WSSCWATER
DELIVERING THE ESSENTIAL

Parkway Water Resource Recovery Facility

- **Electrical Upgrades – Progressive Design-Build**
- **Plant Water Upgrades – Construction**

Facility Design and Construction Division

Mark Coughlin, Section Manager
Venedra Whigham, Facility Construction Manager

October 10, 2024

Agenda

Parkway Water Resource Recovery Facility Overview

Electrical Upgrades – Progressive Design-Build

- Team Introductions
- Physical Scope
- Delivery Method
- Ideal Team

Plant Water Upgrades

- Team Introduction
- Overview
- Scope
- Challenges
- Ideal Team

Questions / Discussion

Parkway Water Resource Recovery Facility Overview

Parkway Water Resources Recovery Facility

Overview

- 10100 Canadian Way; Laurel MD, 20707
- Located near Intersection MD-295 and MD-197
- 7.5 Million Gallons per Day (MGD) facility originally constructed in 1959.
- Northern portions of facility are in current Federal Emergency Management Agency (FEMA) floodplain and subject to climate adjusted flood risks

Parkway Water Resources Recovery Facility

Project Overview

The Facility has undergone upgrades regularly since opening.

Electrical Upgrades

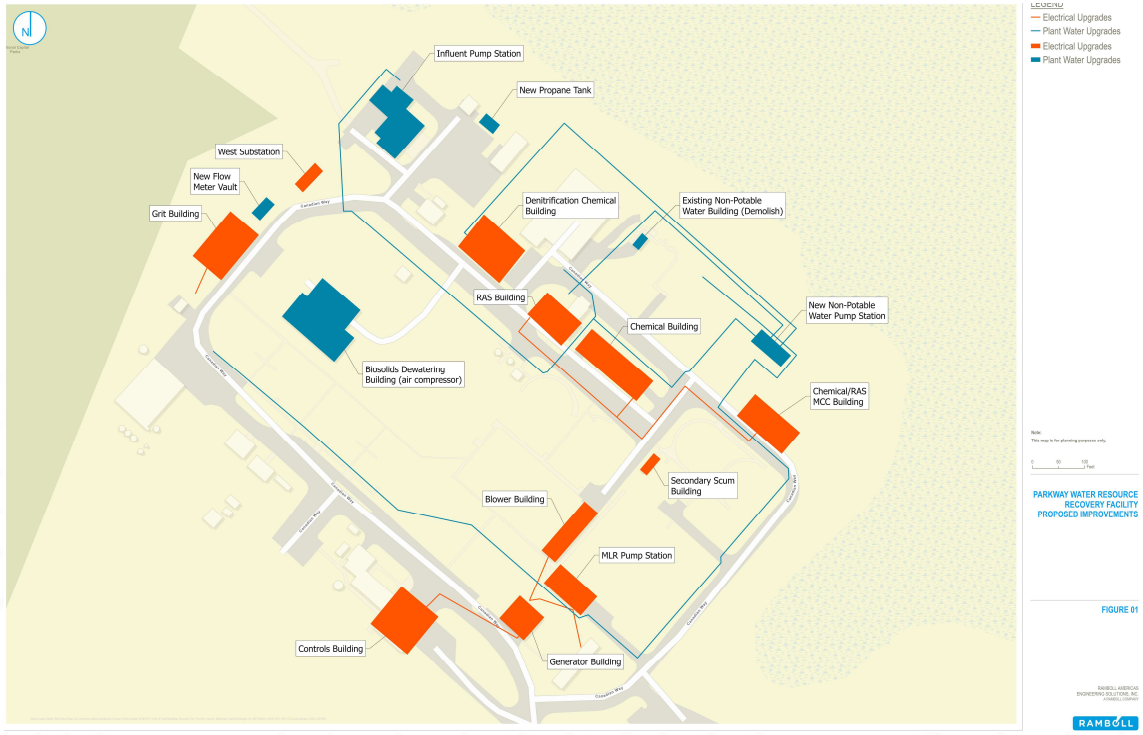
- 2MW diesel generator replaces 900kW
- Transformers, Switchgear, Motor Control Center
- Variable speed blowers replace constant speed blowers
- Mechanical Building Upgrades
- New Support Buildings
- Structural Improvements - Flooding

Plant Water Upgrades

- Influent Pump Station Upgrades
- New Non-Potable pump station
- New non-potable water network
- Structural Improvements – Flooding

Effluent Channel

- Bidding in 2027 +/-



Parkway Water Resources Recovery Facility

Project Overview

Patuxent River (Future) Floodplain Exposure

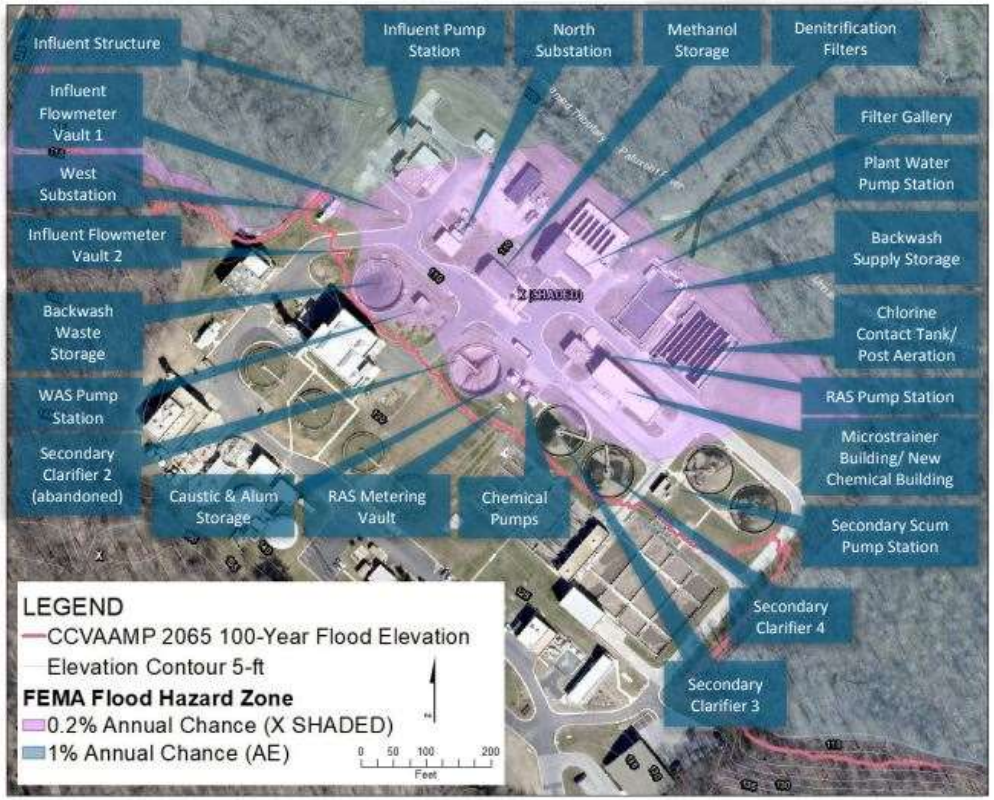


Figure 4-2. Floodplain at Parkway Wastewater Treatment Plant

FEMA flood hazard zone delineation from Prince George's County Flood Insurance Study (FEMA, 2016)

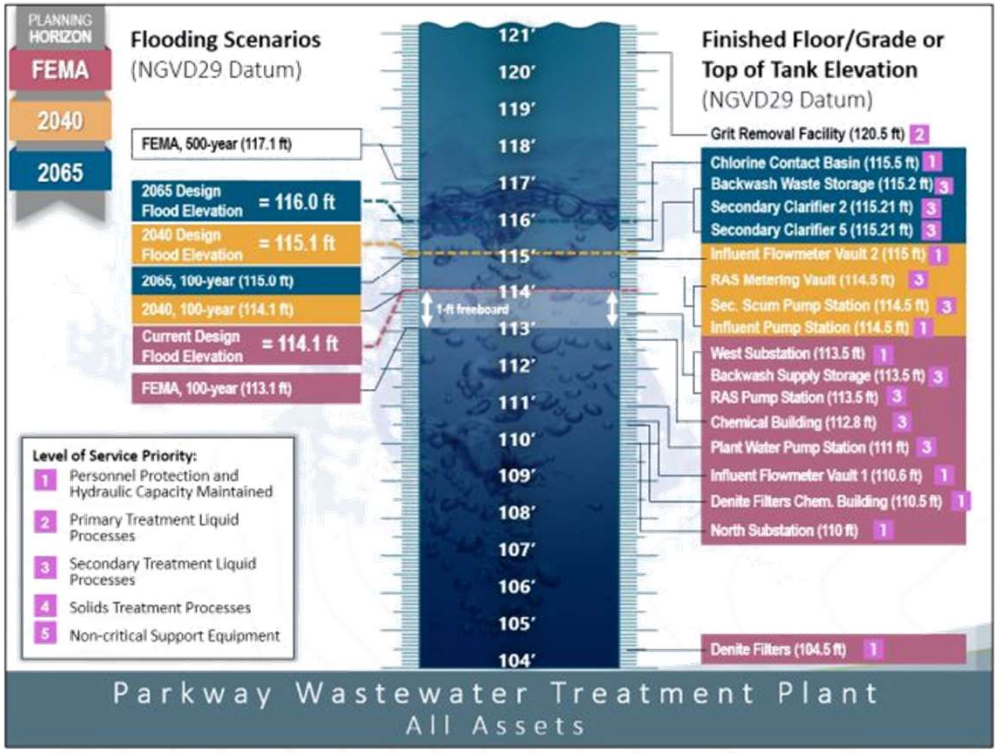


Figure 4-4. Buildings/Areas at Risk at Parkway Wastewater Treatment Plant

FEMA flood elevations from Prince George's County Flood Insurance Study (FEMA, 2016)

Parkway WRRF Electrical Upgrades Progressive Design-Build CD7296A22

Team Introductions

Washington Suburban Sanitary Commission

Facility Design and Construction Division

Mark Coughlin, Section Manager

Owner's Advisor (Ramboll)

Rachel Schwaab, Project Manager

John Kerrigan, Subject Matter Expert

Bob Dudley, Subject Matter Expert

Progressive Design-Builder

Prime

Designers

Other Subcontractors

Electrical Upgrades Progressive Design-Build
Physical Scope

Electrical (11 buildings)

- 2MW Generator and building upgrades from existing 900kW generator
- 7 Transformers
- Motor Control Centers (MCCs), variable frequency drives (VFDs), panels, building upgrades

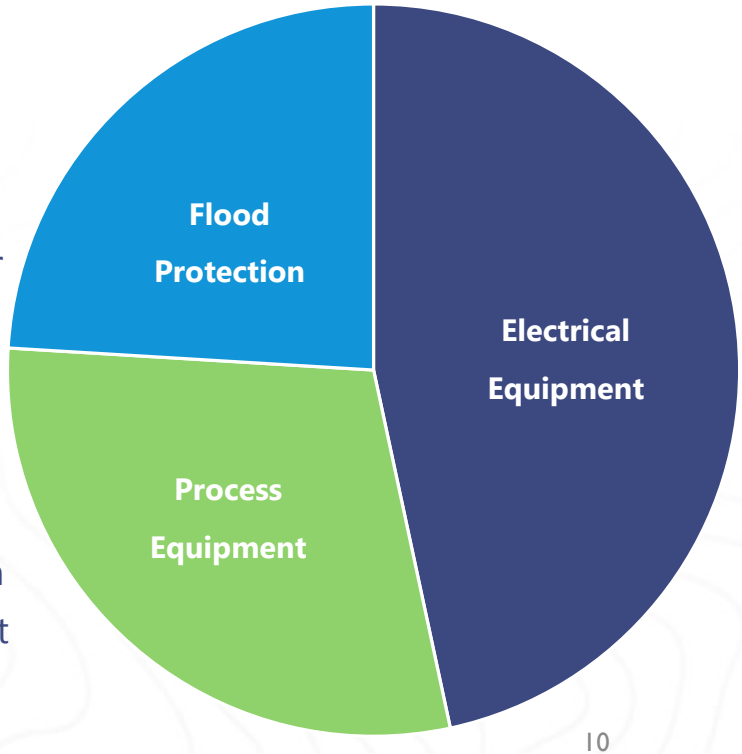
Mechanical

- Grit Building: Grit pumps, piping, valves and flushing connections
- Blower Building: Variable speed turbo blowers, associated piping
- Chemical Building: Processes and pumps
- Reactivated Sludge Pump Station: Sump pumps
- Denitrification Filter Building: Sump Pumps
- Mixed Liquor Building: Recycle pump motors
- Provide HVAC, Fire Protection for 11 buildings as necessary

Structural / Flood Protection (8 buildings)

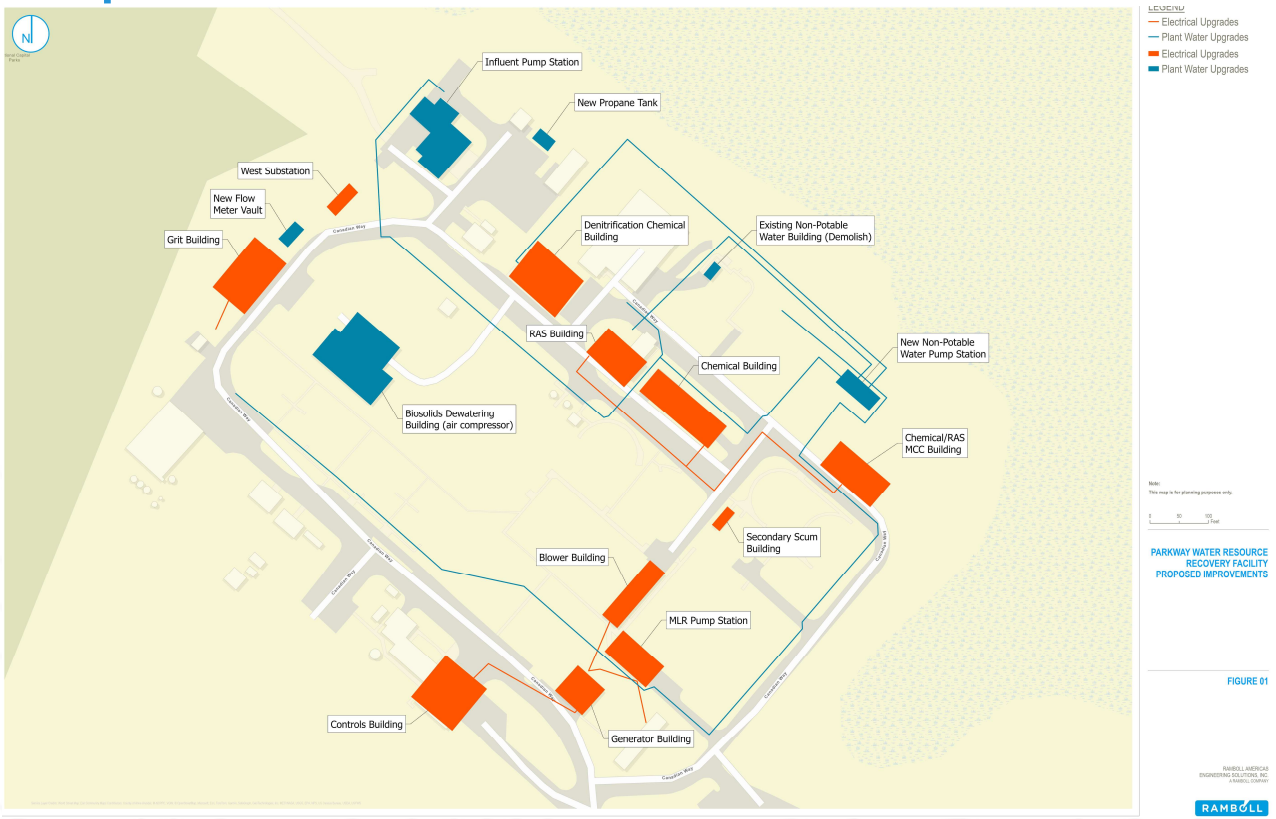
- New Electrical Building to house MCC's for Chemical Building and Reactivated Sludge Pump Station
- Dry- and Wet-Proofing to protect structures, equipment and speed recovery

Estimated Breakdown of Project Cost



Electrical Upgrades Progressive Design-Build

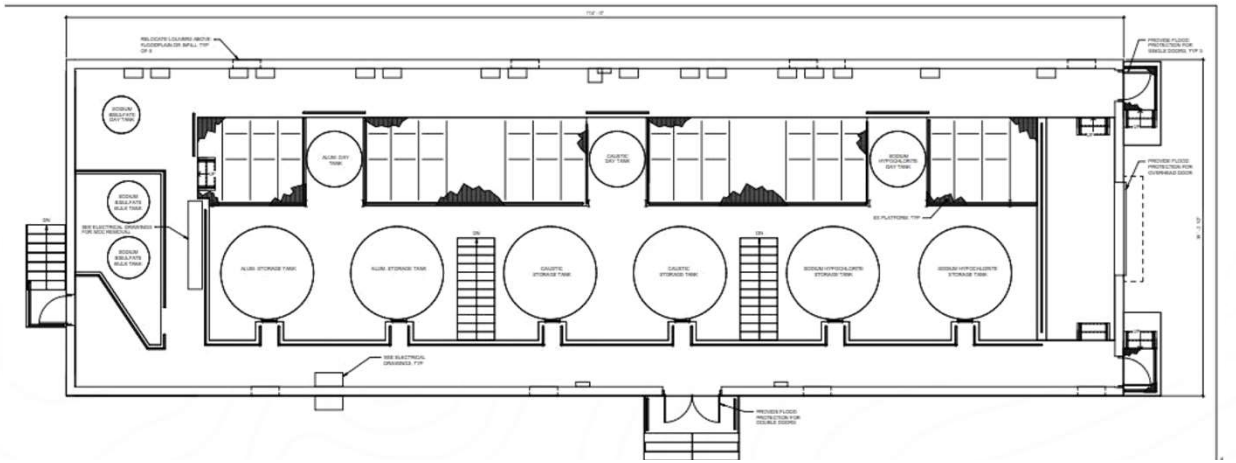
Physical Scope

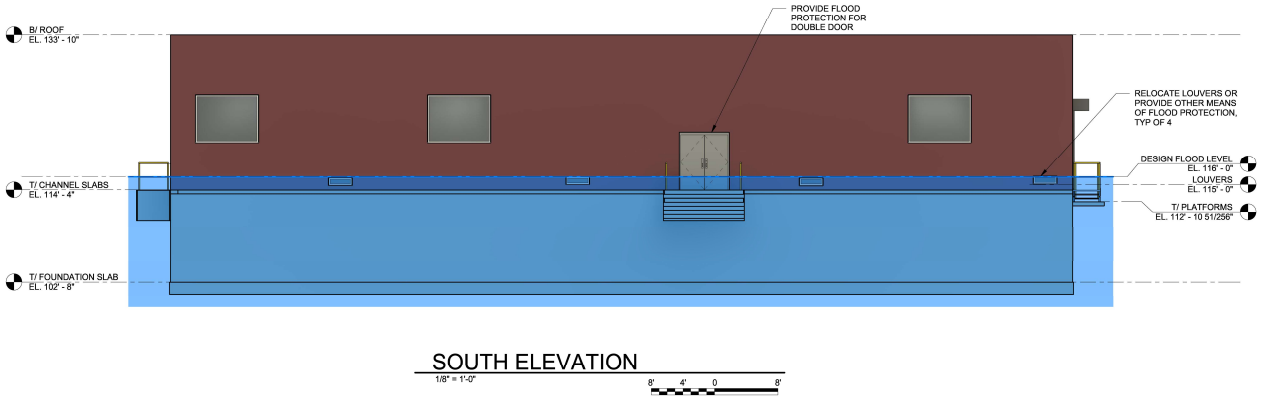


Electrical Upgrades Progressive Design-Build

Chemical Building

- Electrical replacement and relocation
- Process Mechanical upgrade
- Dry- and Wet-flood proofing including structural upgrades to optimize equipment protection and building recovery



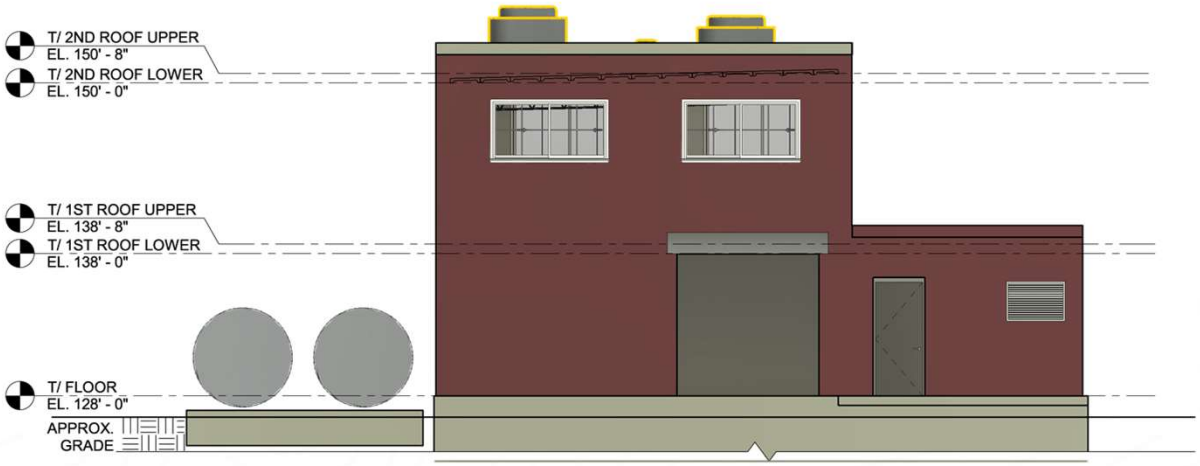


SOUTH ELEVATION
1/8" = 1'-0"
8' 4' 0 8'

Electrical Upgrades Progressive Design-Build

Generator Building

- Replace 900 kW generator with 2 MW diesel generator.
- Appurtenances for new generator.
- No floodproofing component.



SOUTH ELEVATION

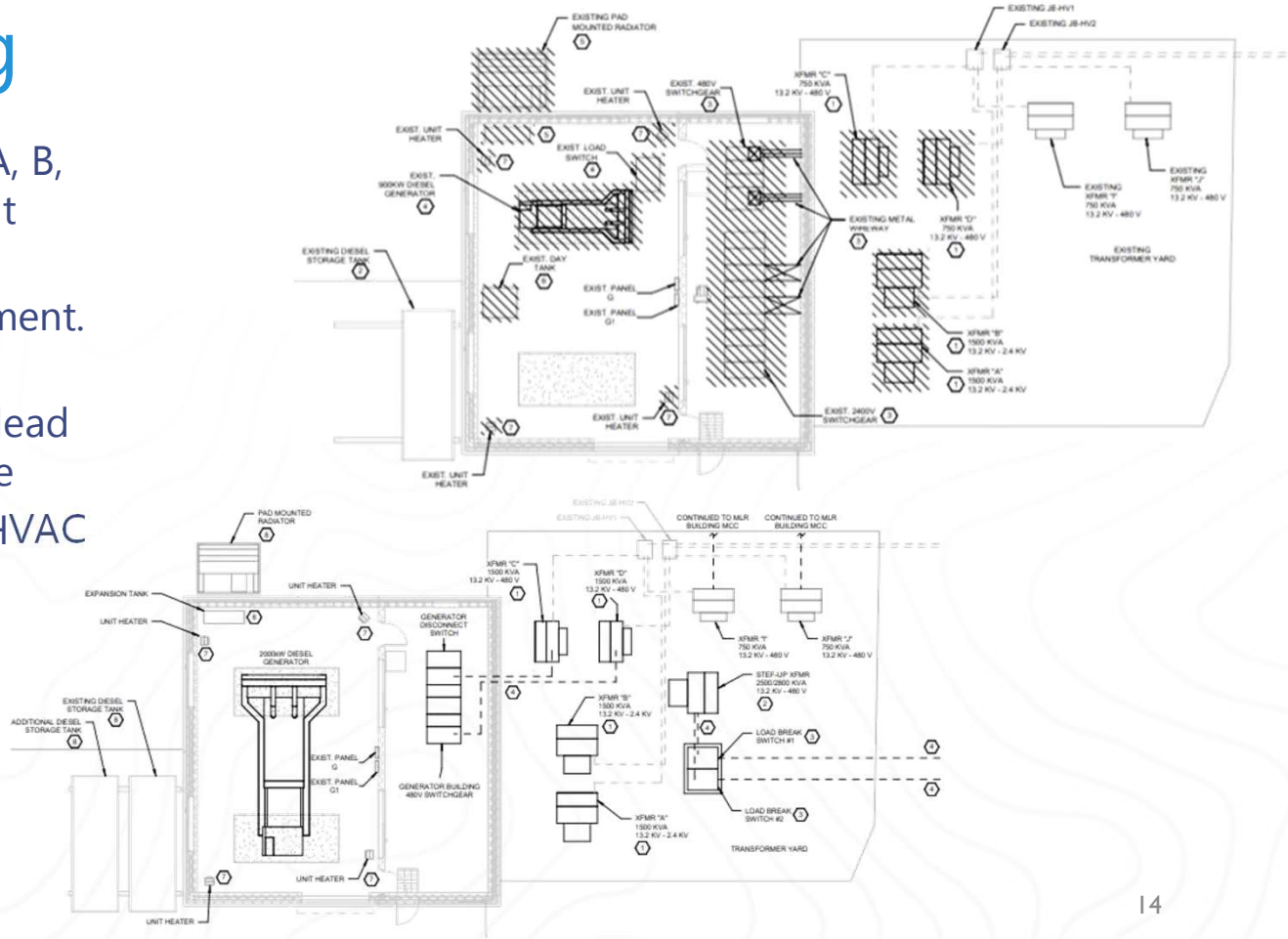
1/8" = 1'-0"

8' 4' 0 8'

Electrical Upgrades Progressive Design-Build

Generator Building

- Remove existing transformers A, B, C and D. Long lead replacement
- Remove ex. 480V & 2400V switchgear. Long lead replacement. Provide load break switches.
- Remove ex. 900kW gen. Long lead 480V, 2MW diesel gen. upgrade
- Remove ex. power controls & HVAC Upgrade
- Ex. diesel tank to remain. New second tank.
- Provide necessary conduits, appurtenances and controls



Electrical Upgrades Progressive Design-Build Delivery Method

WSSC Water Process

- 3rd Progressive Design Build / FDCD
- Engineers Joint Contract Documents Committee based contract documents.
- Owner's Advisor and WSSC Water team fresh from recent successes
- Contract milestones define the schedule in the Preliminary Phase
- Requires transparent estimates and contracting plans through Preliminary Phase

Project Demands

- Data gathering and study included in Preliminary Phase
- Integrate Design & Construction Methods
- Equipment with Long Lead times
- High Performing Collaborative Delivery Team

Design Disciplines

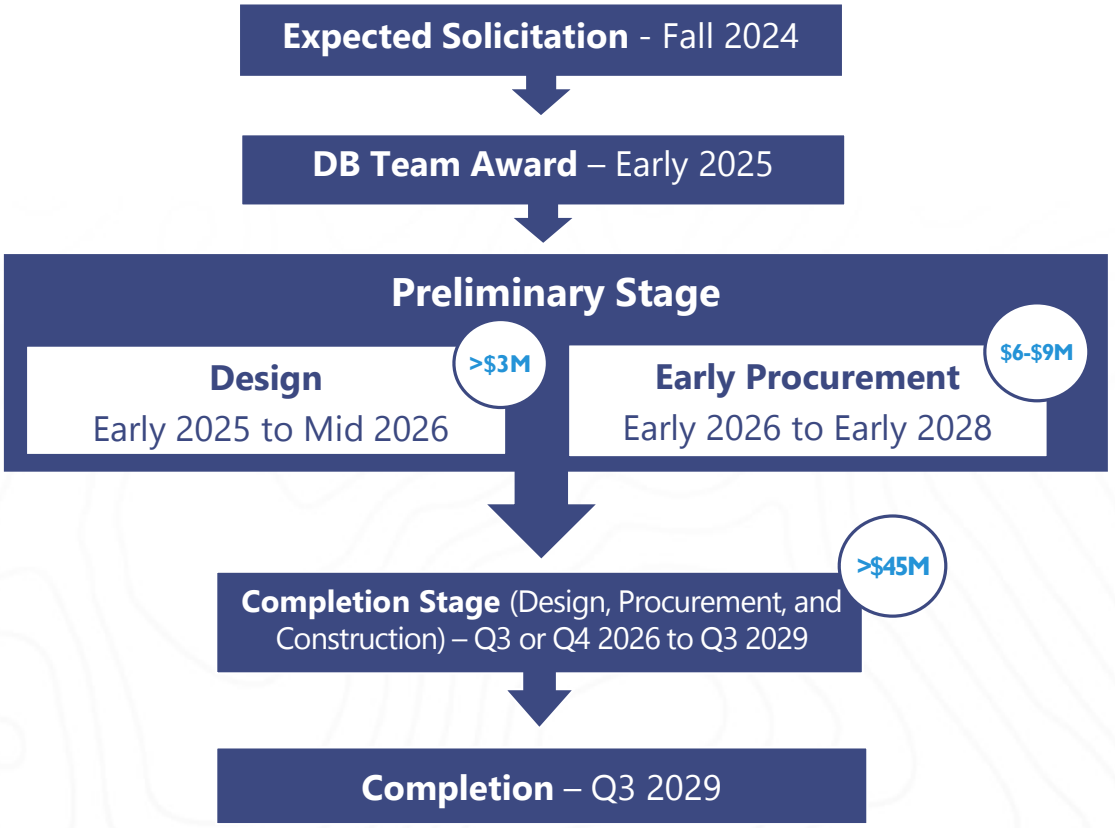
- Structural Design for building upgrades and flood protection
- Electrical Design
- Mechanical
- Instrumentation
- Architecture

Administrative Disciplines

- Progressive Design-Build Management
- Schedule and Cost Estimating
- State Revolving Fund Compliance, Davis-Bacon; American Iron and Steel; Buy America Build American

Electrical Upgrades Progressive Design-Build

Process & Schedule



Electrical Upgrades Progressive Design-Build

Ideal Team

Progressive Design-Builder

- Collaborative Delivery Projects in Water/Wastewater of comparable size
- Project Executive – experienced in collaborative delivery and Water/Wastewater
- Project Manager experienced in collaborative delivery and Water/Wastewater

Engineer of Record – Experienced with Collaborative Delivery

- Civil – Water Resources and Environmental
- Structural, Floodproofing
- Mechanical:
  - HVAC, Thermal & Fluid, Fire Protection
- Electrical and Computer:
  - Water/Wastewater industry, Major modifications to existing plant, electrical upgrades > $3 Million
  - Power Generation & Distribution Electrical Instrumentation & Controls
- Maryland Licensed Architect

Superintendent

- Water and Wastewater/Electrical Component/Relevant Size

Administrative Support

- Scheduling, Cost Estimating
- State Revolving Funding Compliance

Parkway WRRF Plant Water Upgrades - Construction Contract CD7297A22

Team Introductions

Washington Suburban Sanitary Commission

Facility Design and Construction Division

Venedra Whigham, Facility Construction Manager

(Buyer), Procurement Office

Engineer of Record (Mott MacDonald)

Kelly Baxter, P.E., Practice Leader
Water & Wastewater Treatment

General Contractor

Prime

Subcontractors

Plant Water Upgrades Construction
Project Overview

The Influent Pumping Station and the Plant Water Network were updated in the 1990s.

This project would provide upgrades to several areas on the Parkway Facility including:

- Influent Pumping Station
- Plant Water Distribution Network
- Plant water Pumping Station
- Air compressor in Biosolids building

Plant Water Upgrades Construction
Physical Scope

Rehabilitation of existing influent pump station

- Removal and replacement of existing pumps
- Structural reinforcements, Flood mitigation

Installation of new flow meter

- Construct new meter vault
- Install metering instrumentation, piping

Non-potable plant water building

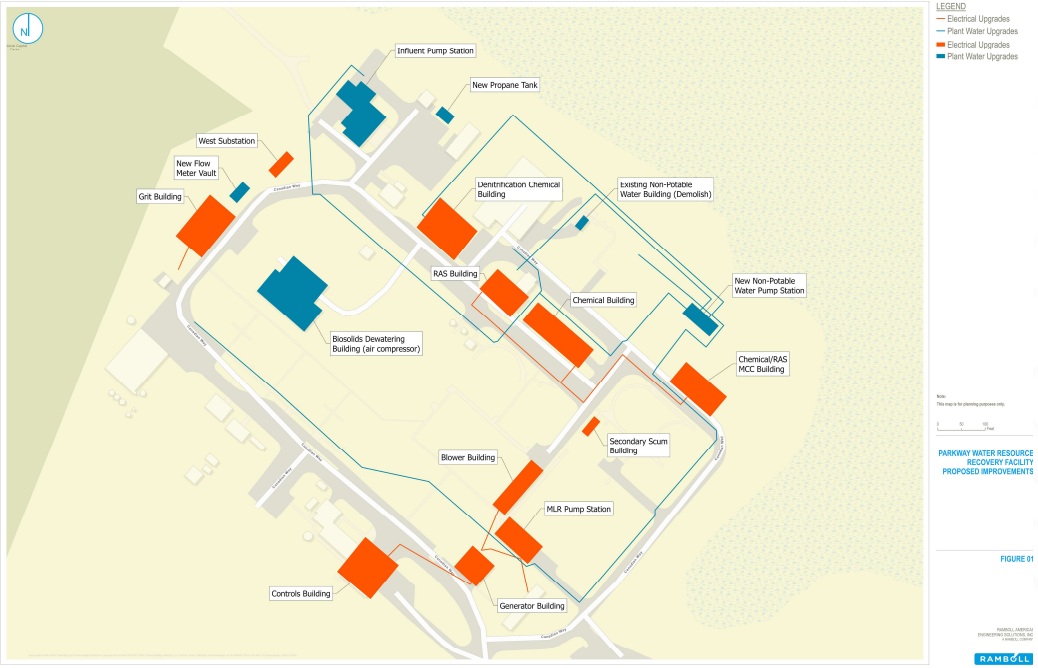
- Construct new plant water building
- Install new pumps and appurtenances
- Demolition of existing obsolete structure

On-site system piping networks

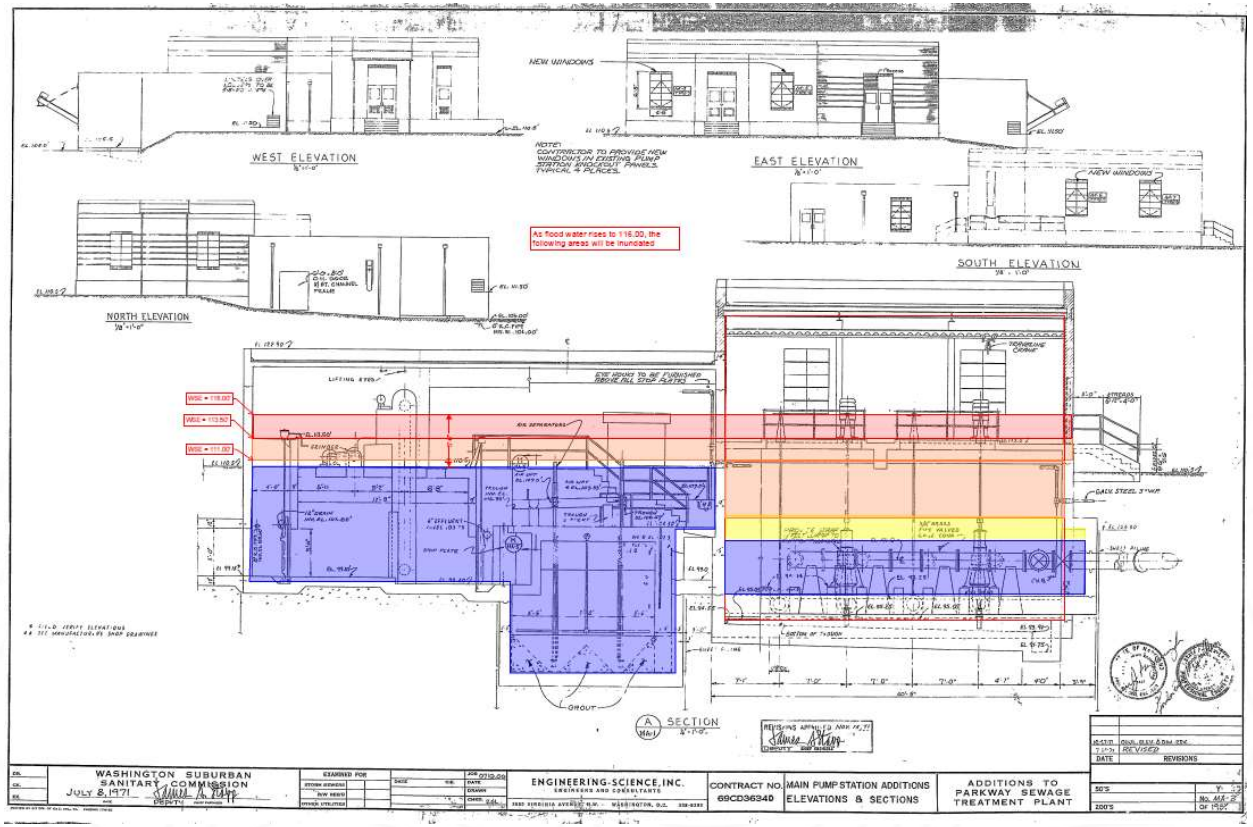
- Upgrade ex. non-potable water network
- Installation/upgrades of electrical conduits

Compressor in biosolids building:

- Install new air compressor



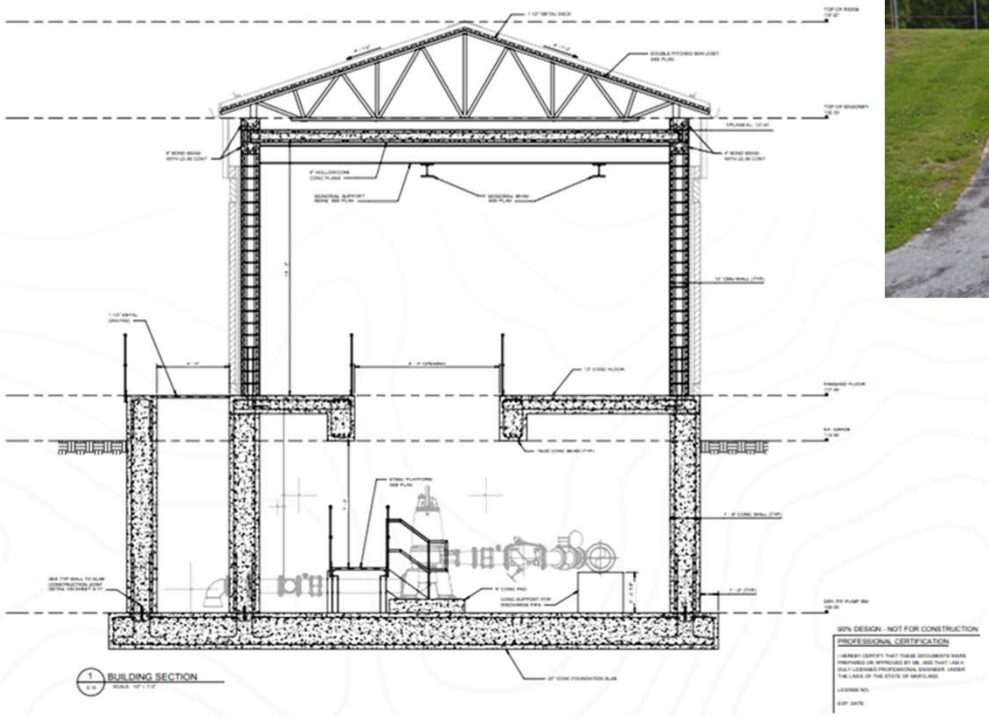
Plant Water Upgrades Construction
Influent Pump Station



- Pumps
- Structural – New pumping scheme
- Structural – Flood protection
- Dry- and wet-floodproofing
- Architectural Upgrades

Plant Water Upgrades Construction
Non-Potable Pump Station

- Demolish Existing Pump Station
- Construct New Pump Station



Plant Water Upgrades Construction Challenges

- Maintenance of Plant Operations
  - Bypass pumping for out of service systems
  - Flow to the various unit processes, equipment and tanks must be maintained during construction
- Site traffic management and mobilization needs
- Safe boundaries for construction work
- Unexpected subsurface conditions

Plant Water Upgrades Construction
Ideal Team

Construction General Contractor

- Wastewater Plant Upgrades including mechanical and electrical
- Project Manager, Project Engineer, Superintendent

Specialty Disciplines (Subcontracted or Internal)

- Site Civil
- Structural Concrete
- Flood Control
- Electrician
- Process Mechanical
- HVAC Mechanical
- Instrumentation/Controls

Administrative Support

- Scheduling, Cost Estimating
- State Revolving Funding Compliance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Questions?

Submit your questions to **supplierdiversity@wsscwater.com**

For event presentations and sign in sheets, visit www.wsscwater.com/work-us/procurement/outreach-events

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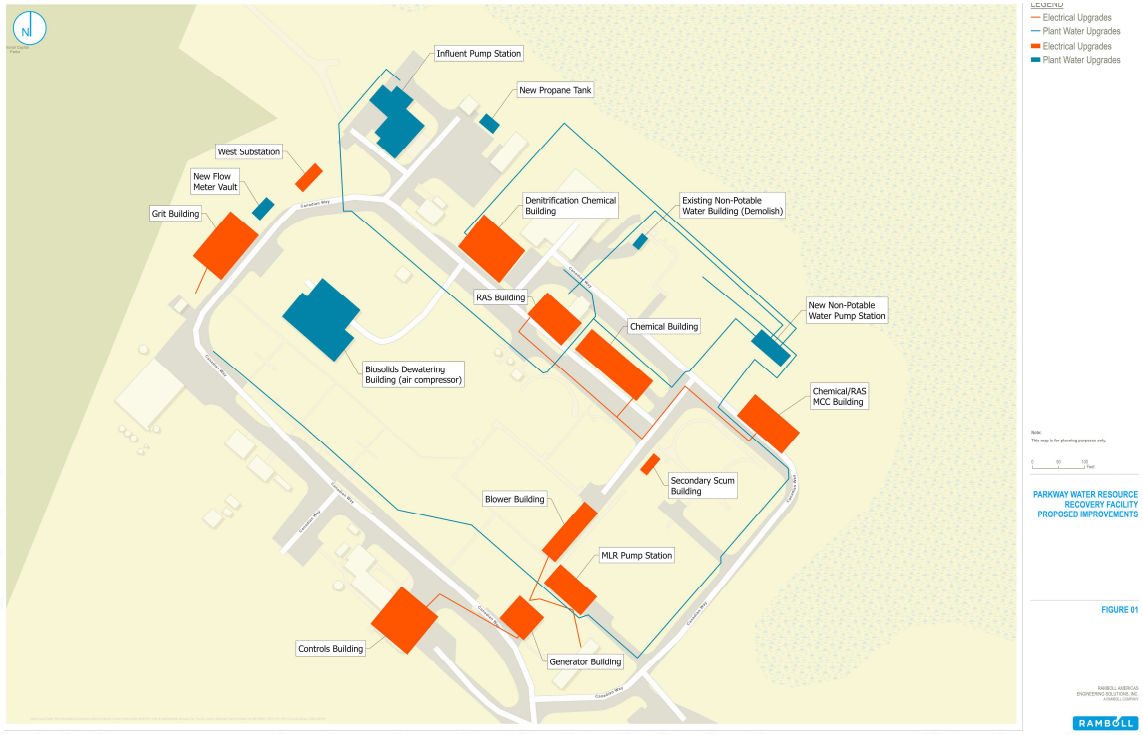

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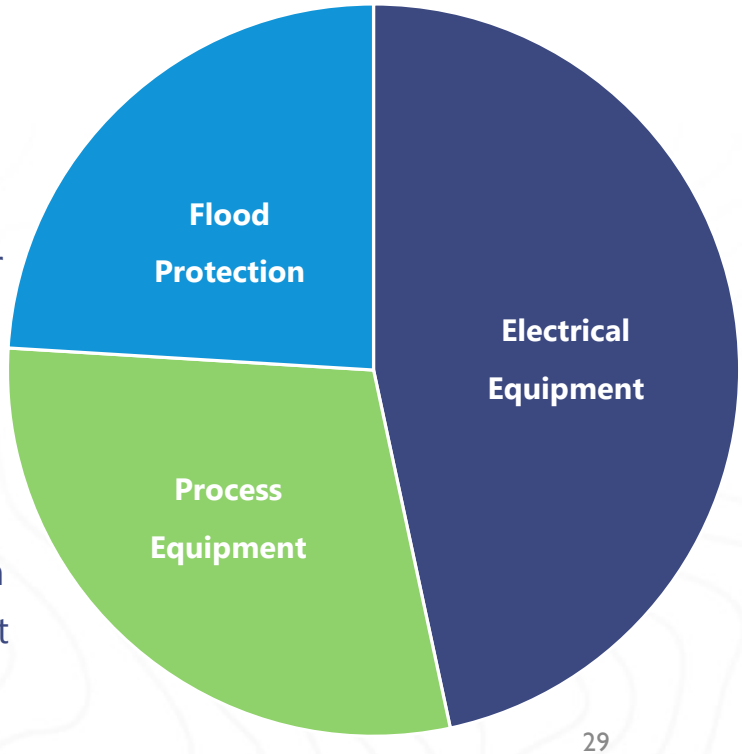

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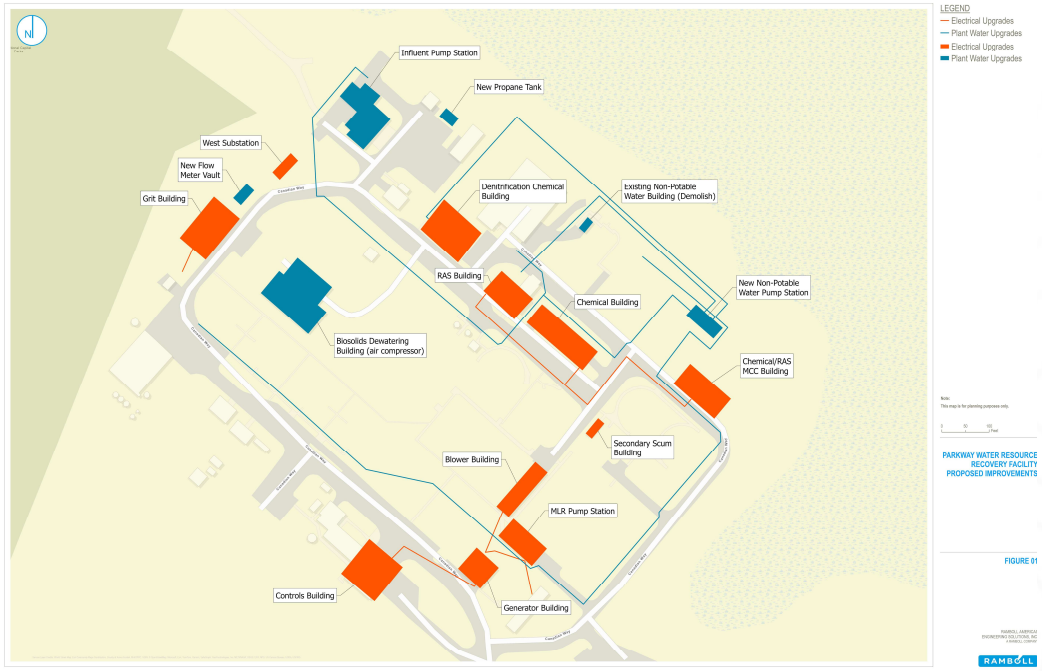

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