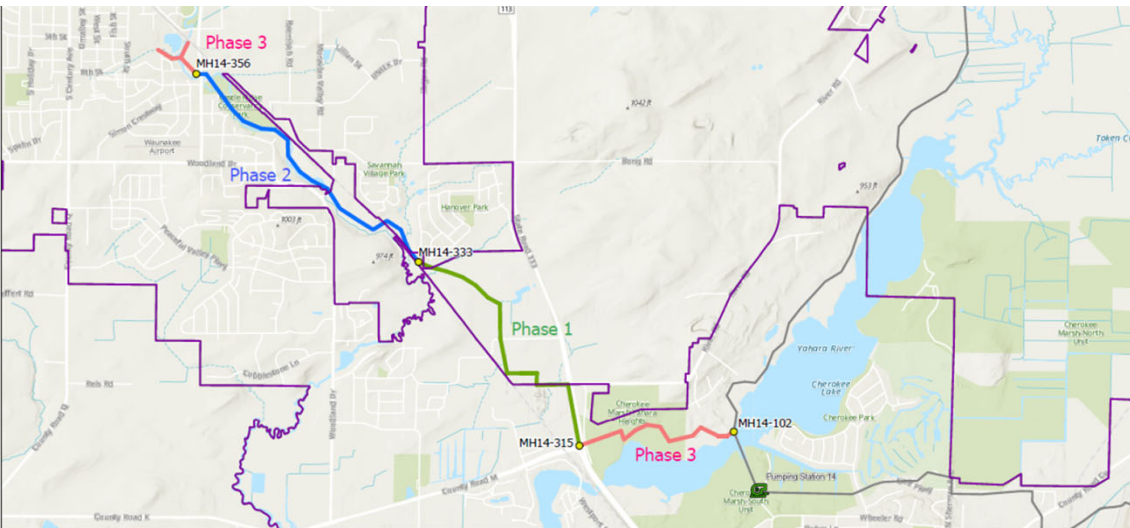
## Coordination

Kennedy Rd closure w/ Hwy M construction/development

## Budget

Total Project Cost: \$12 M

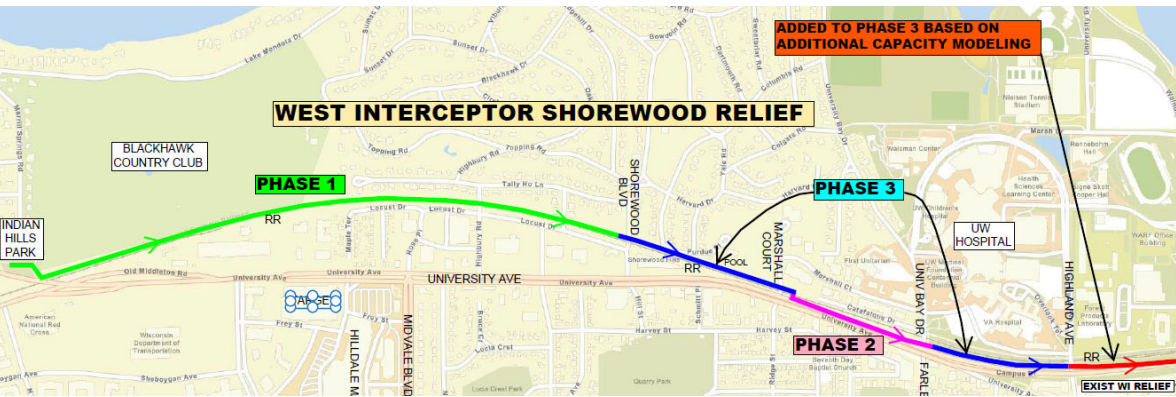
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# West Interceptor Shorewood Relief Phase 3

## Scope

Relief interceptor to complete last phase of work – Capacity upgrades for West Interceptor Shorewood Relief. Added east end.

## Schedule and Status

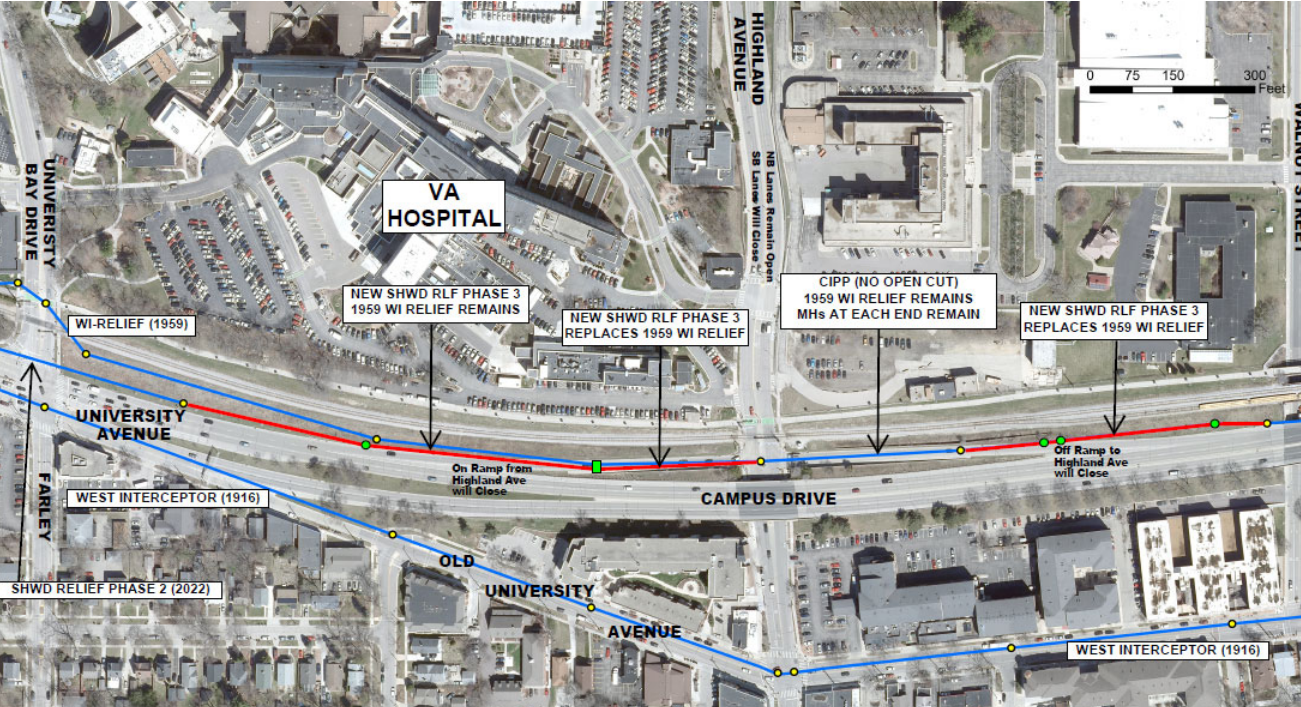
- 50% design, acquiring easements
- Bid in Spring 2023
- Construction 2024 - 2025

## Challenges

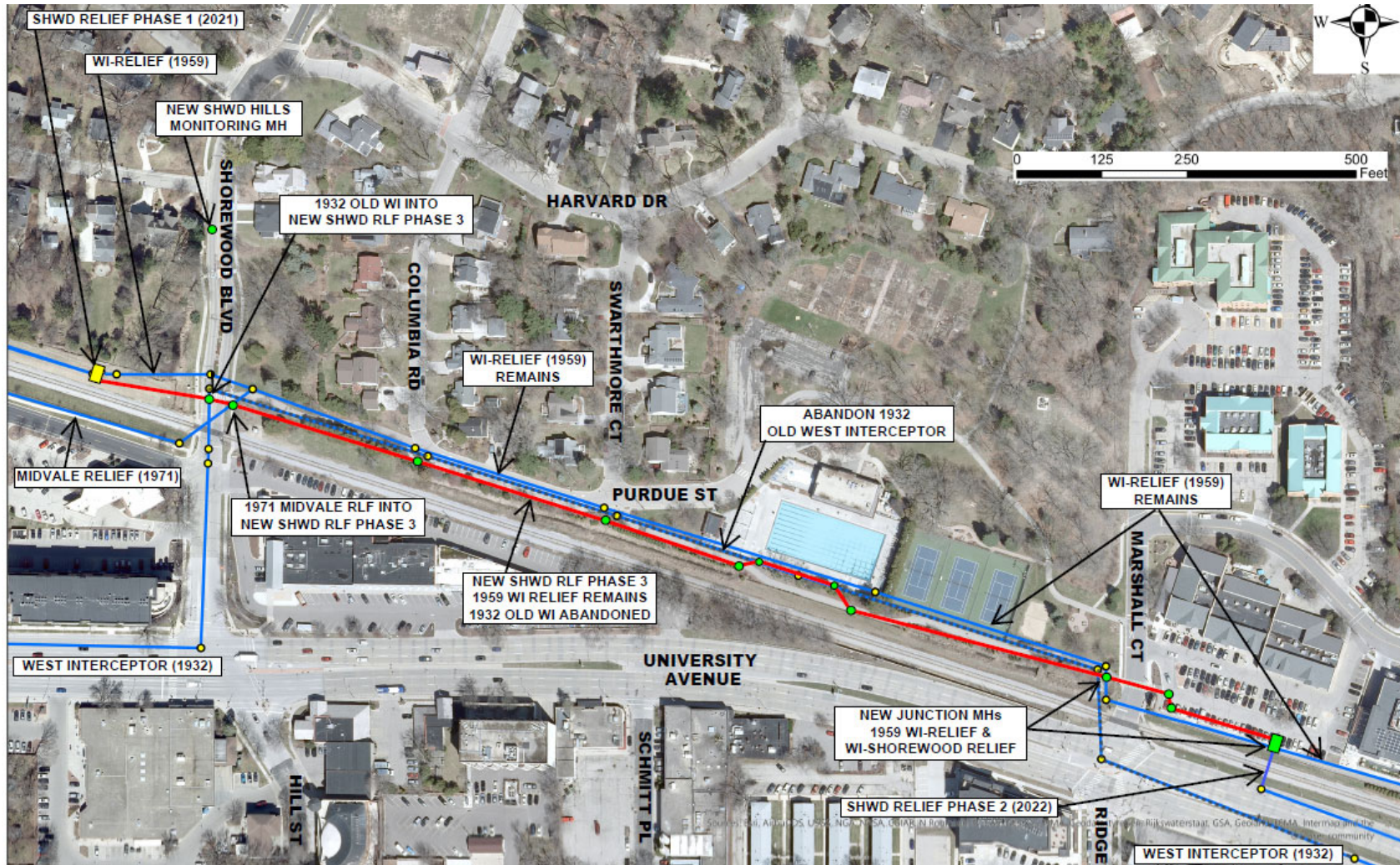
Coordination with Univ Ave road construction, Bus Rapid Transit, traffic control (Highland), coord with Pool/businesses

## Budget

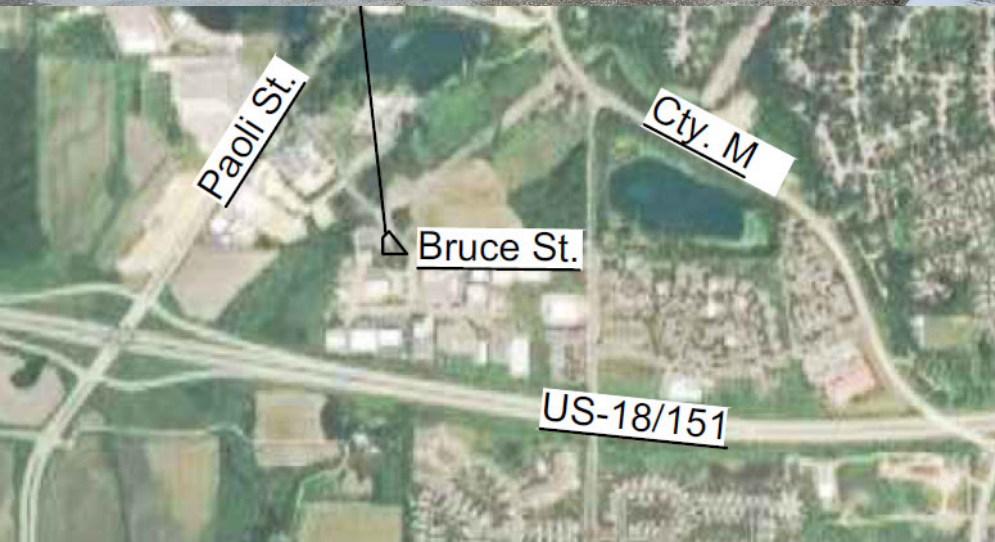
Total Project Cost (ph 3): \$7.6 M  
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## Pumping Station 17 Firm Capacity Improvements

### Scope

Replace pumps, variable frequency drives, motor control centers, grinder, HVAC equipment, flow meter, piping and valves. Includes large valve vault to connect to the new relief force main. Scope changed in 2022 to Firm Capacity Improvements – address capacity for 10-15 yrs, beyond that a new or enlarged station will be necessary.

### Schedule and Status

- Scheduled to bid 11/29/23
- approval of bids coming to Commission 1/25/24
- Completion 1<sup>st</sup> quarter 2026

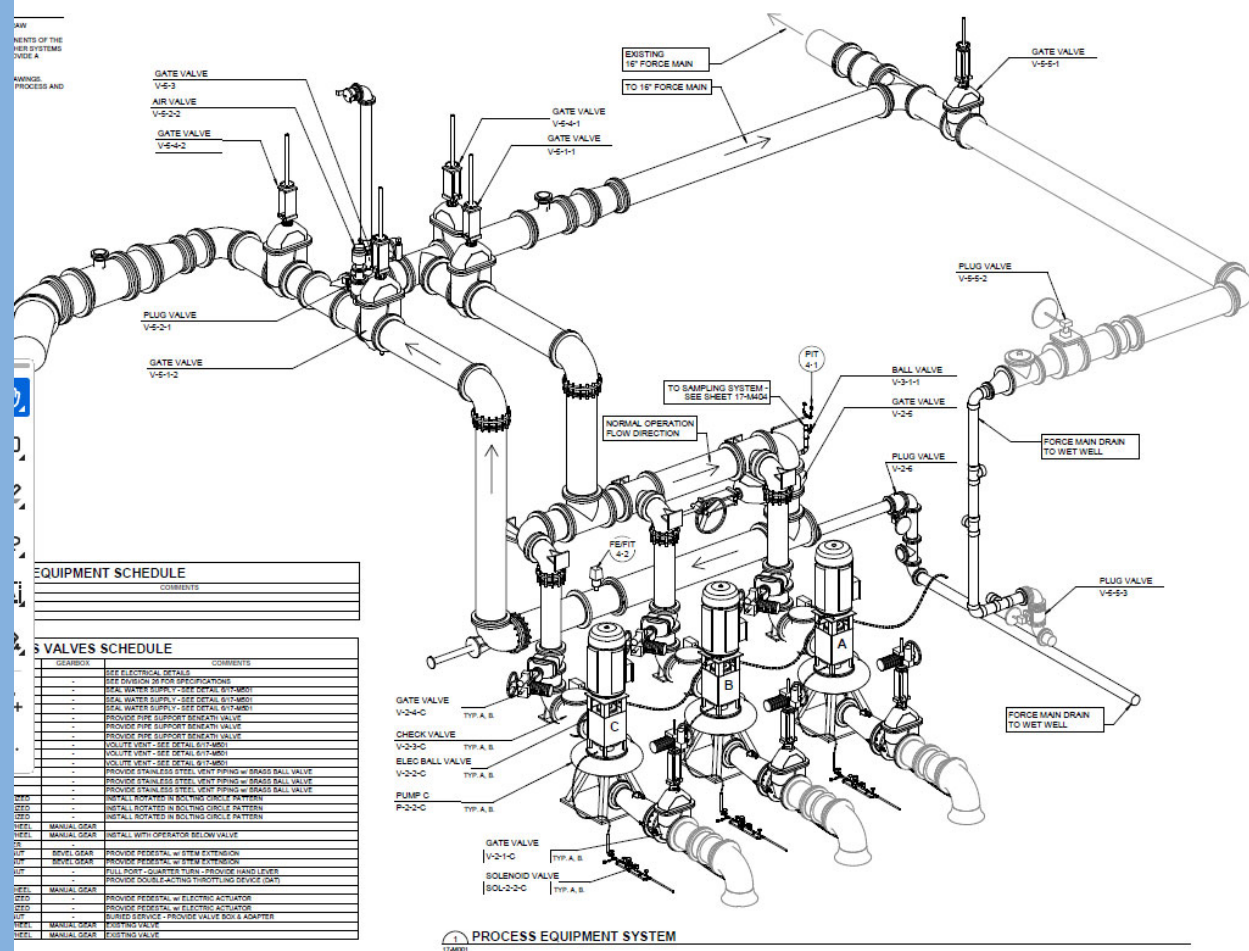
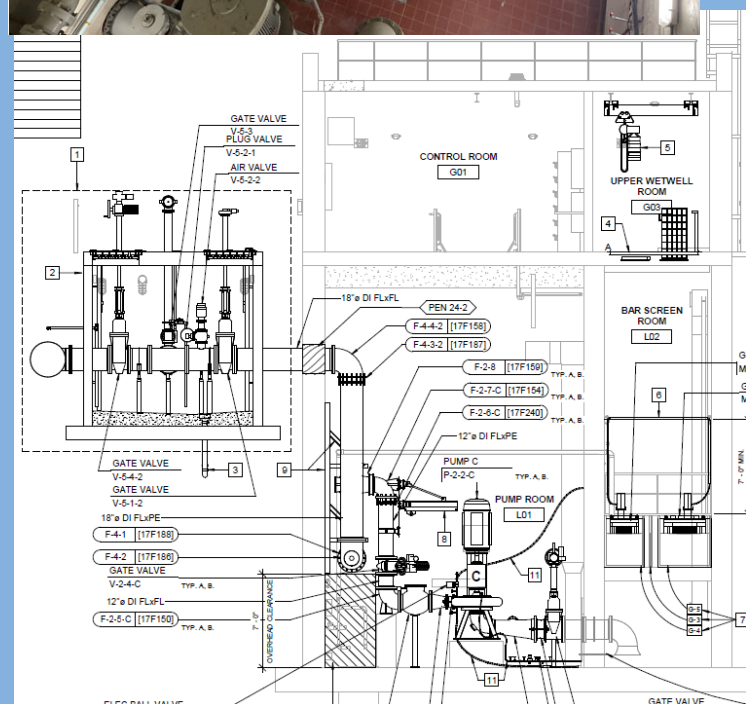
### Budget

Total Project Cost: \$8.1 M

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# Flow Splitter Improvements

## Scope

Rehabilitate flow splitter – concrete has degraded.  
Construct permanent bypass - to be used during construction to reduce duration of bypassing, and for maintenance later.

## Schedule and Status

- Alternatives Analysis complete
- Design ~40% - Strand Assoc.
- Involves detailed sequencing/bypassing plan to keep the plant online
- Bid ~March 2024
- Complete construction mid-2025

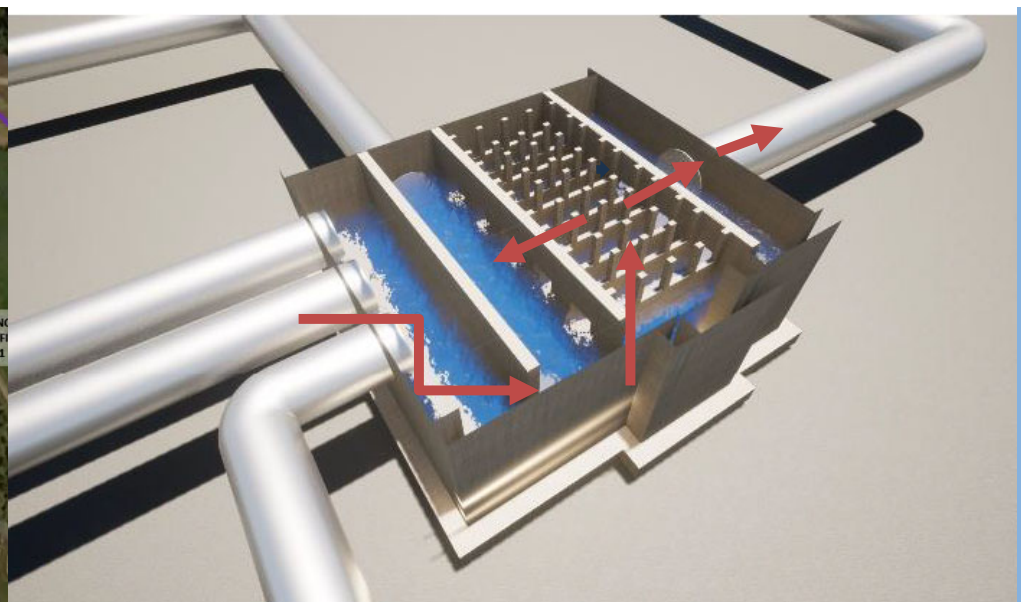
## Budget

Total Project Cost: \$5 M

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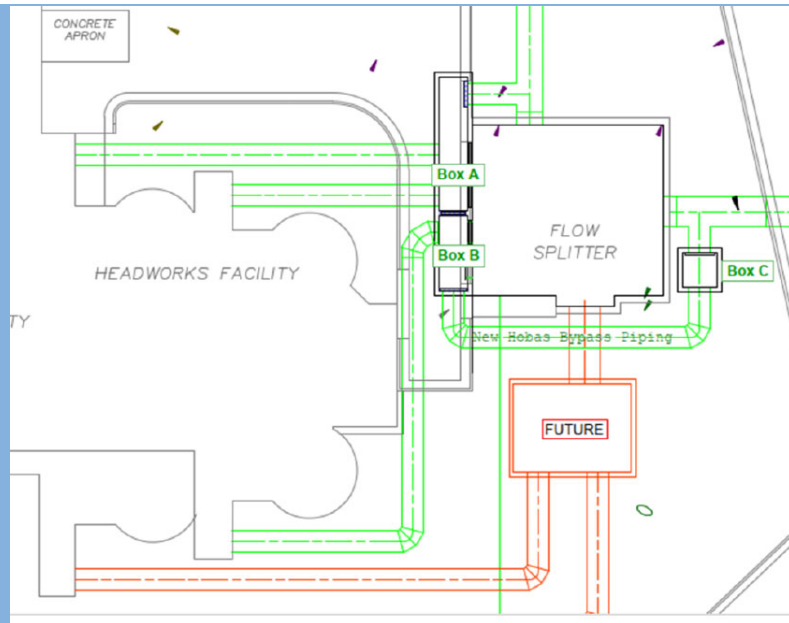


Figure 3.03-5 Proposed Layout-Alternative D

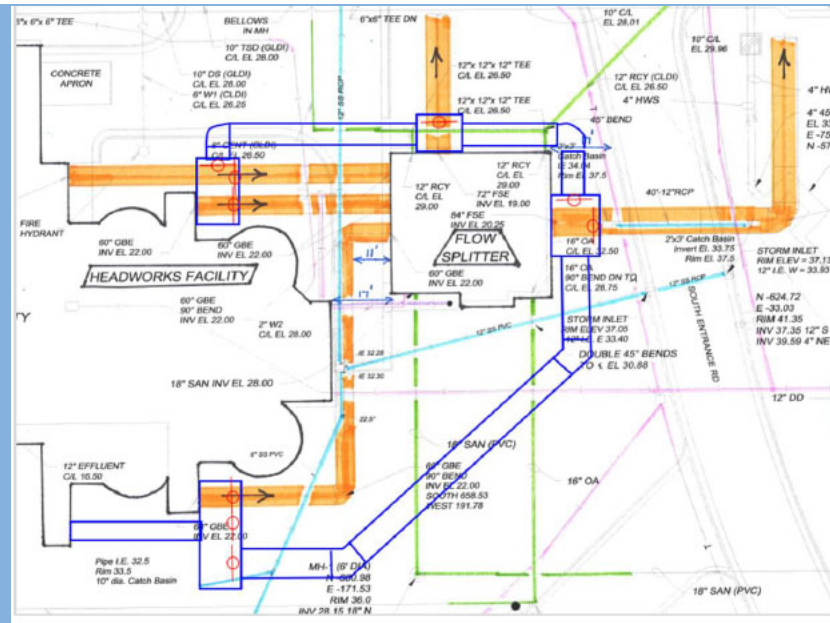


Figure 3.03-4 Proposed Layout-Alternative C

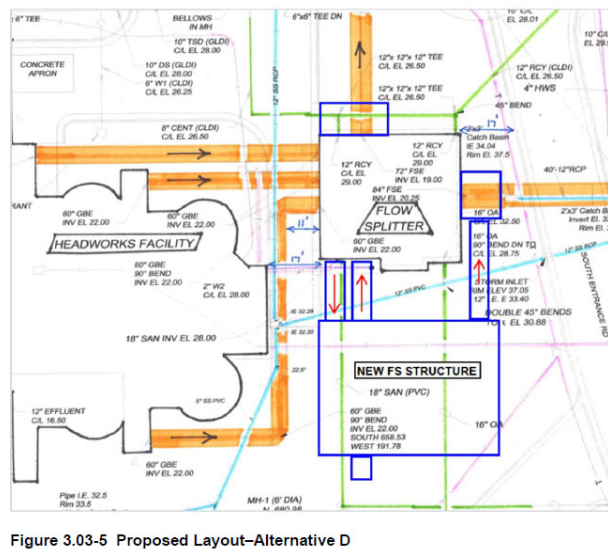


Figure 3.03-5 Proposed Layout-Alternative D

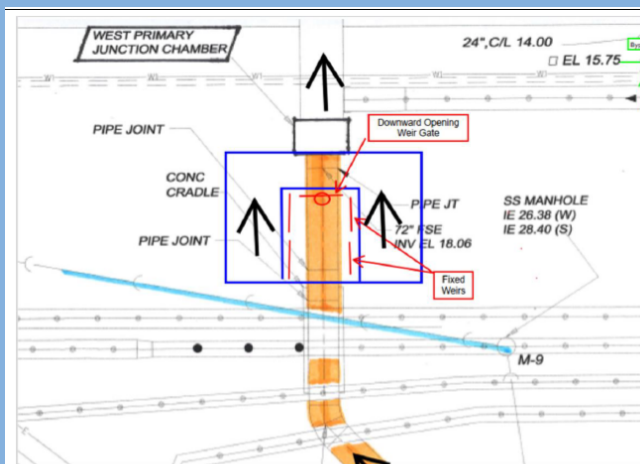


Figure 3.03-6 Proposed Layout-Alternative E (West Plant Splitter Structure)

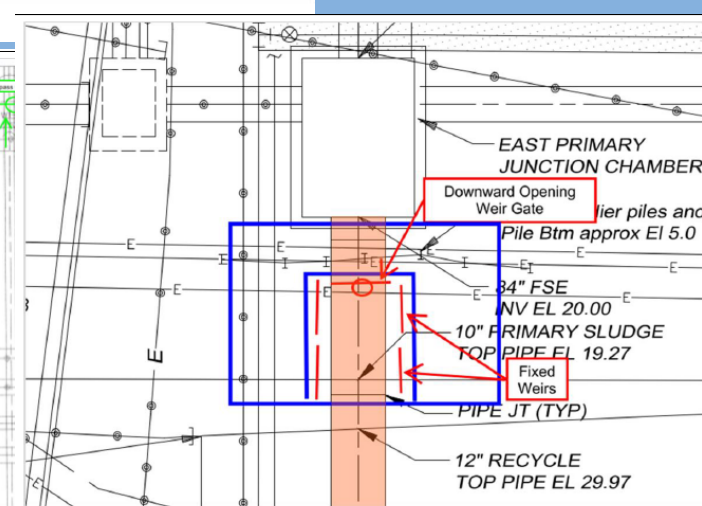


Figure 3.03-7 Proposed Layout-Alternative E (East Plant Splitter Structure)



## Lower Badger Mill Creek Interceptor Phase 6 approx Proposed Route

0 200 400  
Feet

# Lower Badger Mill Creek Interceptor Phase 6

## Scope

30" interceptor from Shady Oak to Midtown Road (the last pipe run)

## Schedule and Status

- Finalizing alignment
- Begin real estate process (relocation order) late 2023 and second PIM in Dec.
- Begin construction mid-2024

## Challenges

Private property, work in channel, trees, steep terrain, bedrock/Karst formations/private wells in Karst.

## Budget

Total Project Cost: \$4.9 M

May need increase – design and construction challenges





Stay tuned!

**Lower Badger  
Mill Creek  
Phase 6**



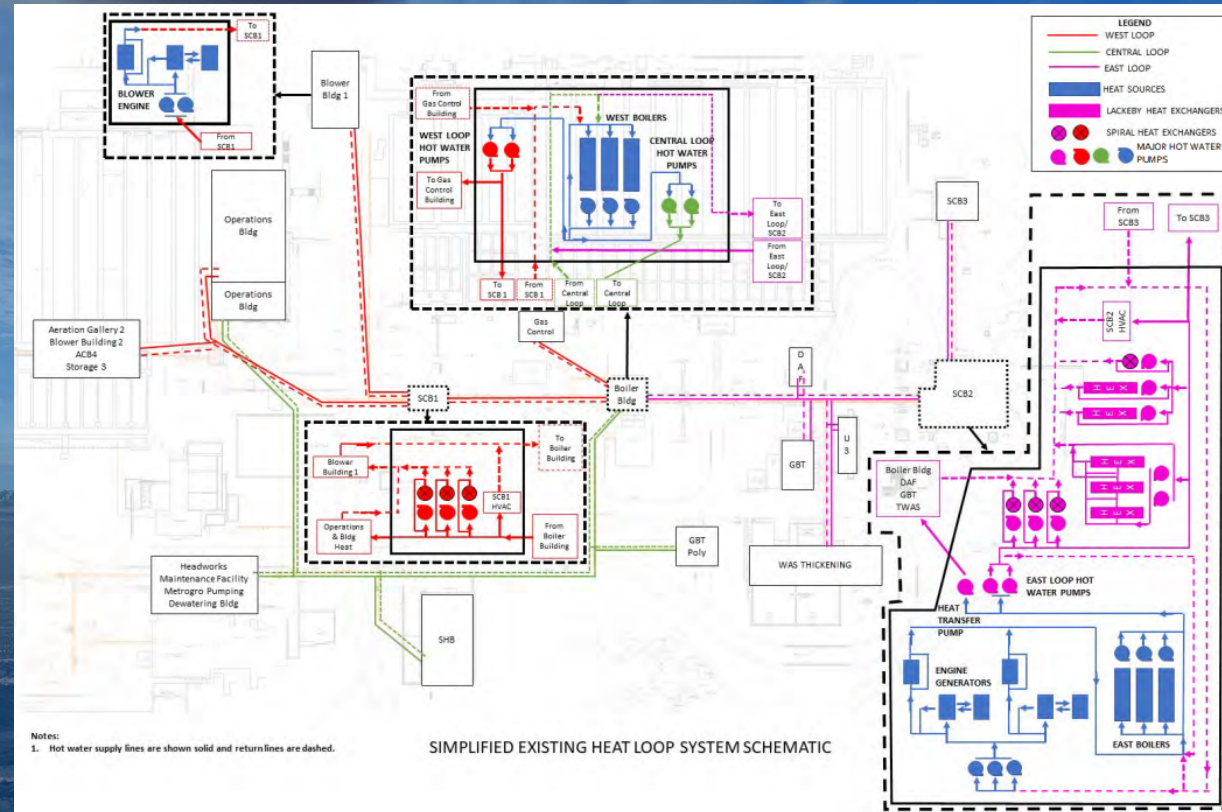
# In Planning

- Heat and Power Improvements (\$50.9M)
- Lagoon Dike Improvements (\$5M)
- W4 System Upgrade (\$1.1M)



# Heat and Power Improvements

- Complete in 2029
- Facility Planning 2024
- Questions:
  - Biogas: Use to generate electricity at plant? or produce pipeline quality gas for others?
  - How handle heat loops if no cogen?







## Lagoon Dike Improvements

### Scope

Increase dike height to increase resiliency from flooding at Superfund site. Need to raise 2+ feet in lowest areas.

### Schedule and Status

- 2022 Completed survey/wetland delin/geotech and prelim alternatives analysis
- 2022/2023 EPA 5 yr review + more analysis
- 2024 Final Design/Permitting
- 2025 Construction south berm, other parts 2026

### Challenges

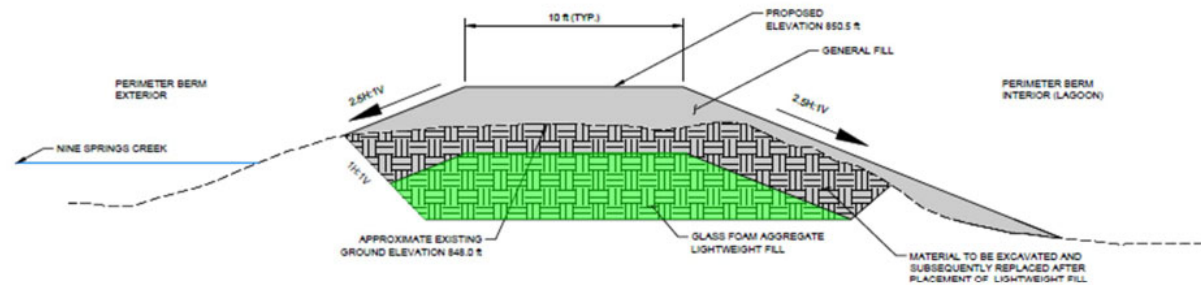
Numerous regulatory challenges, geotechnical

### Budget

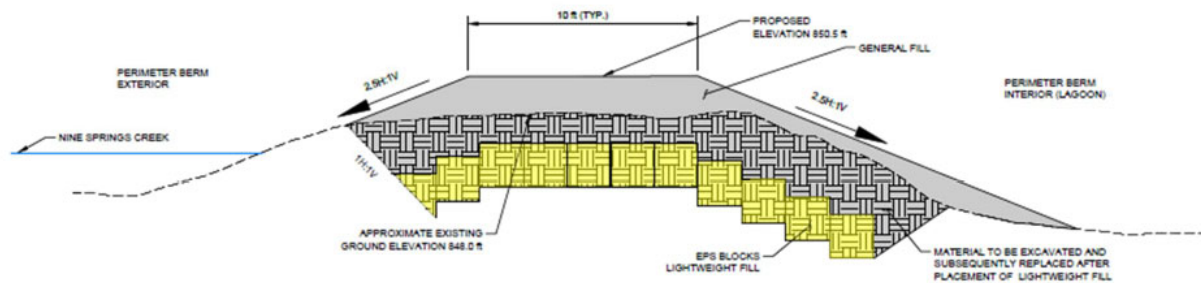
Total Project Cost: \$5M

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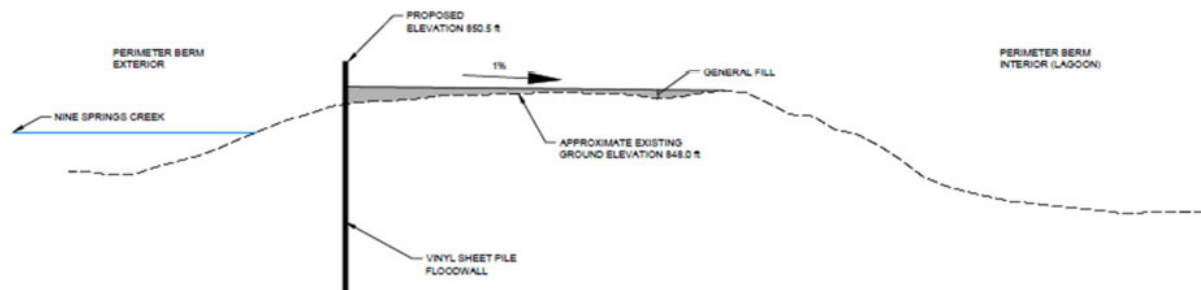




ALTERNATIVE 1: PERIMETER BERM RAISE WITH GLASS FOAM AGGREGATE LIGHTWEIGHT FILL



ALTERNATIVE 2: PERIMETER BERM RAISE WITH EXPANDED POLYSTYRENE BLOCKS LIGHTWEIGHT FILL



ALTERNATIVE 3: VINYL SHEET PILE FLOODWALL

Lagoon  
Dikes



# Questions?



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