



HRGreen®

Building Communities.  
Improving Lives.

# Wilmes Lake Alum Treatment Facility

South Washington Watershed District

City of Woodbury - Minnesota

# Agenda

- Location & Background
- Project Description
- Project Goals
- Recommended Improvements
- Construction Status



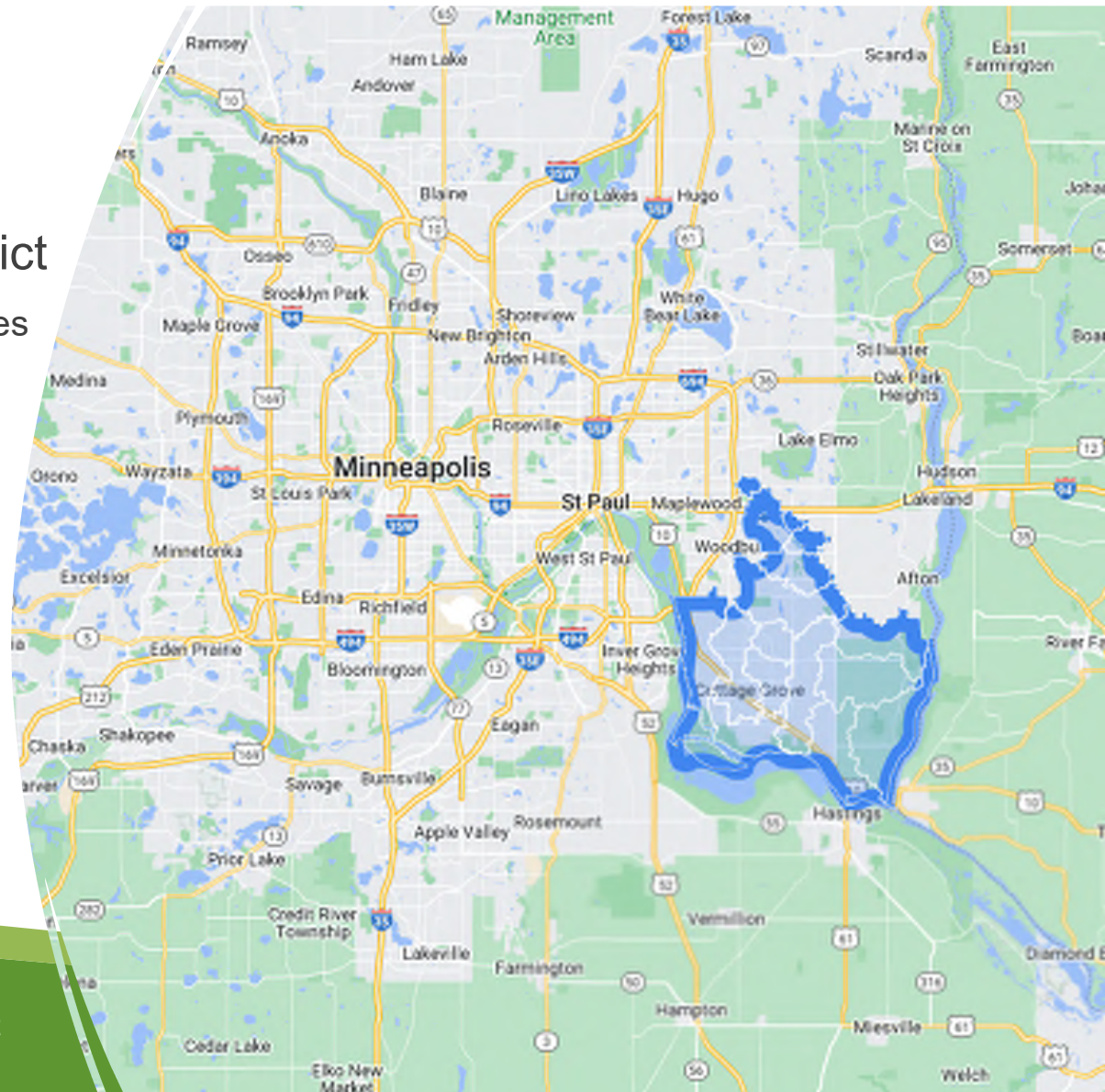
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South Washington Watershed District

4/22/2024

# Location

## South Washington Watershed District

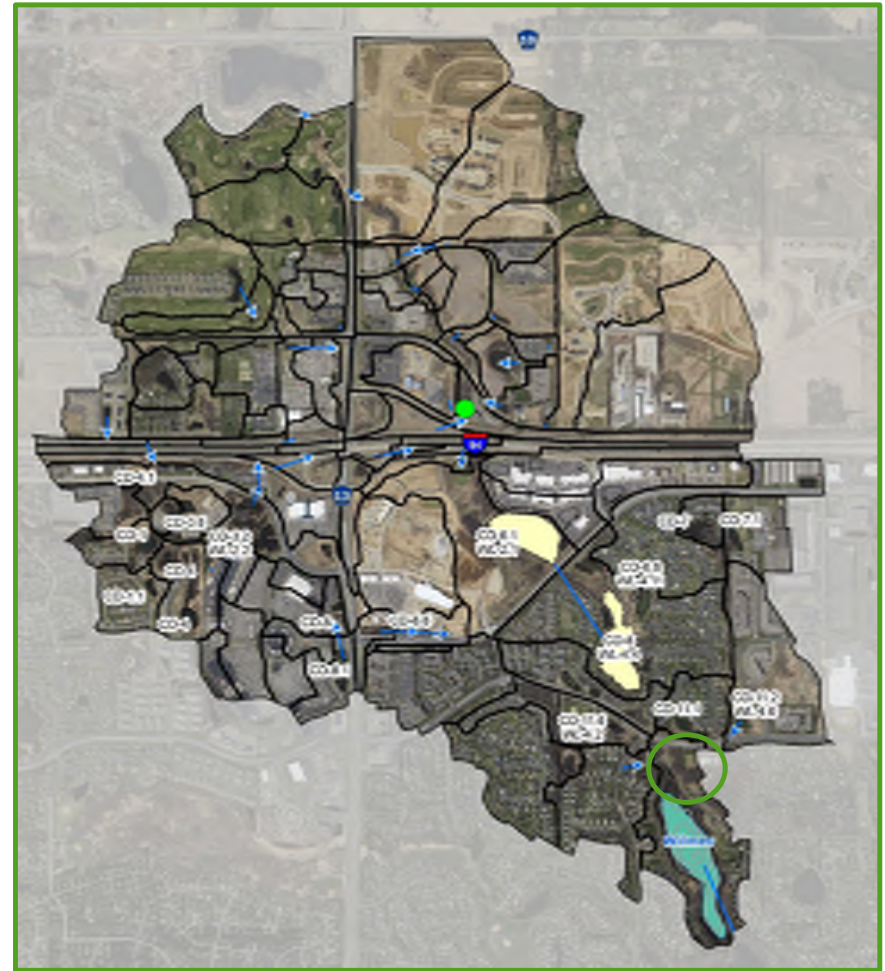
- Established in 1984 to manage the resources of the watershed
- Located in Washington County
- Southeast of St. Paul, MN
- Intersects 10 municipalities



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# Background

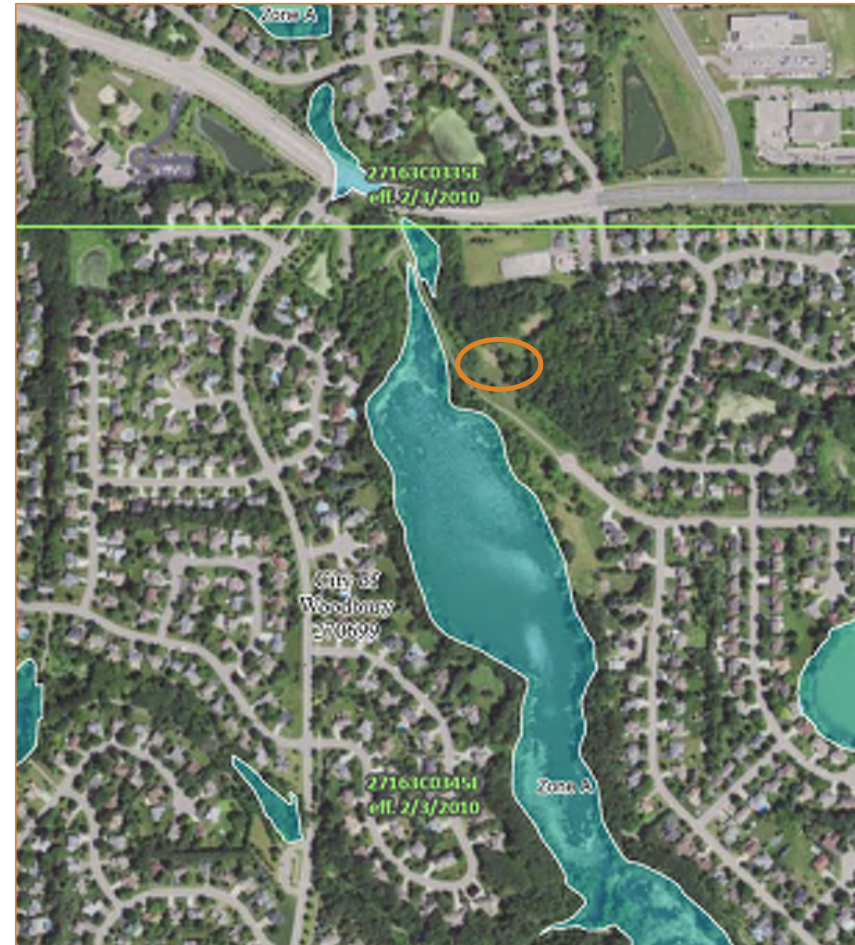
- Watershed area of 3,242 acres
- North Wilmes Lake is listed on Minnesota's 303d list as impaired for TP
- 2018 lake management plan set a TP reduction goal of 153 lbs/yr
- 2019 regional alternative analysis identified regional treatment facility



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# Background

Because we are at a floodplain conference....



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# Background

- Previous study considered alternative methods for achieving the desired TP reduction.
- Alum treatment was recommended
- 2020 HR Green alternatives analysis for implementing chemical treatment
- Treat 1-3 cfs of inflow resulting in expected removal rates of 95-283 lbs TP/yr

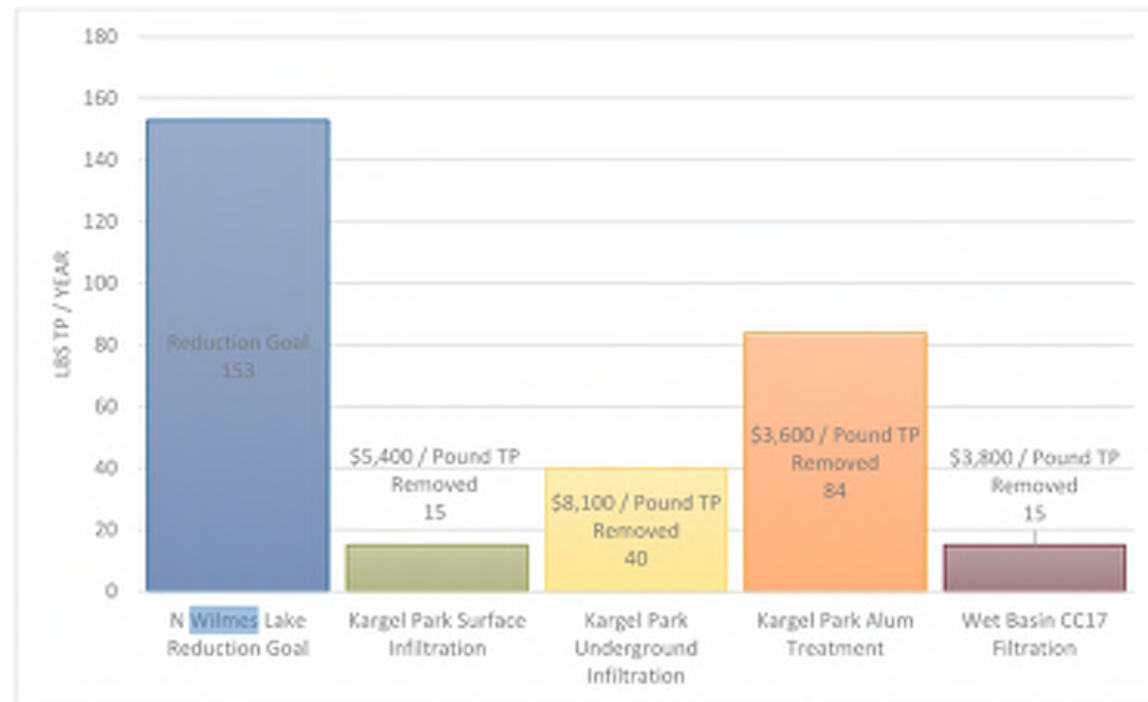


Figure 4: Kargel Park TP removal options compared to the North Wilmes Lake reduction goal

# Project Description

## Considerations:

- Ferric Chloride vs. Aluminum Sulfate
- Site layout
- Treatment facility with a lift station, forcemain and settling basin



# Project Description

How does it work?

- Coagulation
- Flocculation
- Sedimentation





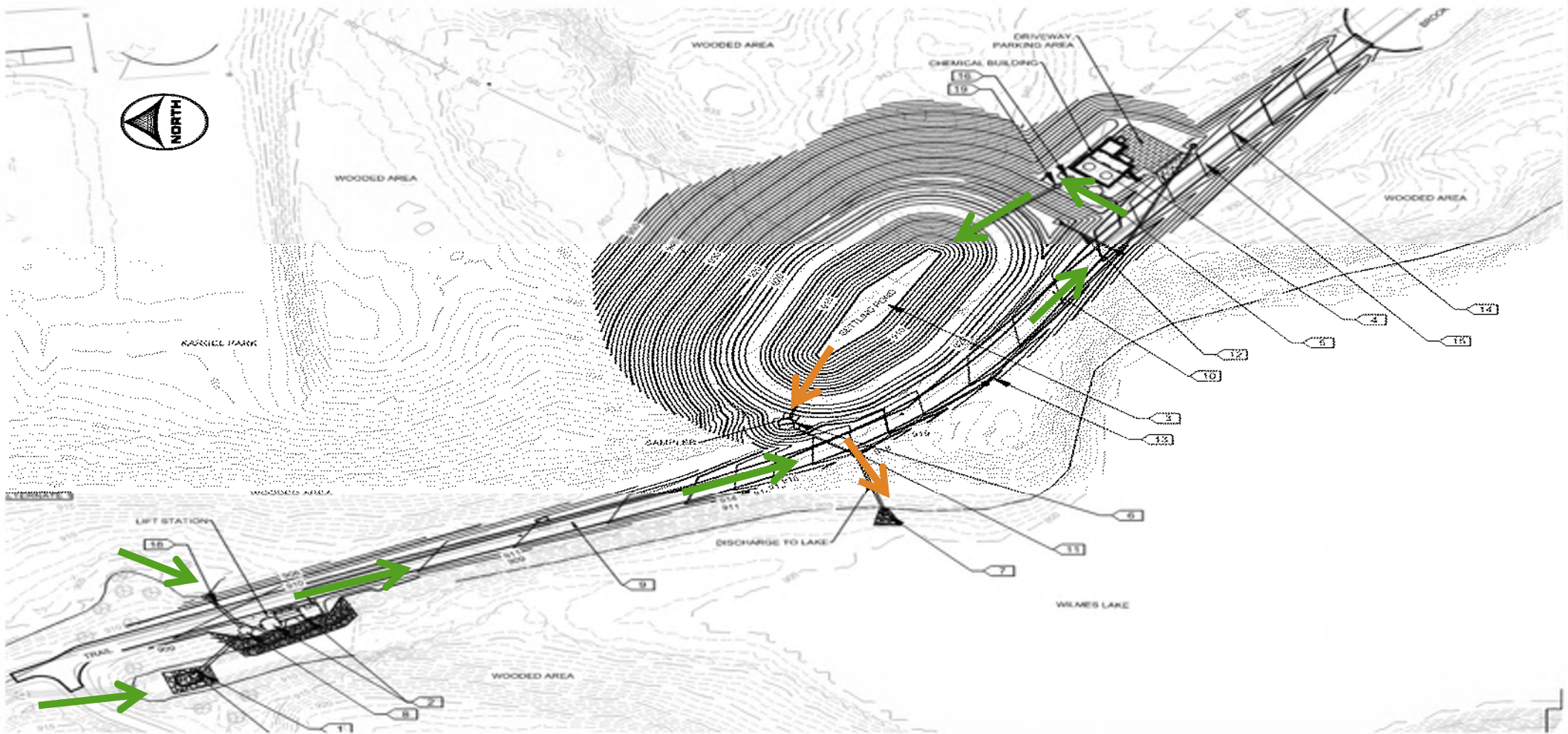
# Project Goals

- Improve water quality of Wilmes Lake
- Blend into park's natural setting
- Provide natural habitat
- Maintain pedestrian connectivity
- Partner with the City for operations and maintenance



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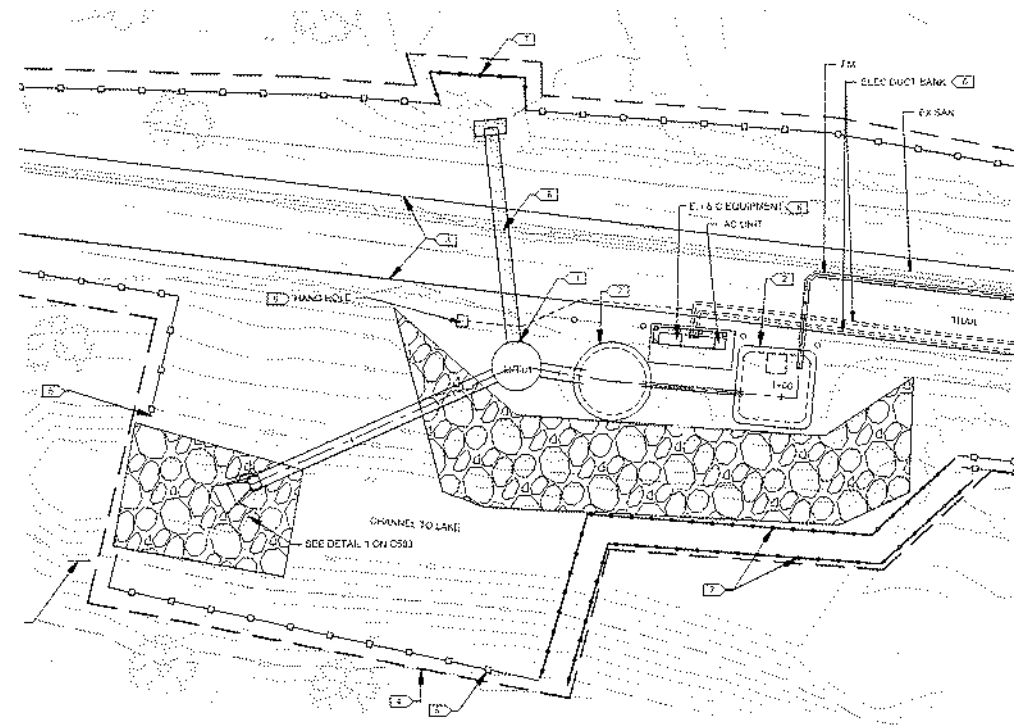
# Recommended Improvements



# Recommended Improvements

## Lift Station

- ▶ Triplex submersible station
- ▶ Each pump rated for 1cfs (448gpm)
- ▶ Median flow within channel: 1.3 cfs
- ▶ Mean flow with channel: 3.2cfs
- ▶ Flows monitored by SWWD
- ▶ SAFL Baffle installed upstream of pumps



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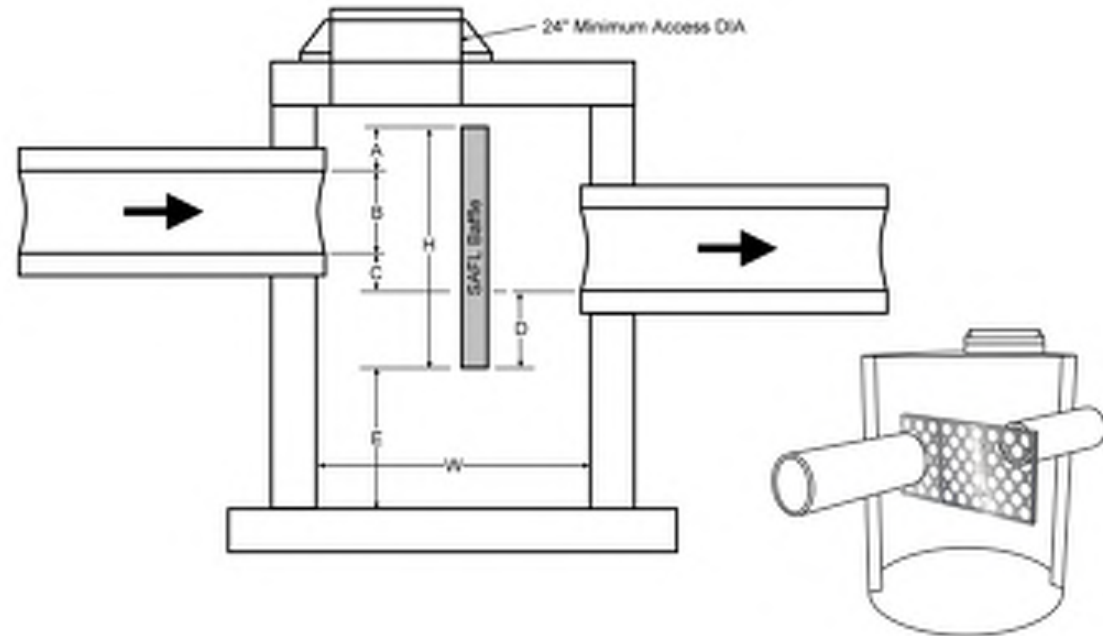


Photo Credit: Upstream Technologies

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# Recommended Improvements

## Settling Basin

- ▶ ~130,000 CF storage
- ▶ 37 hours detention time @ 1cfs
- ▶ 2' clay liner required



# Recommended Improvements

## Settling Basin

- ▶ Dredging will be required in the future
- ▶ Sludge to be monitored
- ▶ Public notices will be posted explaining the process





# Recommended Improvements

## Chemical Building

- ▶ Needed to be visually pleasing
- ▶ Blend into park setting
- ▶ Low lighting for wildlife
- ▶ Permeable pavement
- ▶ Non-reflective tin roof



# Recommended Improvements

## Chemical Building

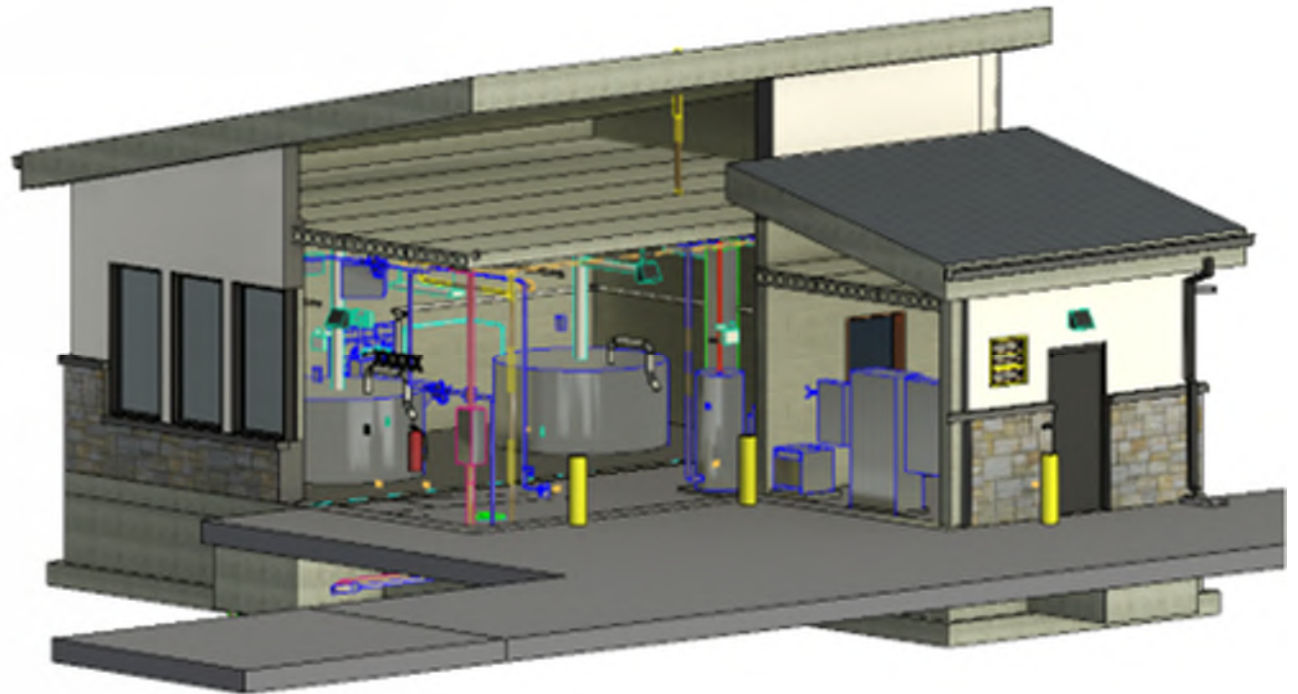
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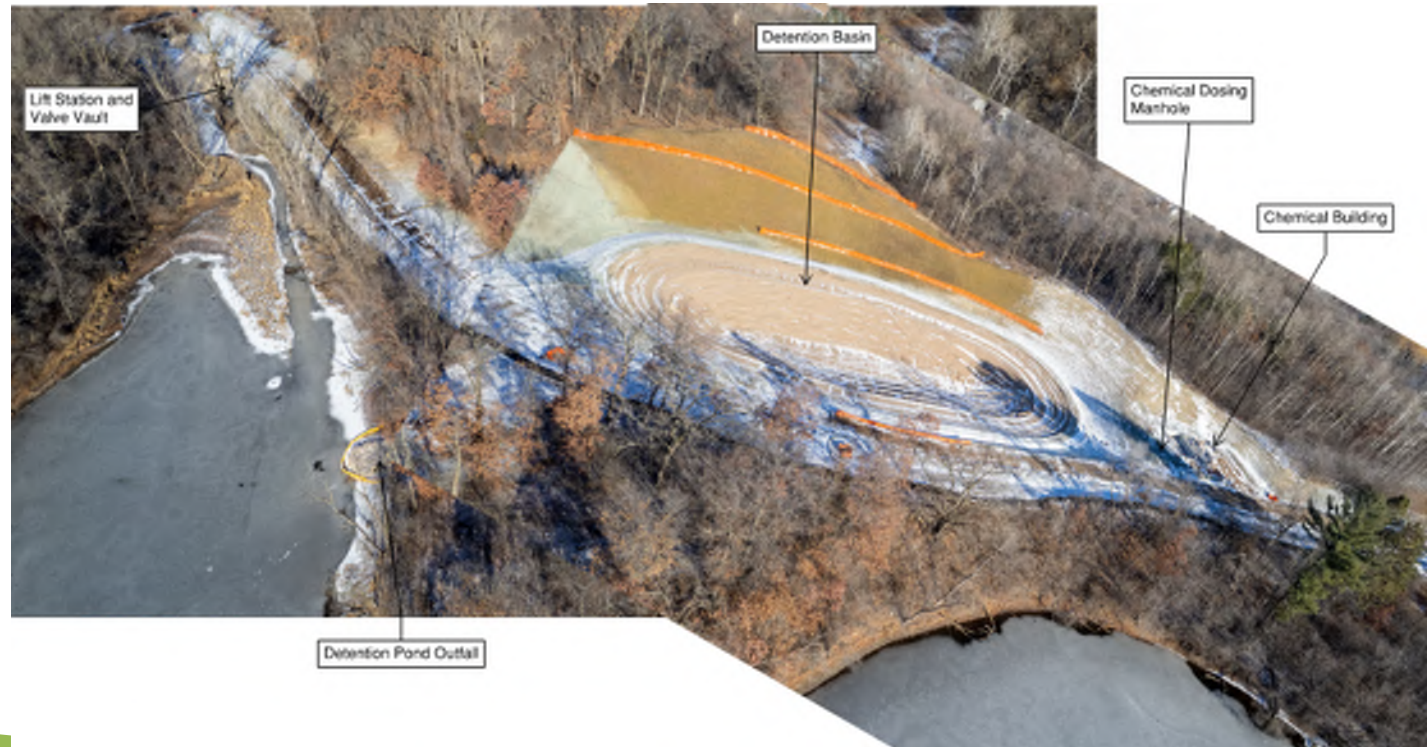
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# Construction Status

How are things going?

- ▶ Lift station constructed awaiting pump installation
- ▶ Basin grading complete
- ▶ Building foundation complete
- ▶ Storm sewer piping is in
- ▶ Landscaping to be completed in spring/summer 2024



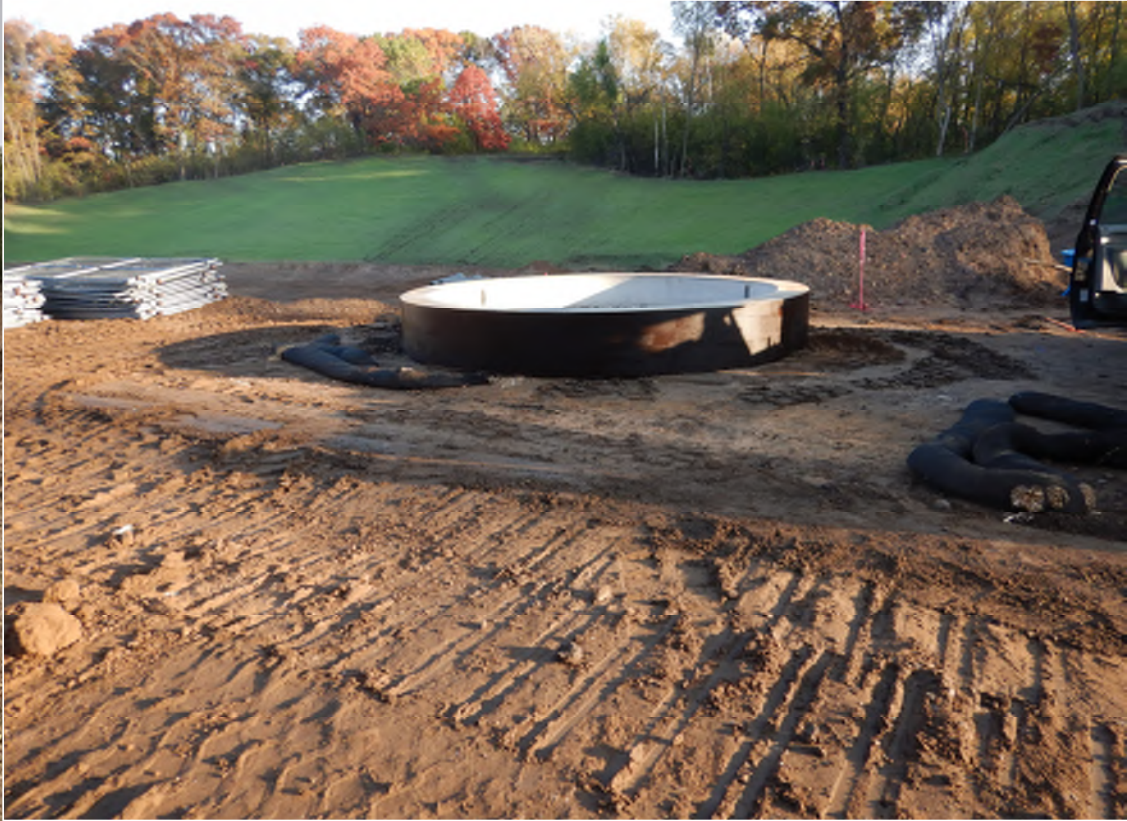
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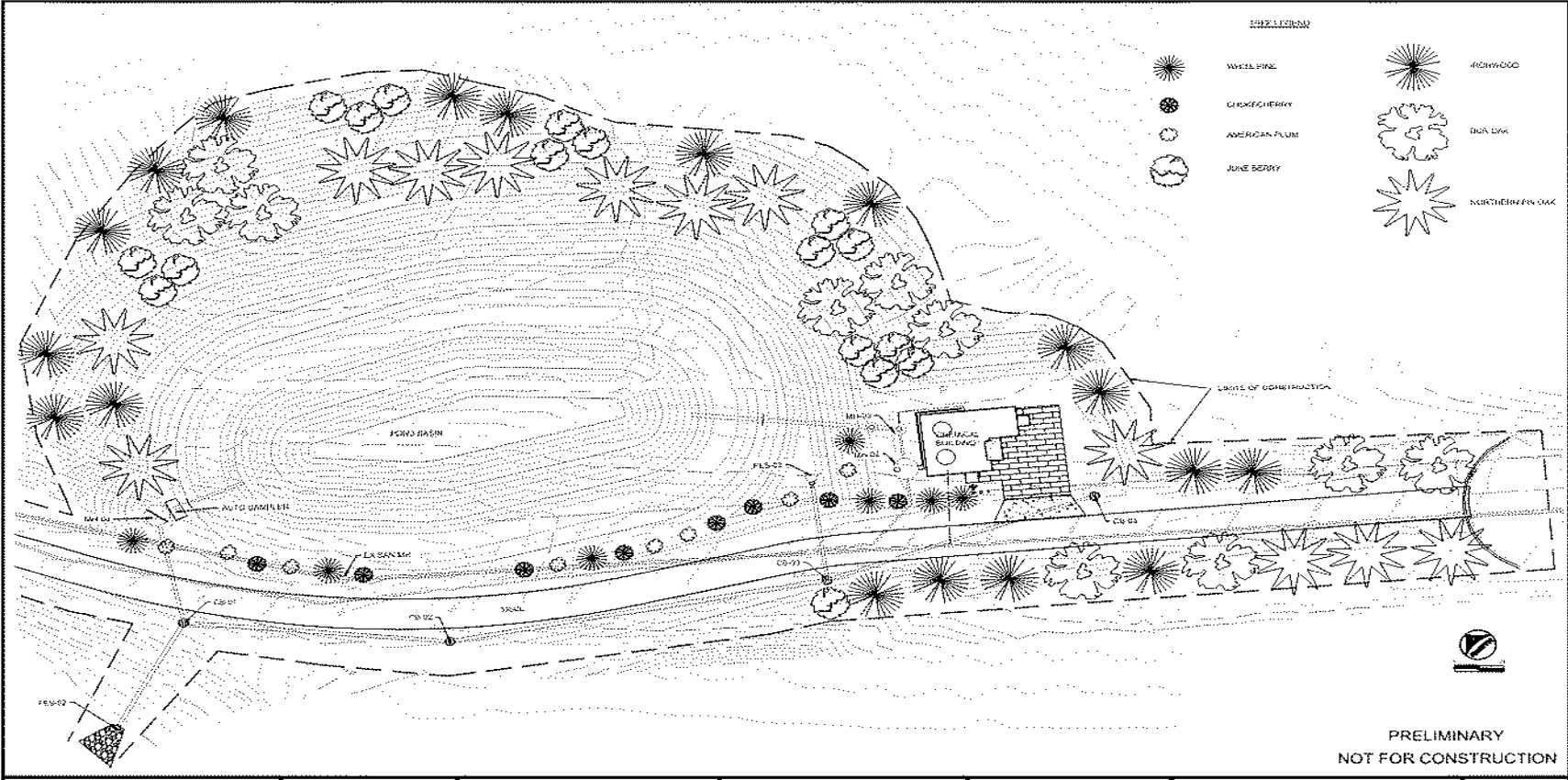
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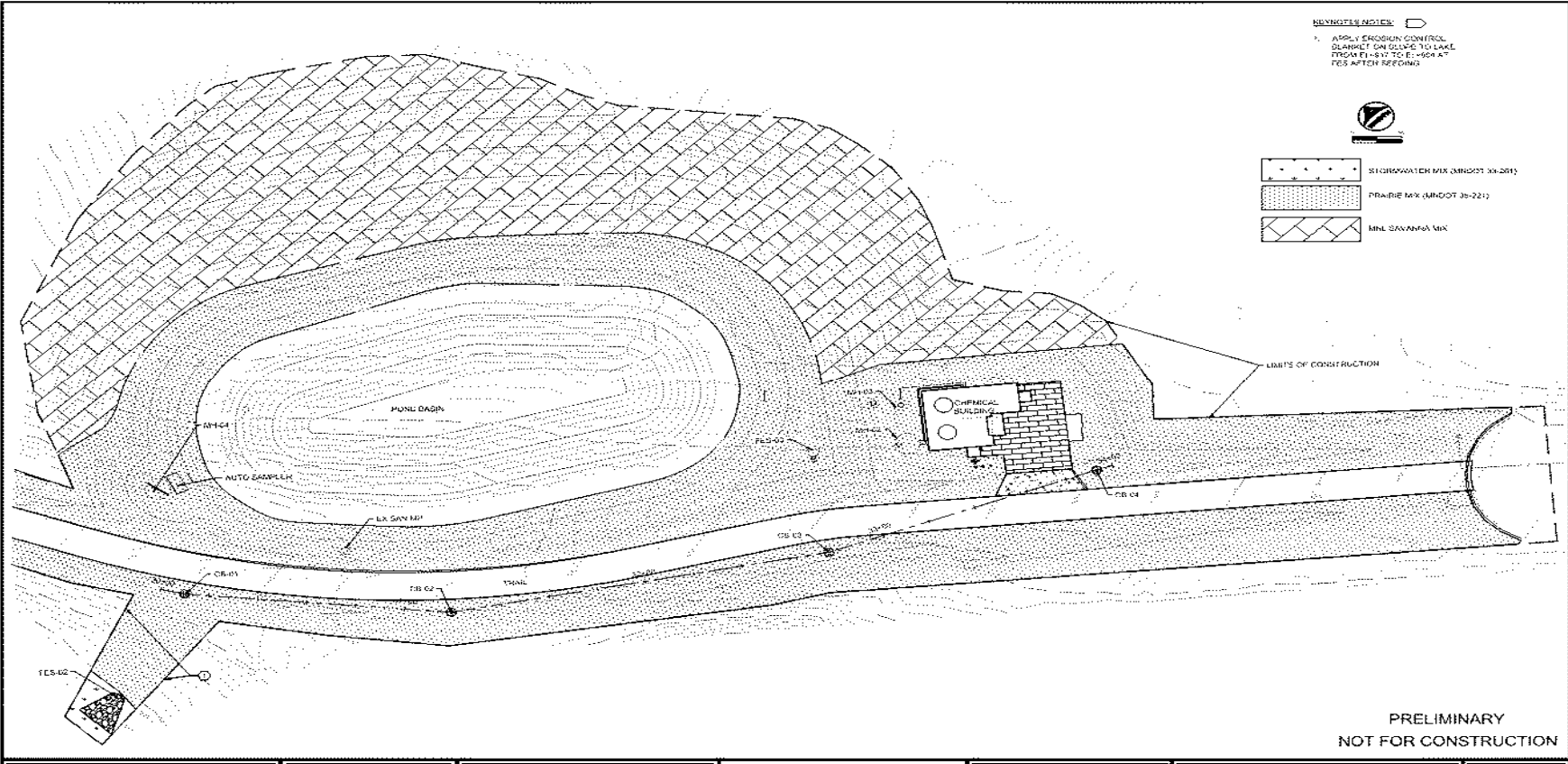
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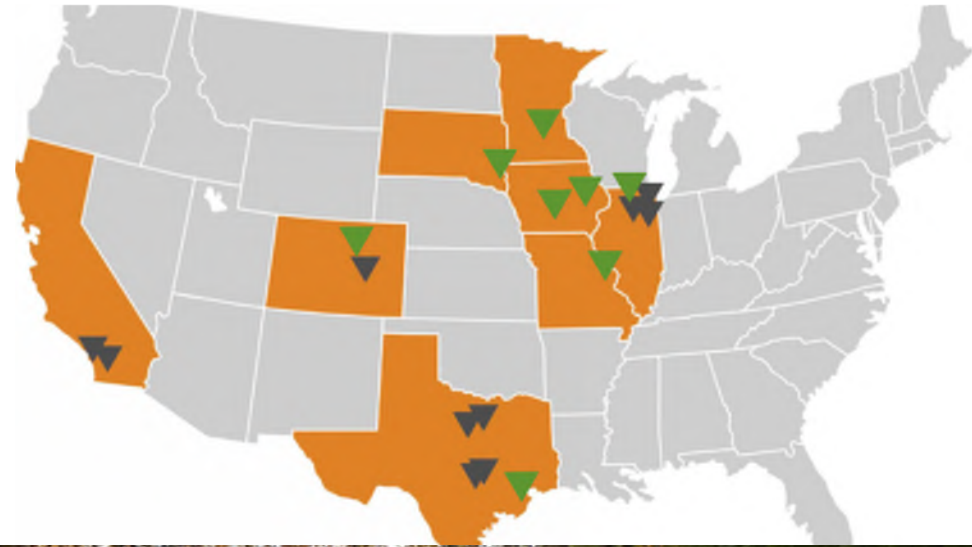
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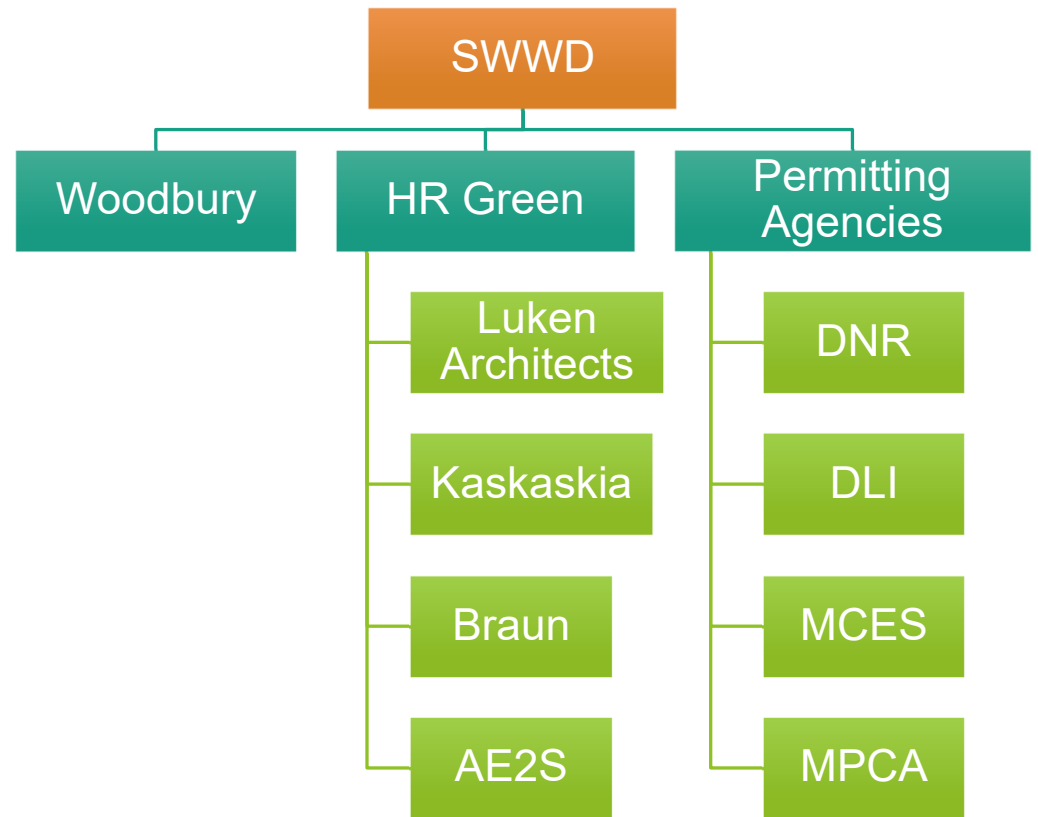
# Design Collaboration

Many disciplines:

- ▶ Water Resources
- ▶ Water-Wastewater
- ▶ Mechanical
- ▶ Structural
- ▶ Electrical
- ▶ Transportation
- ▶ Design Technicians
- ▶ GIS - Drone
- ▶ Construction Observation
- ▶ Instrumentation and Controls



# Design Collaboration



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# Questions



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