

February 20, 2026

Building Momentum

5380 Eisenhower Ave | Alexandria, VA 22304

February 21, 2026

AlexRenew Environmental Center

1800 Limerick Street | Alexandria, VA 22314



BOARD RETREAT AGENDA

INTRODUCTION

The 2026 Board of Directors Retreat will provide a “preview” of the RiverRenew system as the project nears completion. The major goals of the retreat are to:

- Support effective governance by building camaraderie between Board members
- Understand operations and maintenance needs related to the new RiverRenew assets
- Gain insights about staff readiness and operations from municipalities with similar deep tunnel systems
- Learn more about the RiverRenew pumping facilities and steps necessary to prepare for operations

BOARD OF DIRECTORS

John Hill, Chair
James Beall, Vice Chair
Rebecca Hammer, Sec’y-Treas
Mark Jinks
Moussa Wone

CHIEF EXECUTIVE OFFICER

Justin Carl, PE

GENERAL COUNSEL

Amanda Waters

Friday, February 20, 2026

RETREAT DAY 1

Building Momentum | 5380 Eisenhower Ave

12:00 p.m. **Lunch and Board Icebreaker**

12:30 p.m. **CliftonStrengths Session**

3:00 p.m. **Viking Skeeball**
Teams will work together to build catapults that fling beanbags to gain points in an attempt to best AlexRenew staff’s scores from February 2025! Staff’s top score is 124 points.

5:00 p.m. **Wrap-Up and Adjourn**



Saturday, February 21, 2026

RETREAT DAY 2

Ed Semonian Board Room | Room 600 | AlexRenew - 1800 Limerick Street

8:00 a.m.

Continental Breakfast

8:30 a.m.

Welcome and Introductions

Justin Carl | AlexRenew General Manager and CEO

RiverRenew Operational Overview

Ryan Payne | RiverRenew Program Manager

Priyanka Saha | RiverRenew Civil Engineer

9:30 a.m.

Break

9:40 a.m.

DC Clean Rivers: Lessons Learned After 8 Years of Operations

Nick Passarelli | Vice President, Wastewater Operations – DC Water

John Cassidy | Program Manager – DC Clean Rivers

10:45 a.m.

Project Clean Lake: Operational Readiness Lessons Learned

Rick Vincent | Senior Advisor – Schnabel Engineering

11:30 a.m.

Lunch

12:00 p.m.

RiverRenew Pumping Station Operations – A Deep Dive

Ed Cronin | RiverRenew Senior Technical Advisor

1:00 p.m.

Safety Briefing

Rich Taylor | Project Manager – Traylor-Shea, Joint Venture

1:15 p.m.

RiverRenew Pumping Station Tour

3:00 p.m.

Wrap-Up and Adjourn



2026 BOARD OF DIRECTORS RETREAT

This meeting is open to the public. If you need an interpreter, translator, materials in alternate formats, or other accommodations to access this service, activity, or program, please contact Lorna Huff, Board Executive Assistant, at (703) 721-3500 ext. 2260 or lorna.huff@alexrenew.com at least three business days prior to the meeting.

Tour participants are required to wear full personal protective equipment, which includes long pants, safety toe shoes, a reflective vest, and a safety helmet. Only those over the age of 18 may participate in the tour.



AlexRenew

RIVERRENEW OPERATIONAL OVERVIEW

BOARD OF DIRECTORS RETREAT | FEBRUARY 21, 2026

DRAFT

Today's Presenters



Ryan Payne
RiverRenew
Program Manager



Priyanka Saha
RiverRenew
Civil Engineer



Ed Cronin
RiverRenew
Program Advisor



Nick Passarelli
Vice President, Wastewater
Operations



John Cassidy
DC Clean Rivers
Program Manager



Rick Vincent
RiverRenew
Program Advisor

RiverRenew Team

DC Water Team

**Representing
NEORS**

Presentation Overview



01 RiverRenew Background

The journey to RiverRenew

02 How RiverRenew Works

How does the system capture CSO and operate?

03 From Construction to Operations

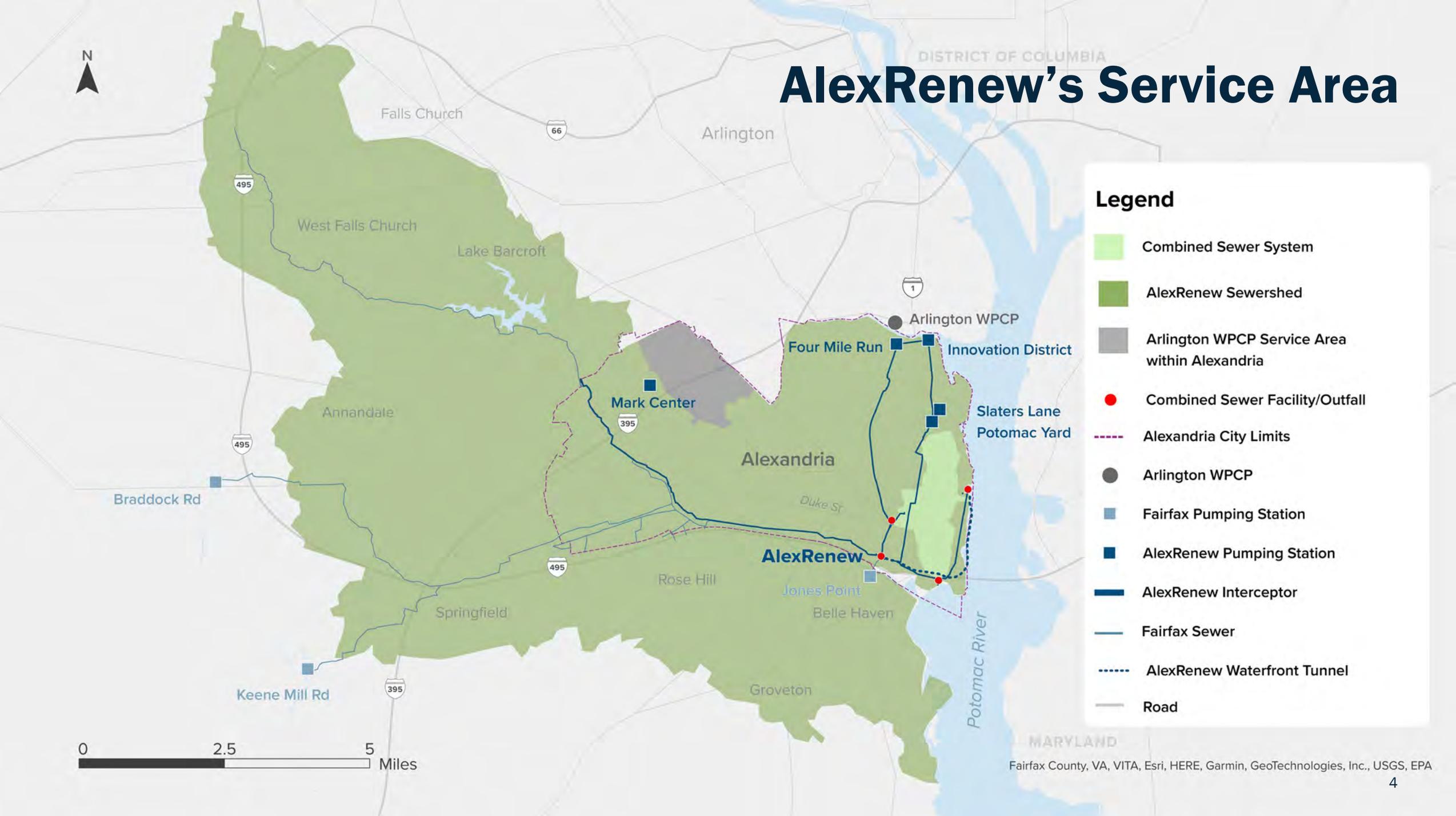
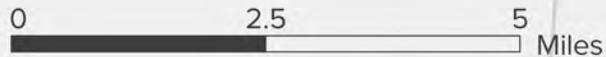
Getting organizationally ready

AlexRenew's Service Area



Legend

- Combined Sewer System
- AlexRenew Sewershed
- Arlington WPCP Service Area within Alexandria
- Combined Sewer Facility/Outfall
- Alexandria City Limits
- Arlington WPCP
- Fairfax Pumping Station
- AlexRenew Pumping Station
- AlexRenew Interceptor
- Fairfax Sewer
- AlexRenew Waterfront Tunnel
- Road



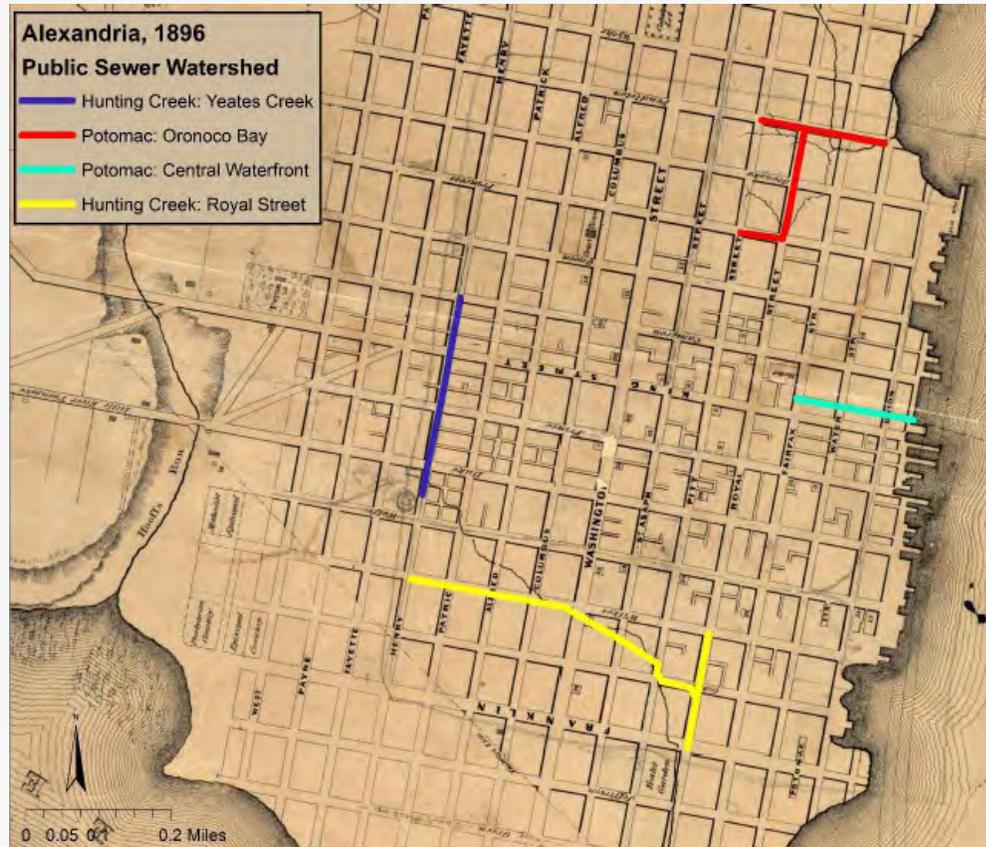


Mansion House at North Fairfax and Cameron Streets circa 1860

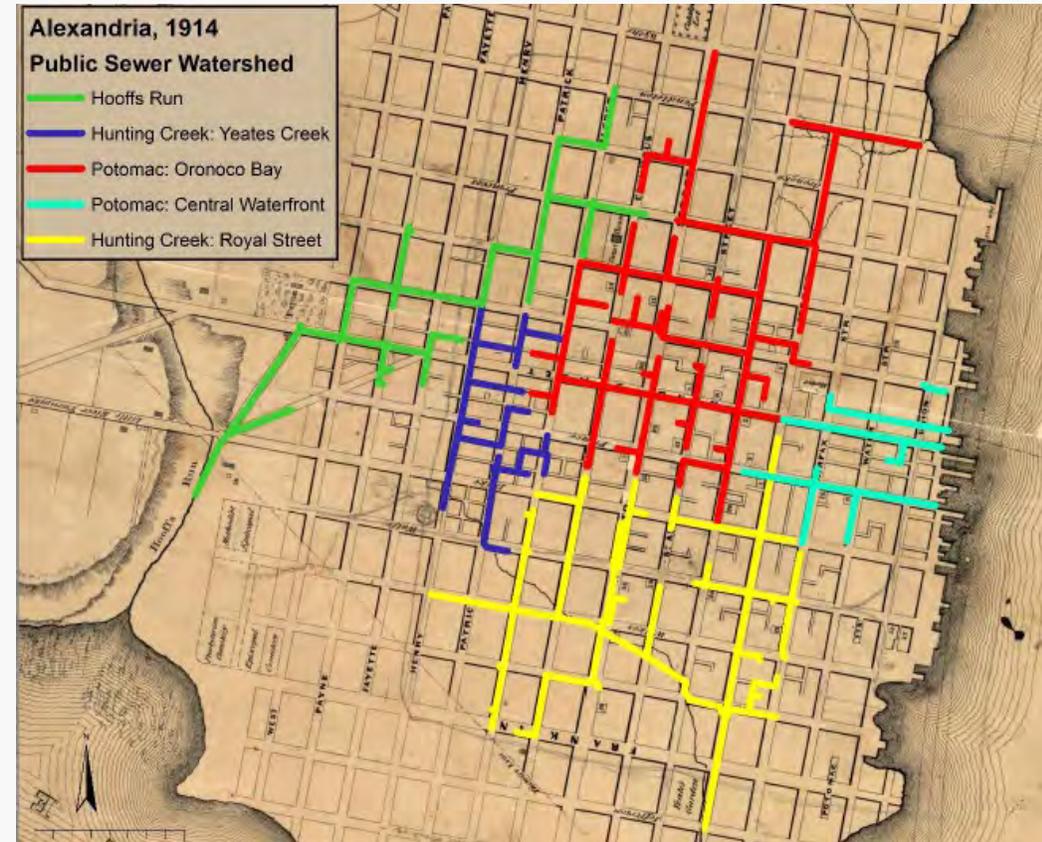
Source: Library of Congress,
Mansion House looking south along
North Fairfax Street (1860)

Alexandria's Early Sewer System

As Alexandria developed in the late 18th and early 19th centuries, a sewer system was needed to manage human health in the city, which was becoming densely populated.



1896



1914

Late 1940s: Call for Action

August 27, 1951
Potomac Water Held Too Thick To Drink and Too Thin to Plow

By Ben Franklin
A Congressional delegation of four members witnessed the flow of Four Mile Run into the Potomac. The area is a breeding ground for flies and mosquitoes.

Park Service Charges Alexandria With Heavy Pollution of Potomac
Sewage Flow Into River Reduces Usefulness of Memorial Highway

By the Associated Press
RICHMOND, Va., Jan. 4.—The National Park Service upbraided Alexandria today for heavily polluting the Potomac River.

Pollution Curb Order Expected By Alexandria

State Hearing Ends Without Decision, but Early Action Is Seen

Joint Sewage Planning Gets Green Light

The Alexandria Sanitation Authority...

Council Asks State to Approve Alexandria Sanitation Authority

Creation of an Alexandria sanitation authority to construct and operate the city's first sewerage system... The City Council has its final approval to the plan yesterday after a public hearing of which only one objector appeared.

State Warns Against Delay in Building Sewage Treatment Plant for Joint Use

The State Water Control Board... Alexandria, either alone or jointly with Fairfax. Both Alexandria and Fairfax may take advantage...

Potomac Pollution Began About 1863

Once Called 'Sweetest River'
The Potomac River Basin... The growth of Washington...

Biologist Finds Pollution Too Thick for Life

Potomac River's Bottom Reported

Morse 'Sees And Smells' Potomac on 5-Hr. Tour

Our Disgraceful Potomac
President's Cup Regatta officials dramatize the disgraceful condition of Washington's "beautiful Potomac" Dr. Seckinger...

Sewage-Filled Potomac's Carrier of Diseases

Air Pollution Possible... A recent scientific study, explained by Mr. Levin, suggests that air pollution might follow the same path as the water pollution—a study which...

The Filthy Potomac
One cannot read the detailed pollution report of the Interstate Commission on the Potomac River Basin without experiencing a feeling of revulsion over the conditions exposed.

Where Are the Fish?

An answer to the question so often voiced by Potomac and Chesapeake Bay anglers... will be sought in the conditions exposed.

1952

AlexRenew is established as an independent political subdivision created under the Virginia Water and Wastes Authorities Act in 1952



Alexandria's Combined Sewer System

Alexandria's 544-acre combined sewer system was constructed in the late 19th and early 20th centuries. The combined sewer area is served by a single pipe that carries both rainwater and sewage. During wet weather events, the combined sewer system can overflow at four locations in Alexandria.

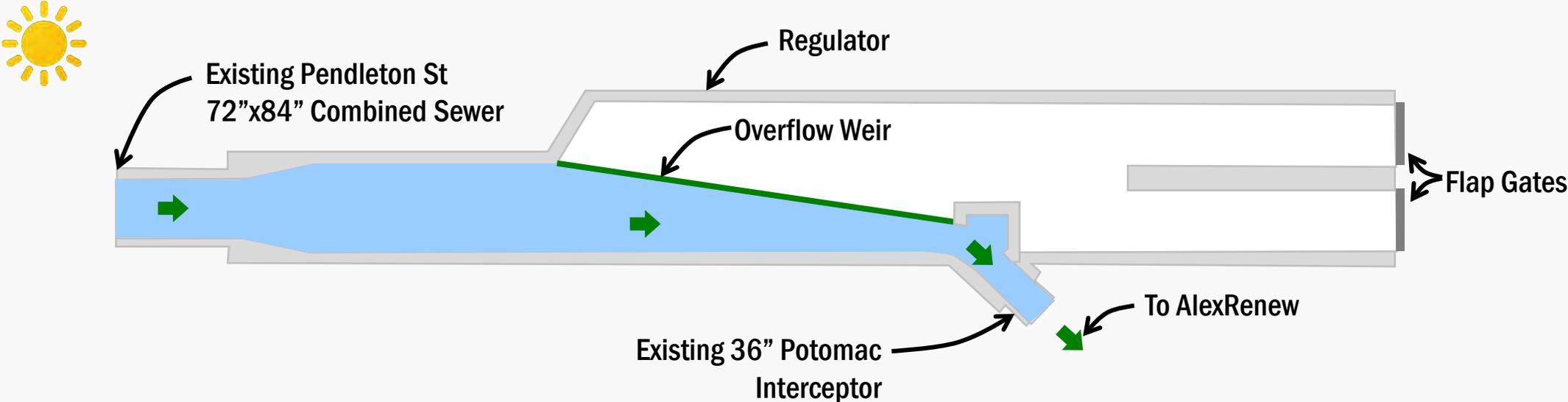
Average Overflow Volume and Number of Events (2000-2016)

CSO	Overflow Volume (MGD)	Number of Events
019	63	37
020	38	46
021	31	70
022	8	45



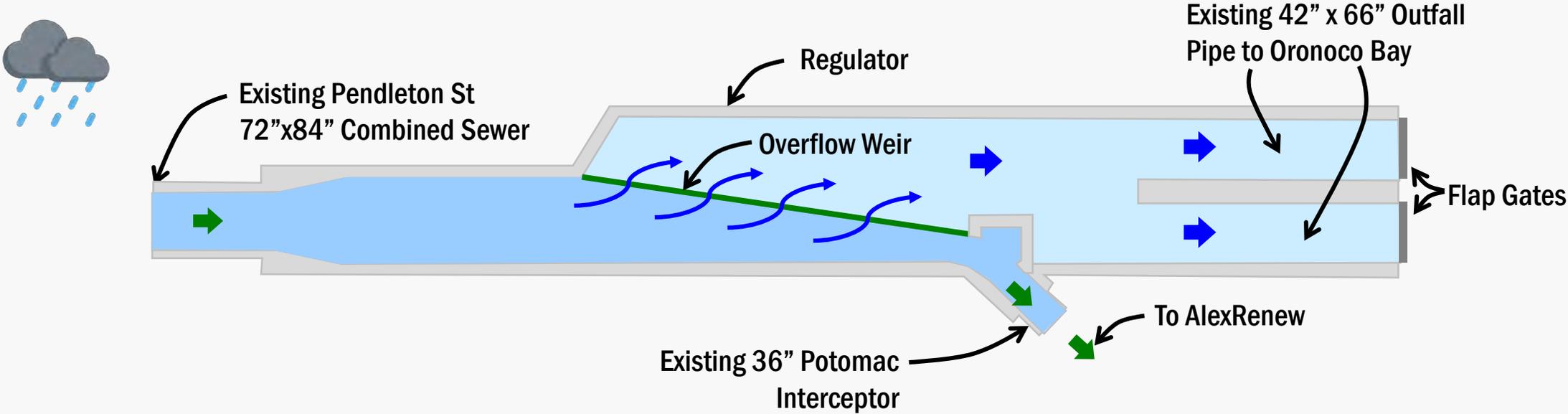
CSO 019 Regulator (dry weather)

The CSO 019 regulator was built in the early 1950's and is located at the intersection of Pendleton and North Union Streets. During dry weather, this structure passively diverts sewage to AlexRenew's wastewater plant via the 36-in Potomac Interceptor.



CSO 019 Regulator (wet weather)

During wet weather, the Potomac Interceptor and AlexRenew's wastewater plant reach capacity, resulting in a combined sewer overflow event and associated discharge to Oronoco Bay and the Potomac River.



2016: A New Call for Action

In 2016, growing stakeholder concern at the local and state levels culminated in action by the Virginia General Assembly, which emphasized the need for Alexandria to move forward with addressing its combined sewer system and associated overflows to the region's waterways.



wtopnews

McAuliffe signs 2025 sewage deadline for Alexandria

Max Smith | maxsmith@wtop.com
April 21, 2017, 5:41 PM

Listen now to WTOP News
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WASHINGTON — The parts of Alexandria's sewage system that dump raw sewage into the Potomac River when it rains now must be transformed by 2025, after Virginia Gov. Terry McAuliffe signed a bill the city had vocally opposed.

McAuliffe "supports the outcome the bill is trying to achieve, and recognizes that the city still has several General Assembly sessions to

Related News

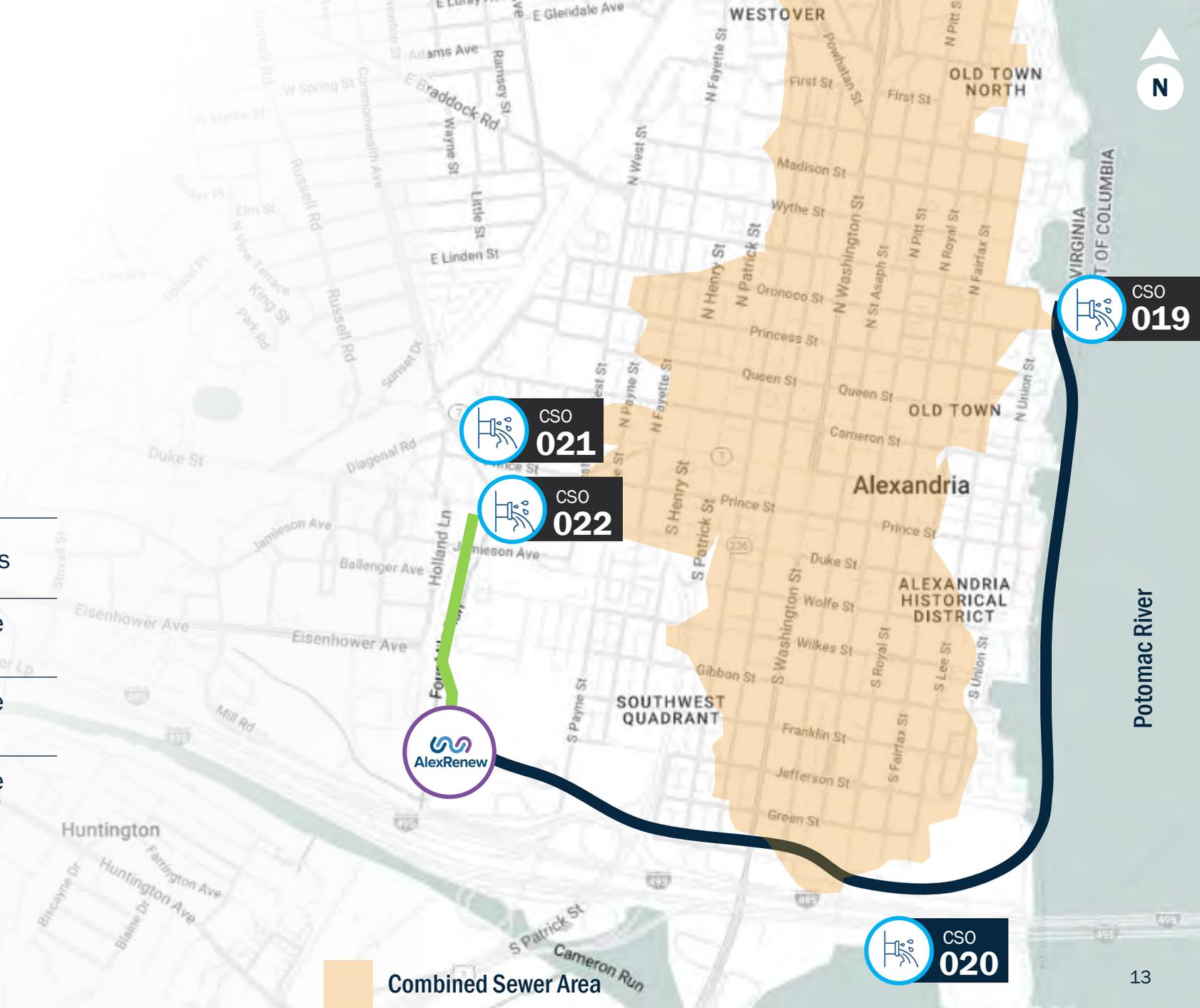
- ['Mean spirited' Alexandria sewer bill sparks partisan fight](#)
- [Lawsuit says Alexandria has](#)

2017 CSO Law

In April 2017, the Virginia General Assembly passed a law requiring Alexandria to remediate its combined sewer system by July 1, 2025. Due to unforeseen delays, this deadline was subsequently extended in 2024 to July 1, 2026.

CSO Control Requirements

CSO	Driver	Requirement
019	EPA policy	4-6 overflows
020	Hunting Creek TMDL	80% volume reduction
021	Hunting Creek TMDL	99% volume reduction
022	Hunting Creek TMDL	99% volume reduction



Combined Sewer Area



Conveyance pipeline to capture CSOs 021 and 022



Wet weather treatment facility

Long-Term Control Plan

In July 2018, the Virginia Department of Environmental Quality approved a joint City-AlexRenew Long-term Control Plan, which recommended a unified tunnel solution to remediate the combined sewer system. As part of the LTCPU, it was recommended that AlexRenew take ownership of the CSOs and the subsequent project.

Storage/conveyance tunnel to capture CSOs 019 and 020



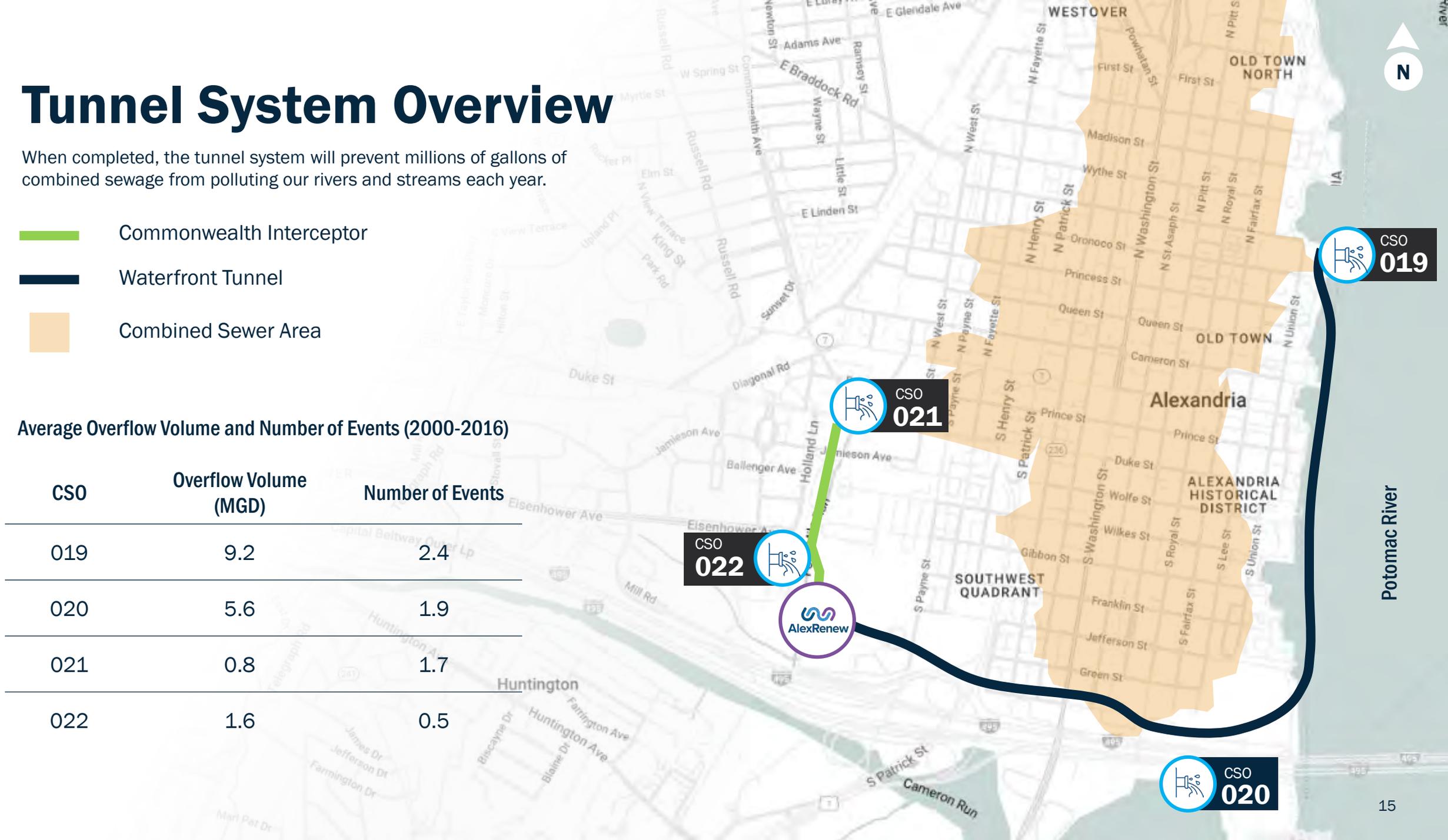
Tunnel System Overview

When completed, the tunnel system will prevent millions of gallons of combined sewage from polluting our rivers and streams each year.

-  Commonwealth Interceptor
-  Waterfront Tunnel
-  Combined Sewer Area

Average Overflow Volume and Number of Events (2000-2016)

CSO	Overflow Volume (MGD)	Number of Events
019	9.2	2.4
020	5.6	1.9
021	0.8	1.7
022	1.6	0.5



Tunnel System Components

The major components of the tunnel system include a 2.2-mile-long tunnel and diversion facilities, an upgraded Commonwealth Interceptor, and tunnel dewatering and wet weather pumping stations.

Waterfront Tunnel and Diversion Facilities



Tunnel Dewatering and Wet Weather Pumping Station



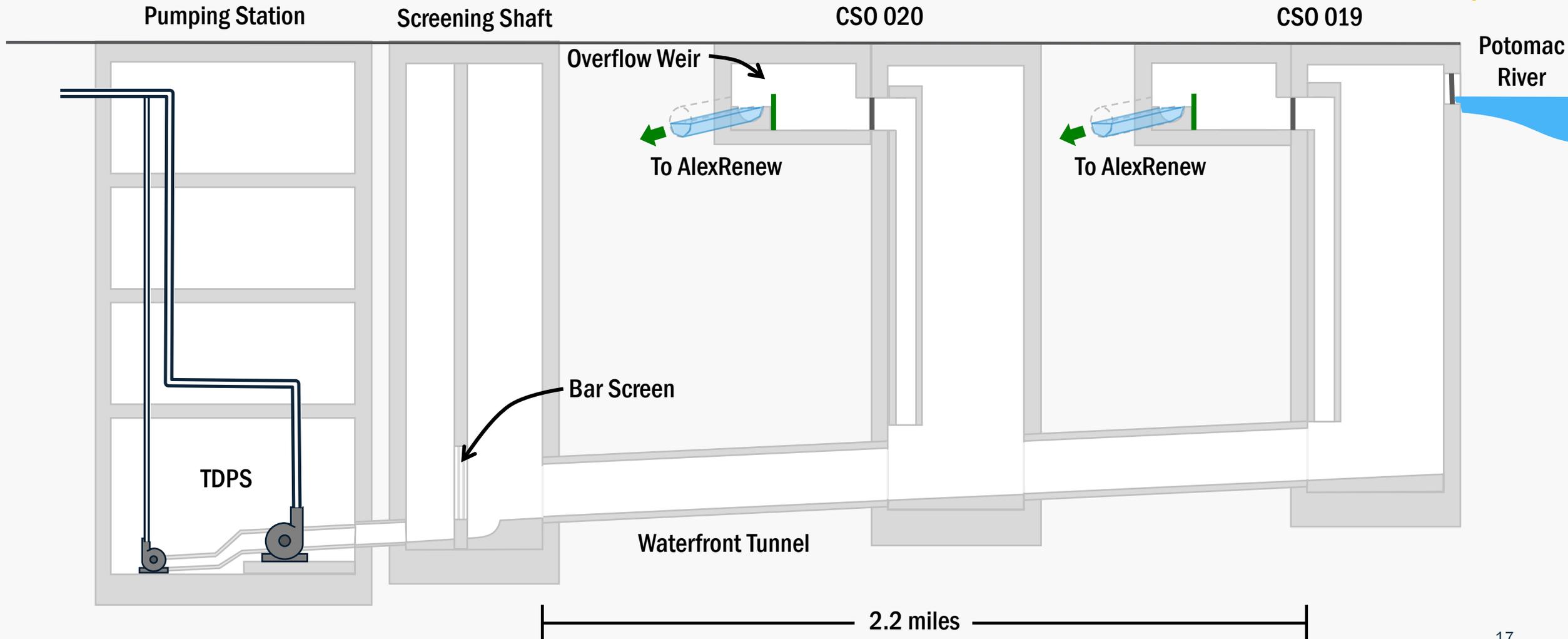
Commonwealth Interceptor



Waterfront Tunnel: How it Works

Dry Day
~95% of year

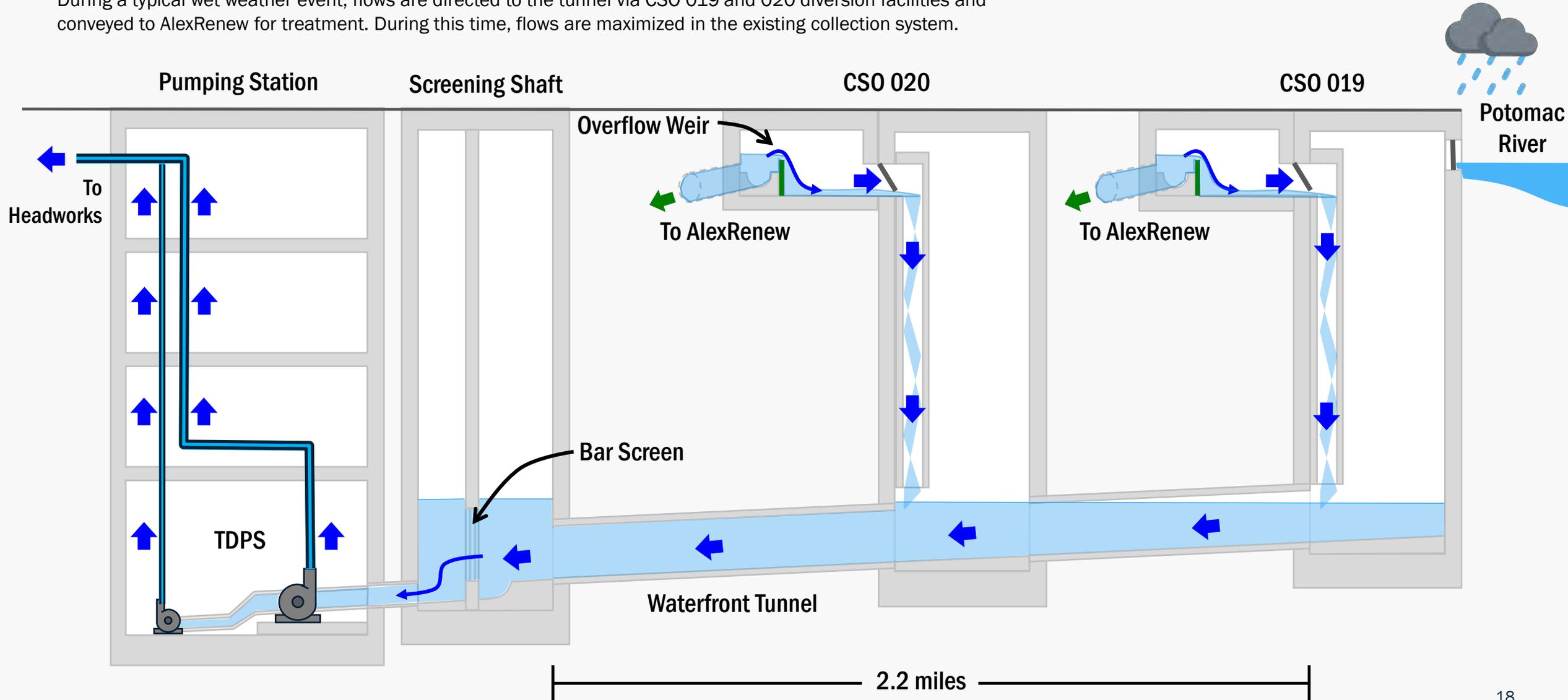
During dry weather, the tunnel is empty and all sewer flows are contained within the existing collection system and conveyed to AlexRenew for treatment.



Waterfront Tunnel: How it Works

Typical Wet Weather
~4% of year

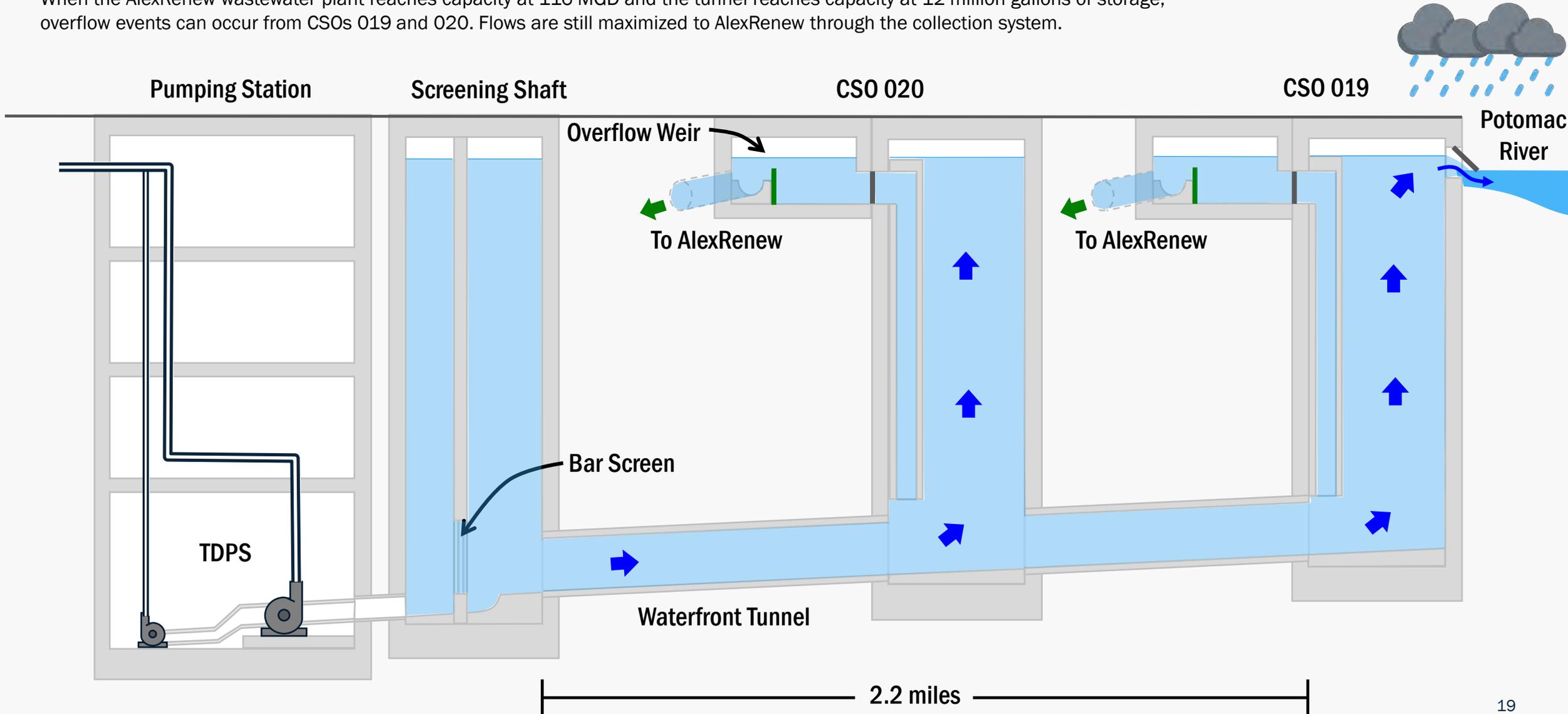
During a typical wet weather event, flows are directed to the tunnel via CSO 019 and 020 diversion facilities and conveyed to AlexRenew for treatment. During this time, flows are maximized in the existing collection system.



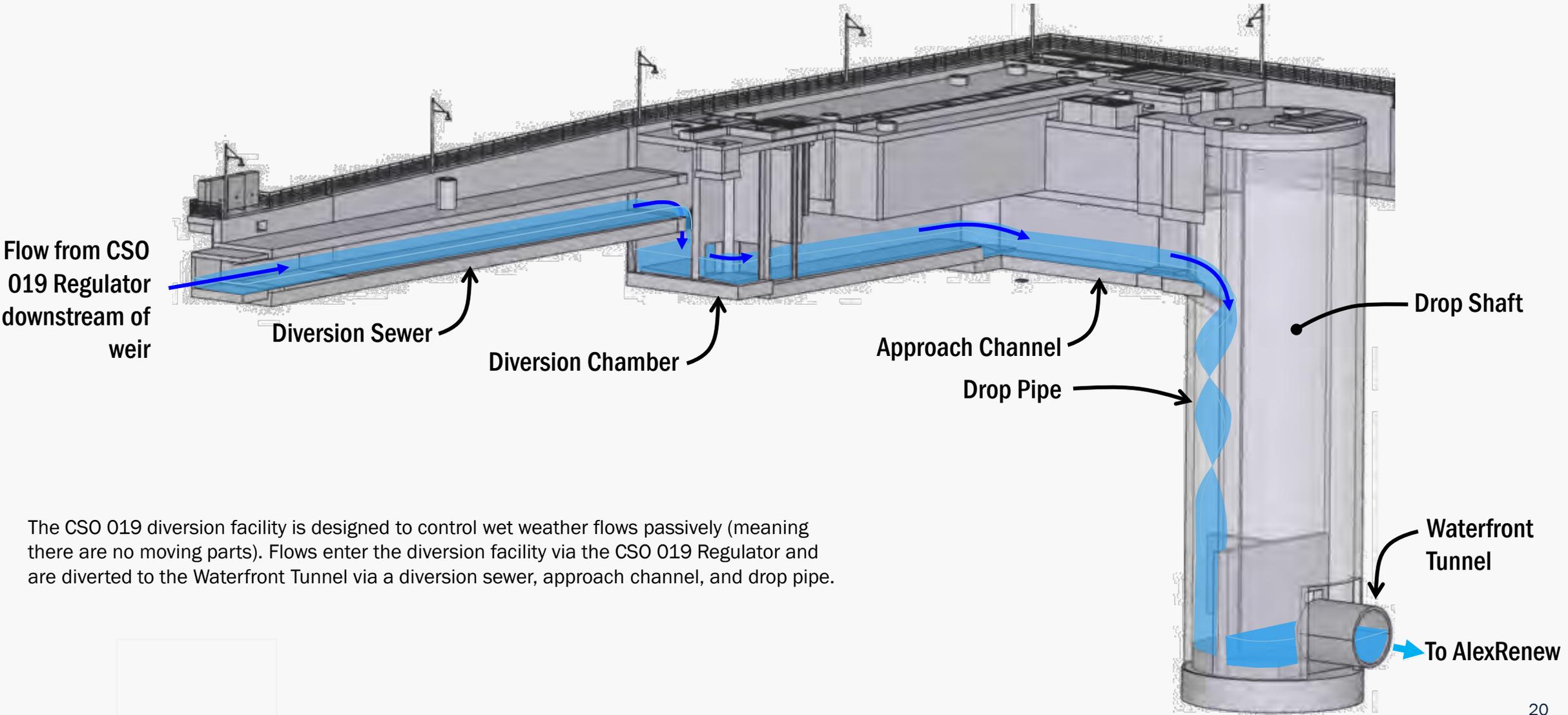
Waterfront Tunnel: How it Works

**Overflow Event
<1% of year**

When the AlexRenew wastewater plant reaches capacity at 116 MGD and the tunnel reaches capacity at 12 million gallons of storage, overflow events can occur from CSOs 019 and 020. Flows are still maximized to AlexRenew through the collection system.



CSO 019 Diversion Facility: How it Works



The CSO 019 diversion facility is designed to control wet weather flows passively (meaning there are no moving parts). Flows enter the diversion facility via the CSO 019 Regulator and are diverted to the Waterfront Tunnel via a diversion sewer, approach channel, and drop pipe.

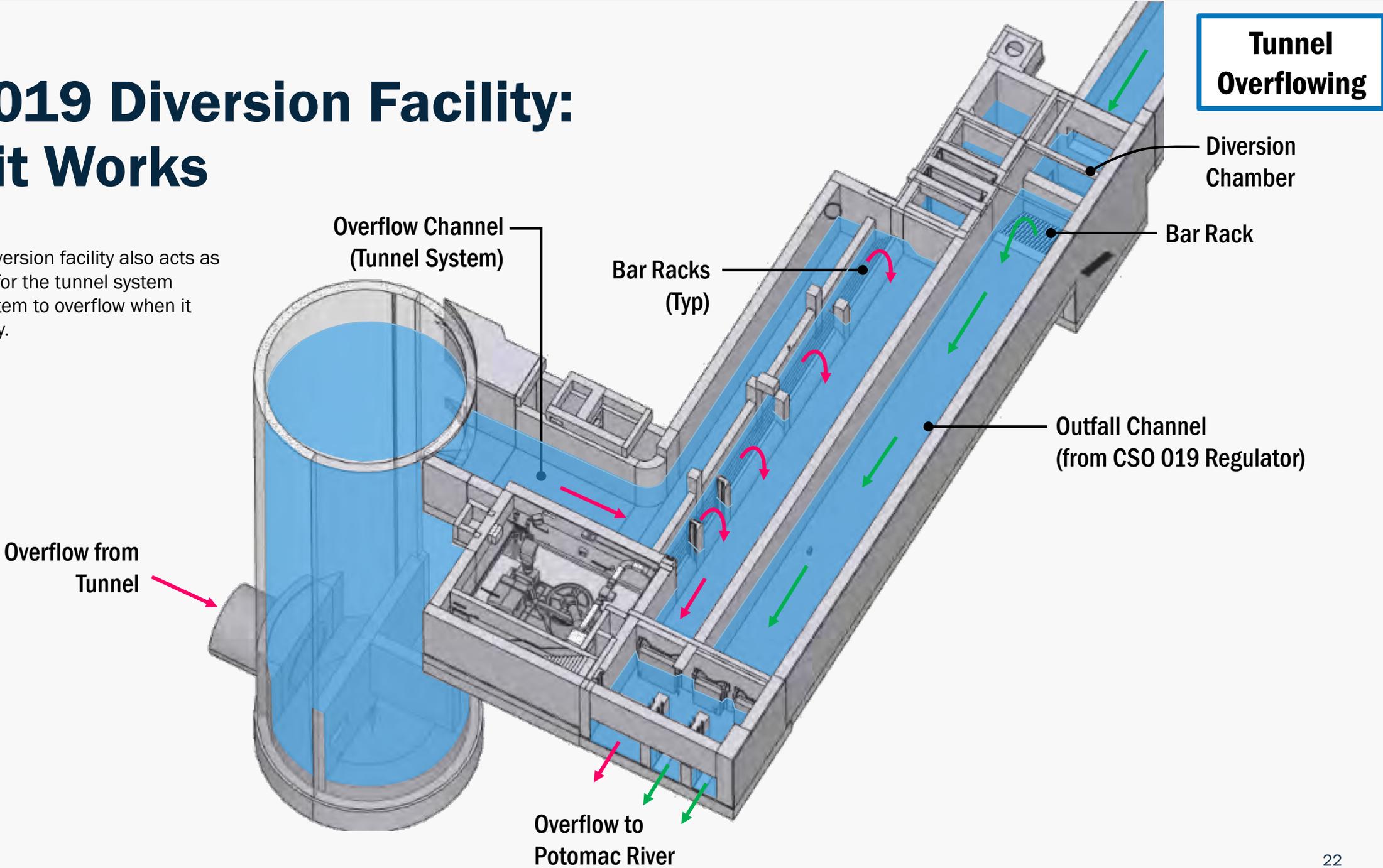
Diversion Facility Modeling

During the design phase, AlexRenew conducted extensive modeling and testing on the design of its diversion facilities. These facilities use specialized hydraulic structures developed in the 1980s in Milwaukee to deliver flow to the tunnel and in-line shafts to remove air from plunged flows, which was fine tuned by DC Water and AlexRenew.

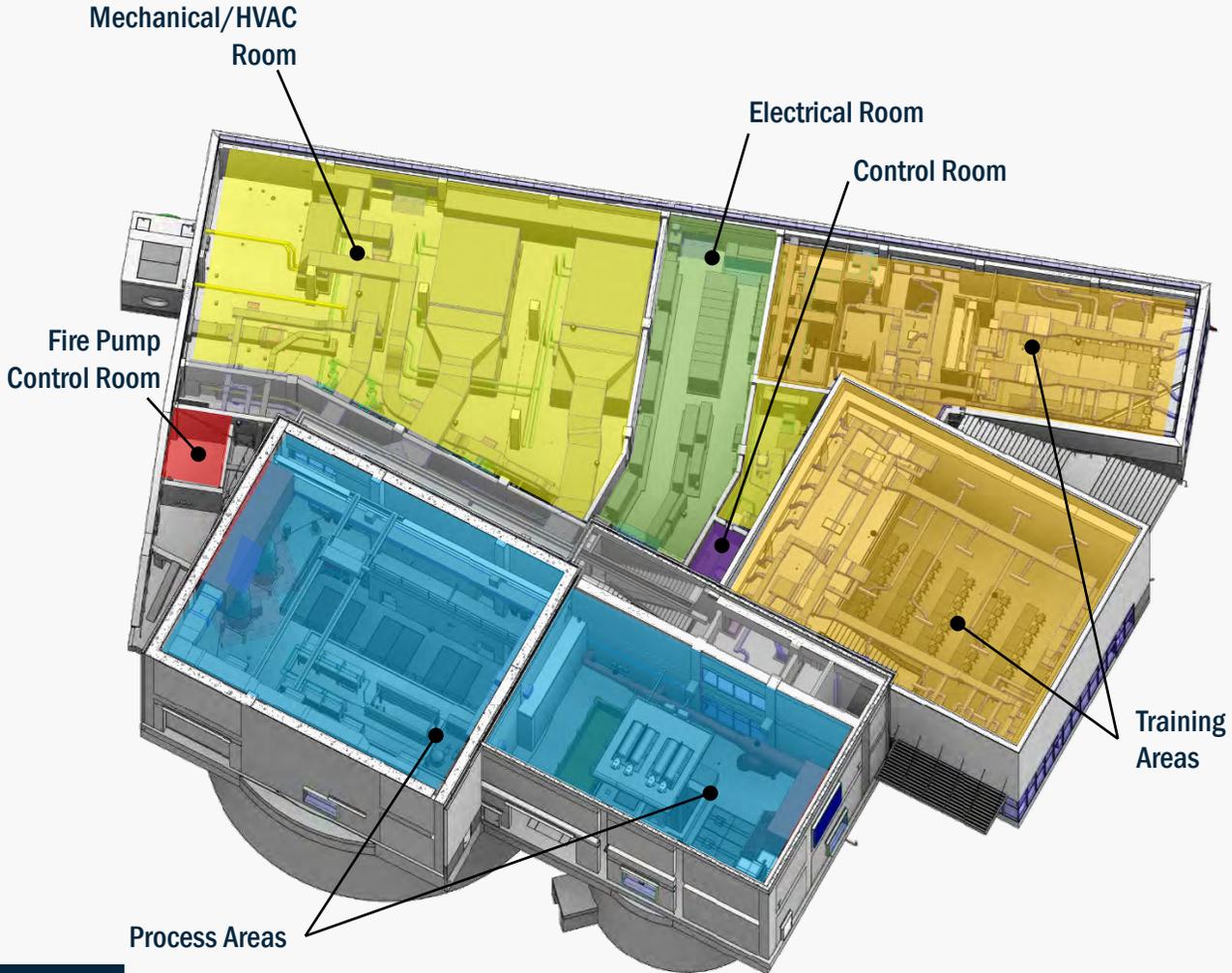
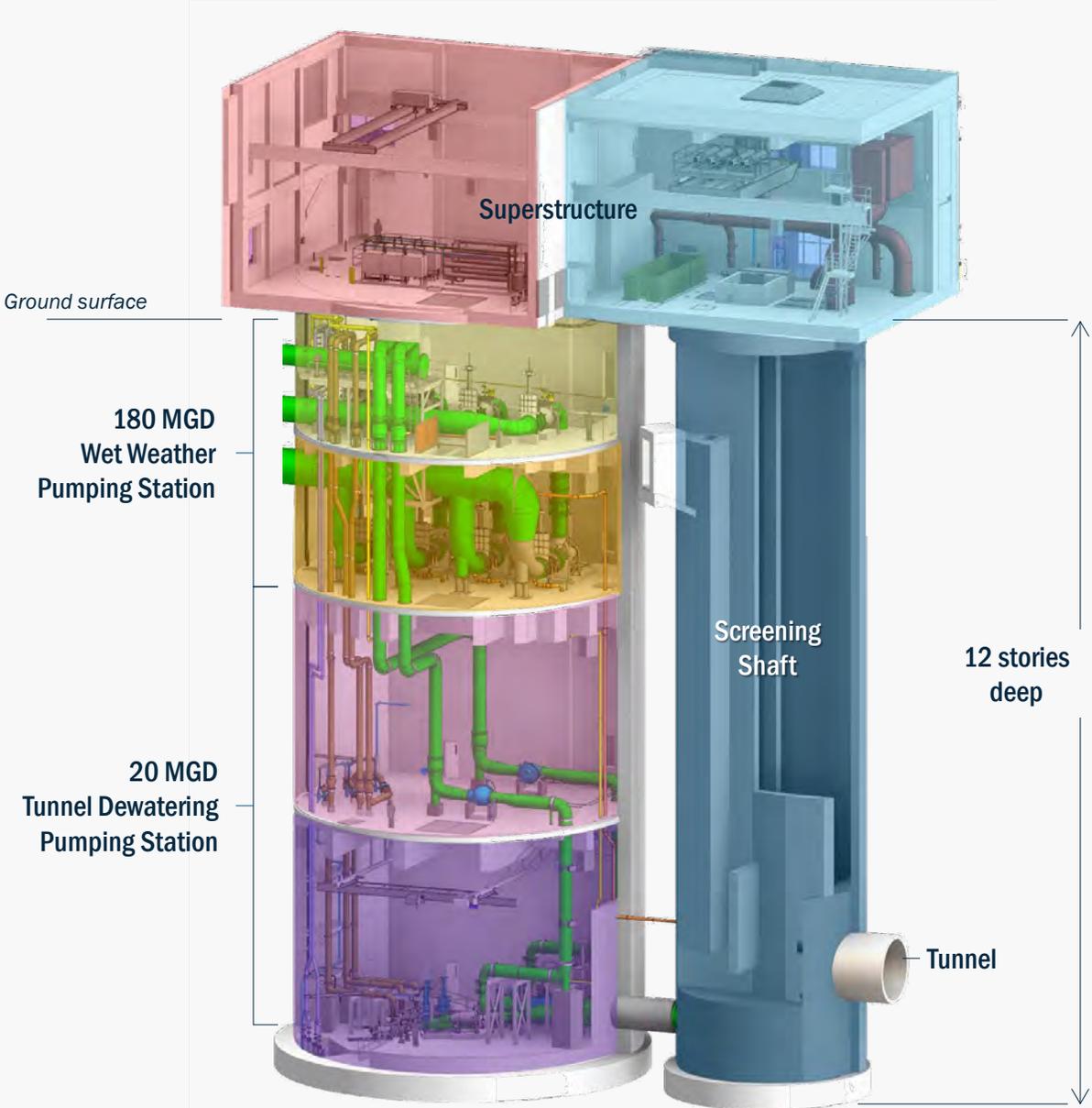


CSO 019 Diversion Facility: How it Works

The CSO 019 diversion facility also acts as a passive relief for the tunnel system allowing the system to overflow when it reaches capacity.

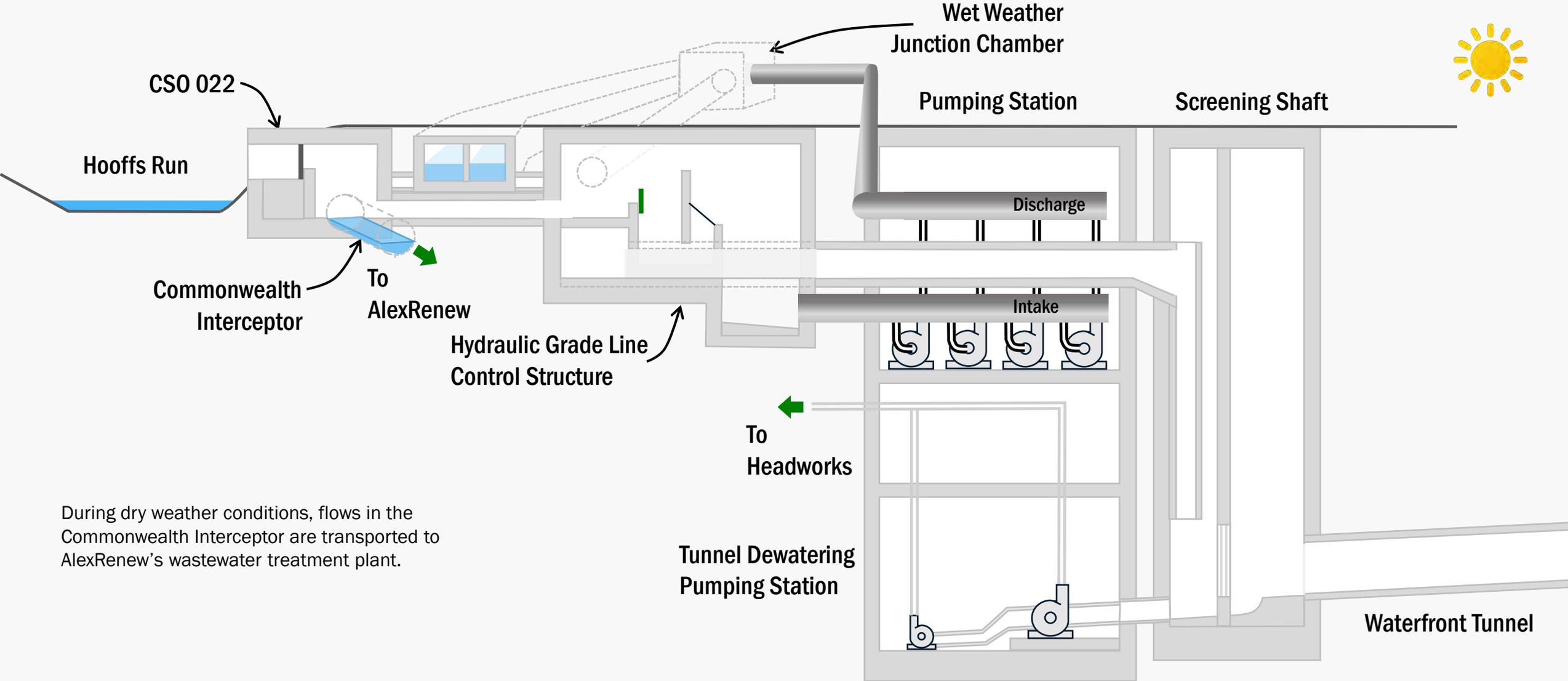


Tunnel Dewatering and Wet Weather Pumping Station



Illustrations of aboveground and underground portions of the pumping station - the workhorse of the system

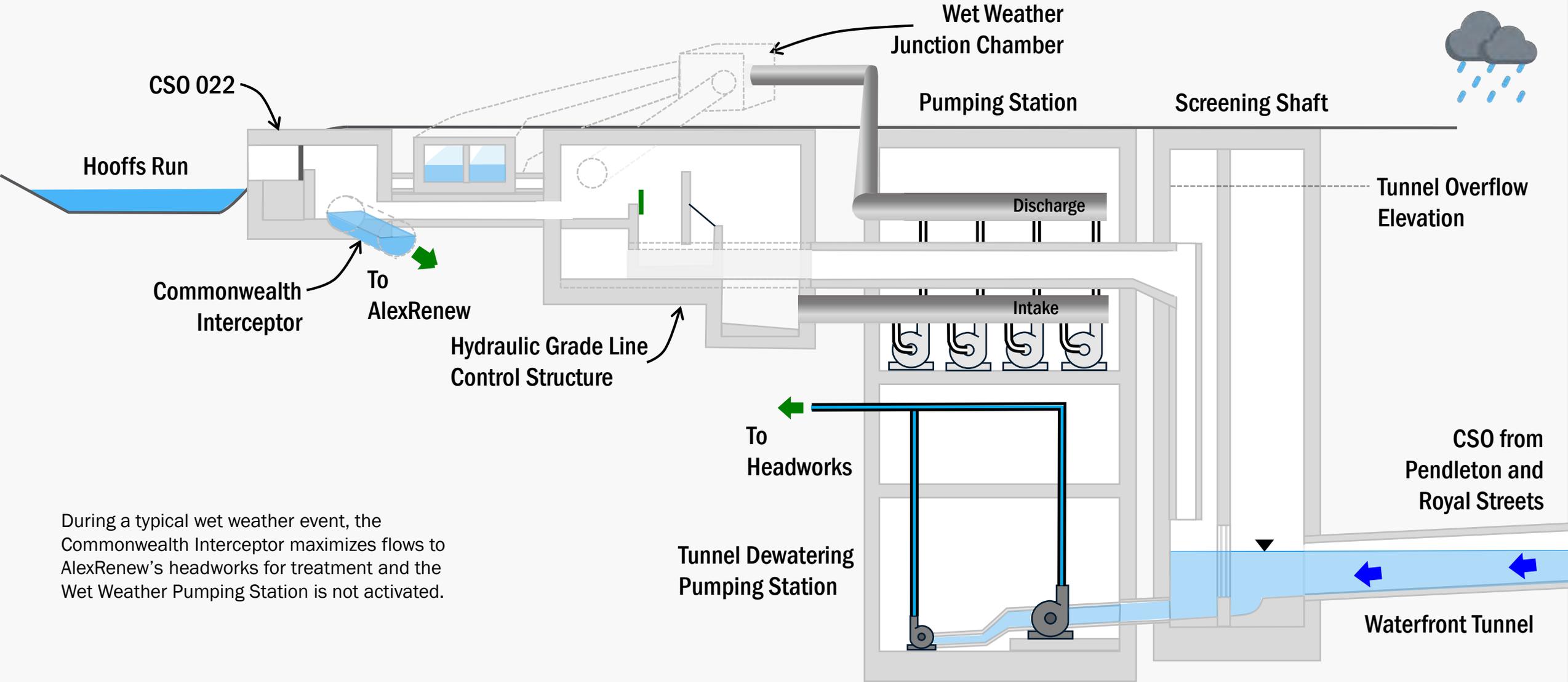
Commonwealth Interceptor: How it Works



During dry weather conditions, flows in the Commonwealth Interceptor are transported to AlexRenew's wastewater treatment plant.

Commonwealth Interceptor: How it Works

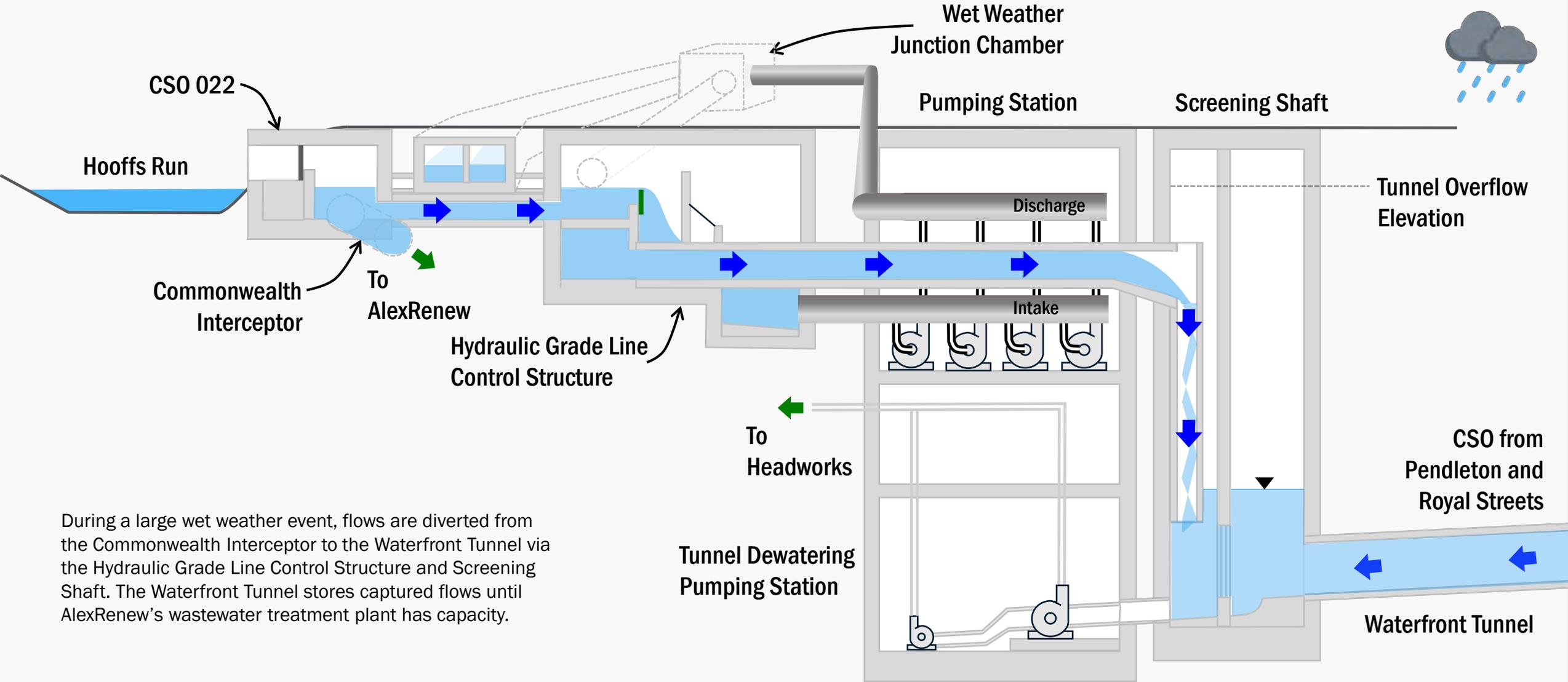
Typical Wet Weather
40-50 storms/yr



During a typical wet weather event, the Commonwealth Interceptor maximizes flows to AlexRenew's headworks for treatment and the Wet Weather Pumping Station is not activated.

Commonwealth Interceptor: How it Works

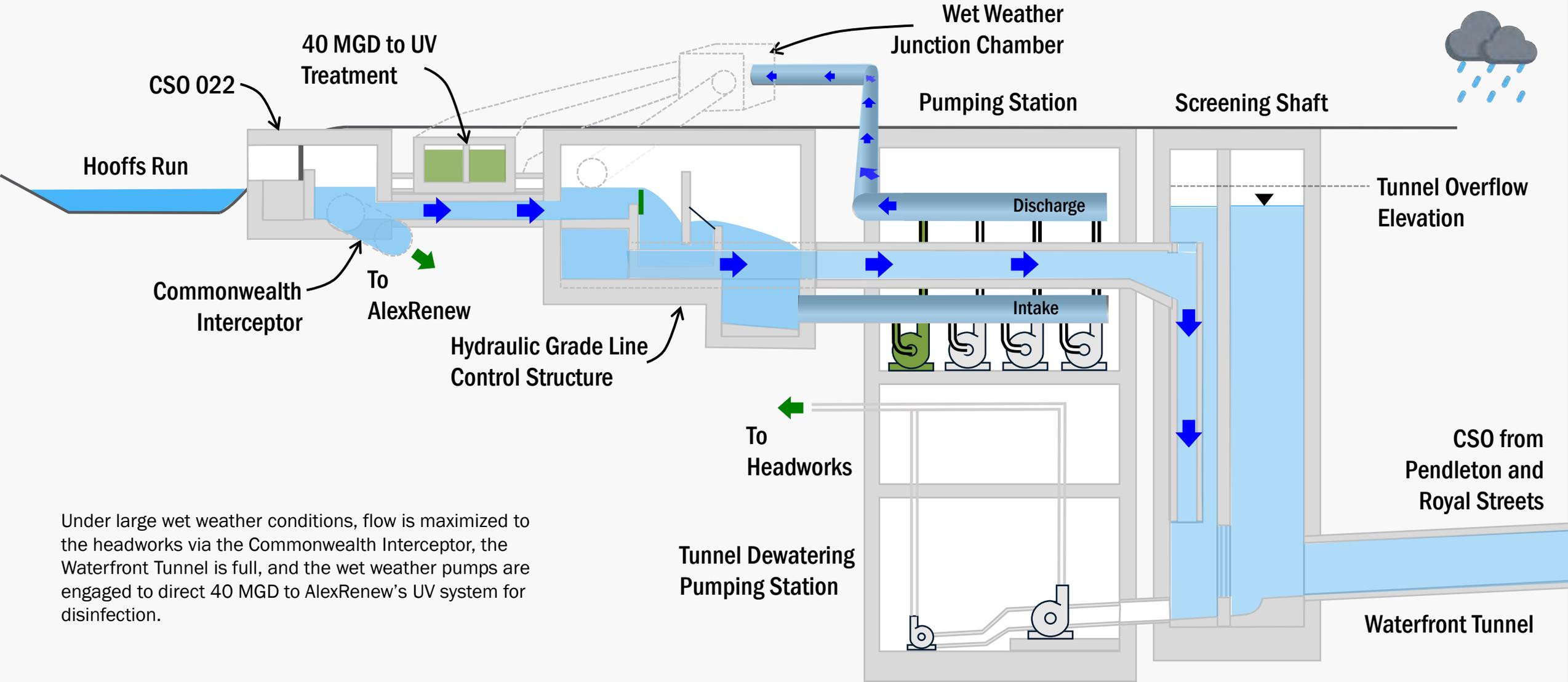
Large Wet Weather
6-8 storm/yr



During a large wet weather event, flows are diverted from the Commonwealth Interceptor to the Waterfront Tunnel via the Hydraulic Grade Line Control Structure and Screening Shaft. The Waterfront Tunnel stores captured flows until AlexRenew’s wastewater treatment plant has capacity.

Commonwealth Interceptor: How it Works

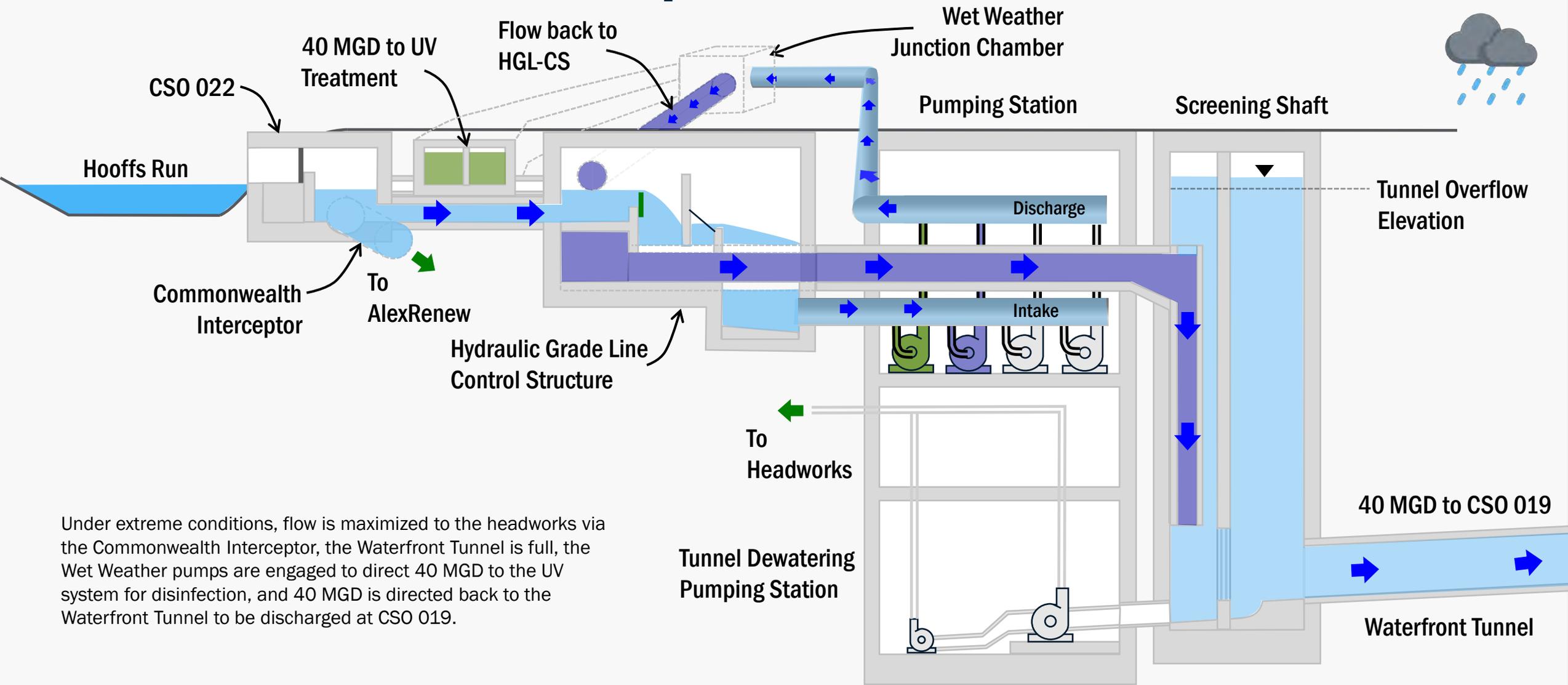
**Large Wet Weather
1-4 storms/yr**



Under large wet weather conditions, flow is maximized to the headworks via the Commonwealth Interceptor, the Waterfront Tunnel is full, and the wet weather pumps are engaged to direct 40 MGD to AlexRenew's UV system for disinfection.

Commonwealth Interceptor: How it Works

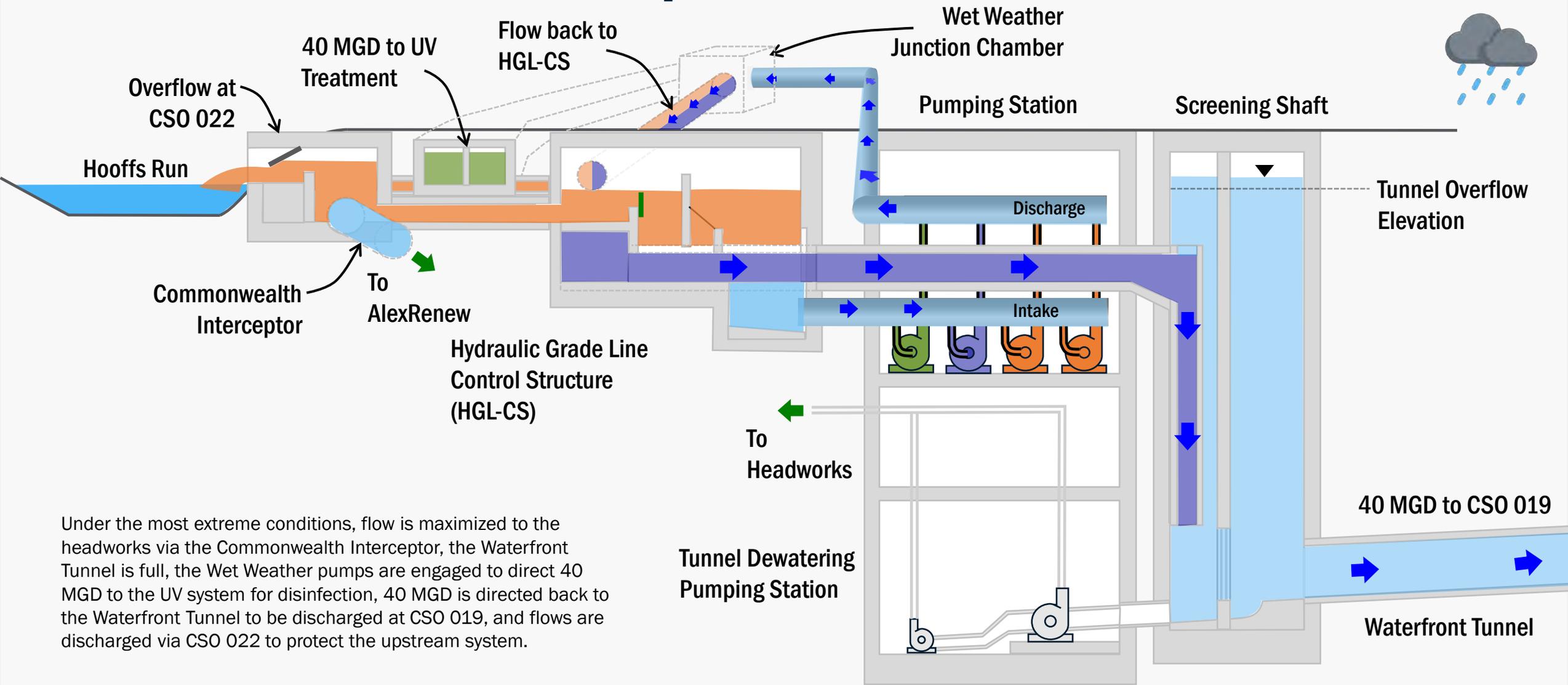
Extreme Wet Weather
1-2 storms/yr



Under extreme conditions, flow is maximized to the headworks via the Commonwealth Interceptor, the Waterfront Tunnel is full, the Wet Weather pumps are engaged to direct 40 MGD to the UV system for disinfection, and 40 MGD is directed back to the Waterfront Tunnel to be discharged at CSO 019.

Commonwealth Interceptor: How it Works

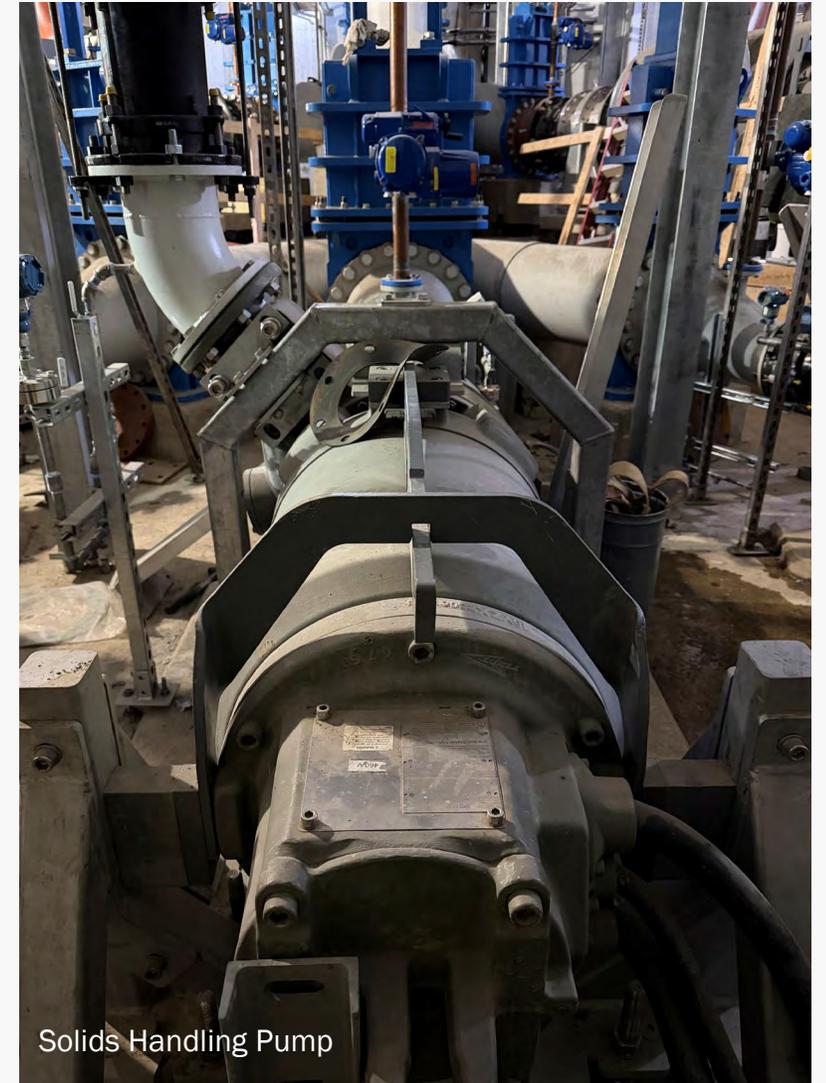
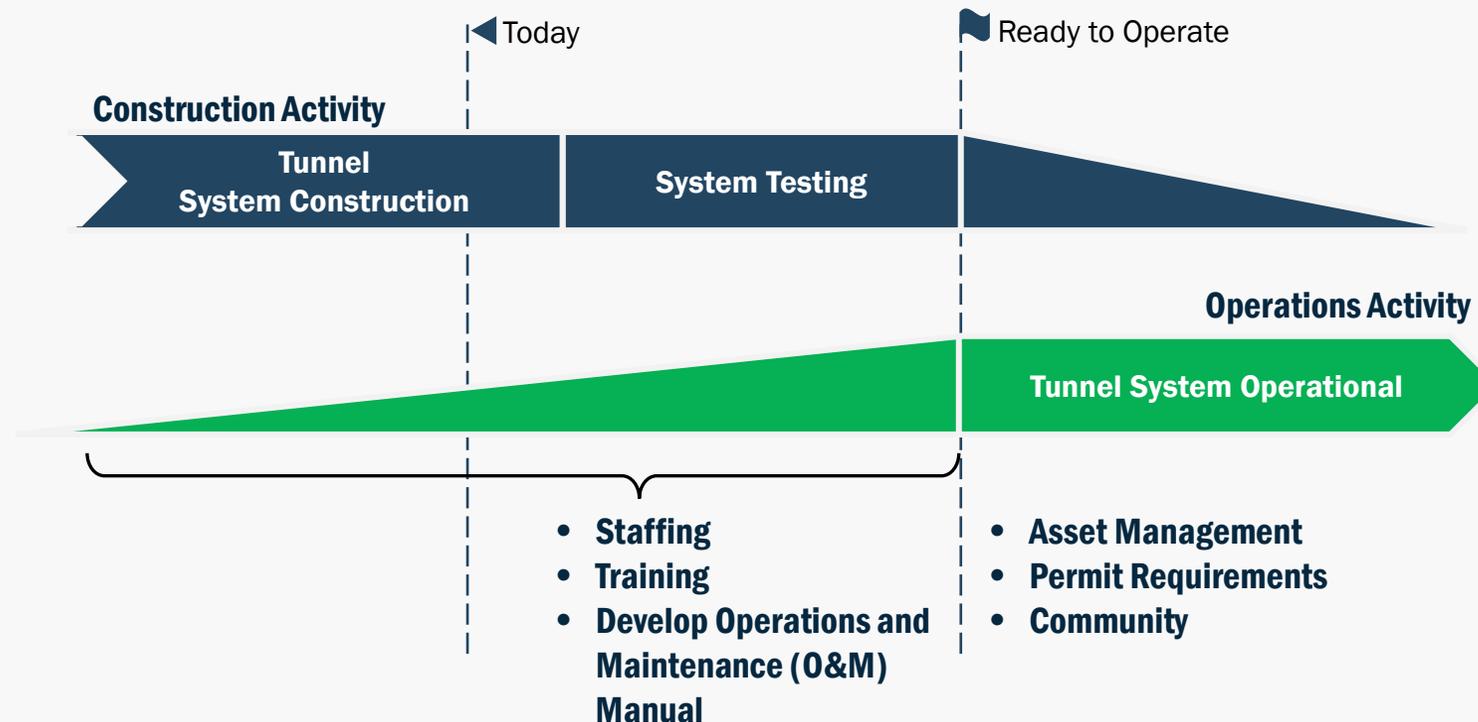
Extreme Wet Weather
<1 storm/yr



Under the most extreme conditions, flow is maximized to the headworks via the Commonwealth Interceptor, the Waterfront Tunnel is full, the Wet Weather pumps are engaged to direct 40 MGD to the UV system for disinfection, 40 MGD is directed back to the Waterfront Tunnel to be discharged at CSO 019, and flows are discharged via CSO 022 to protect the upstream system.

Getting Operationally Ready for the Tunnel System

As construction transitions to system testing, significant training with AlexRenew's operations maintenance, and lab teams is underway to support the transition to operations of the system.



What's new for AlexRenew?

The Tunnel System includes various elements that staff will maintain, some of which will be new to staff, while other equipment is similar to existing assets, just bigger.

Outfalls and Diversion Facilities



Pumping Station



Superstructure



What's new?

- Bigger versions of what we already have

- Bigger versions of what we already have
- Jointly operating wet weather pumping and UV
- Maintain hydraulically controlled valve systems
- Inspect and exercise flushing systems

- Operate and maintain screen rake and clamshell system

Business as usual

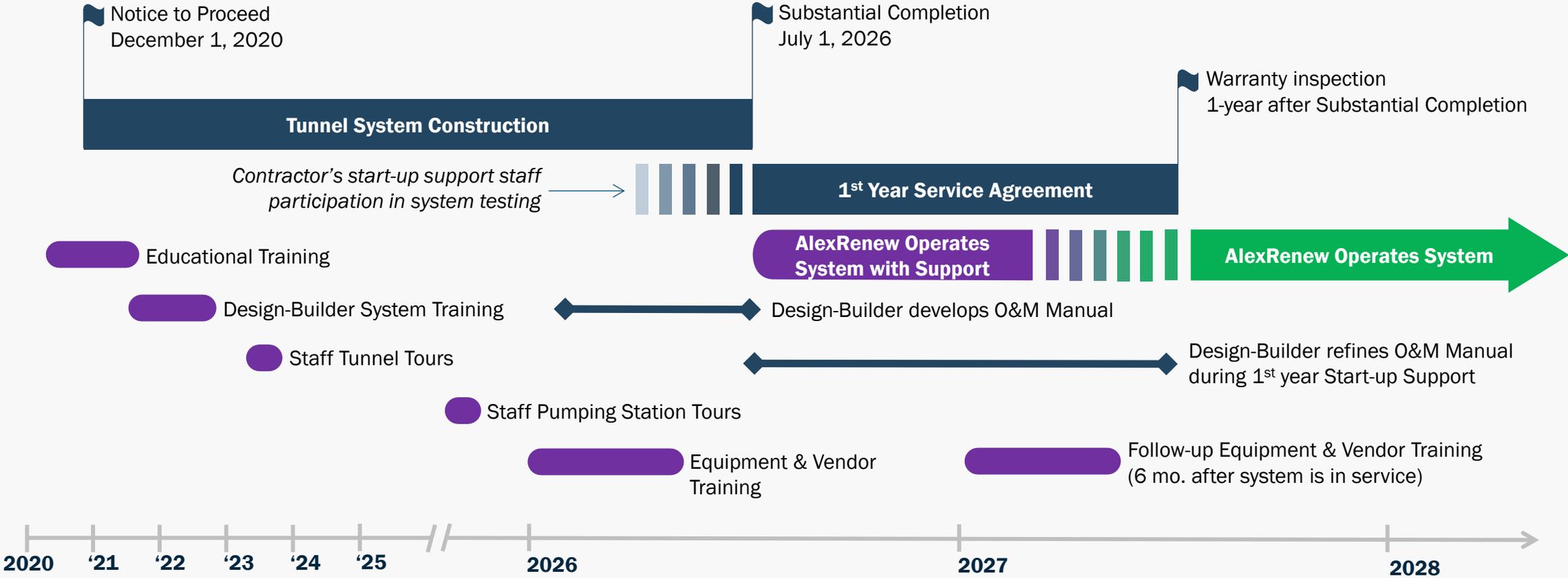
- Operate and maintain odor control systems
- Adjust stop logs, orifices, and weirs (infrequent)
- Maintain instrumentation
- Check diversion sewers and bar racks for debris
- Inspect flap gates

- Exercise valves
- Inspect and maintain pumps
- Inspect electrical systems

- Manage screenings disposal
- Typical facility maintenance (HVAC, plumbing)
- Inspect and service electrical equipment
- Elevator maintenance
- Overhead cranes

Staff Training Approach

The current training series and the service agreement complement a larger training program throughout the tunnel system’s construction focused on supporting staff to understand and be able to operate it without support at the end of the first year.



First Year Service Agreement

To support AlexRenew's Operations and Maintenance (O&M) teams in the first year of operations, AlexRenew is executing a service agreement through an amendment to the contract for start-up support.

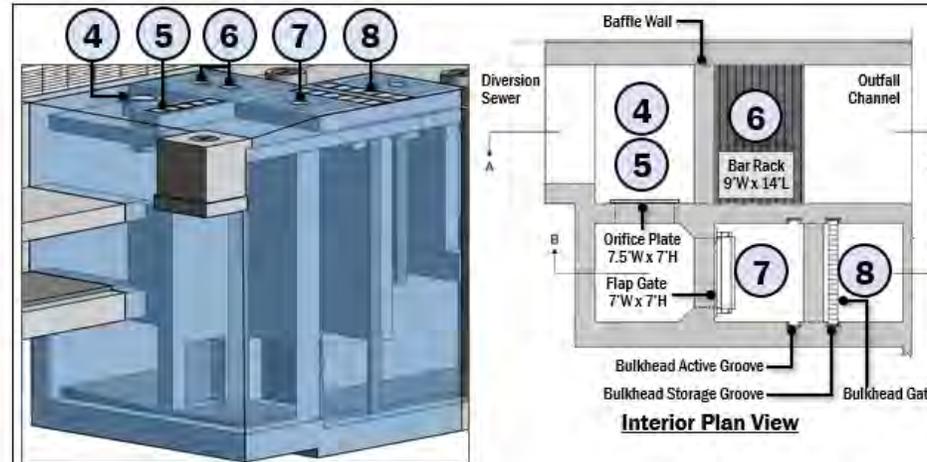
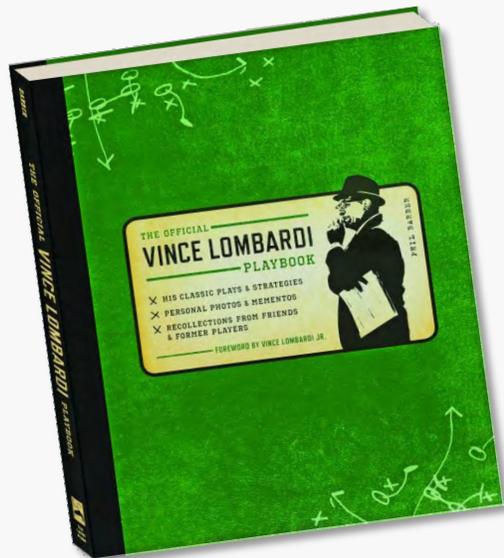
To Do:

- Support Tunnel System operations
- Support maintenance activities
- Coordinate warranty work
- Train staff
- Facilitate warranty inspection
- Update the Operations & Maintenance Manual
- Coordinate interface between Tunnel System and ultraviolet (UV) Operations during wet weather events



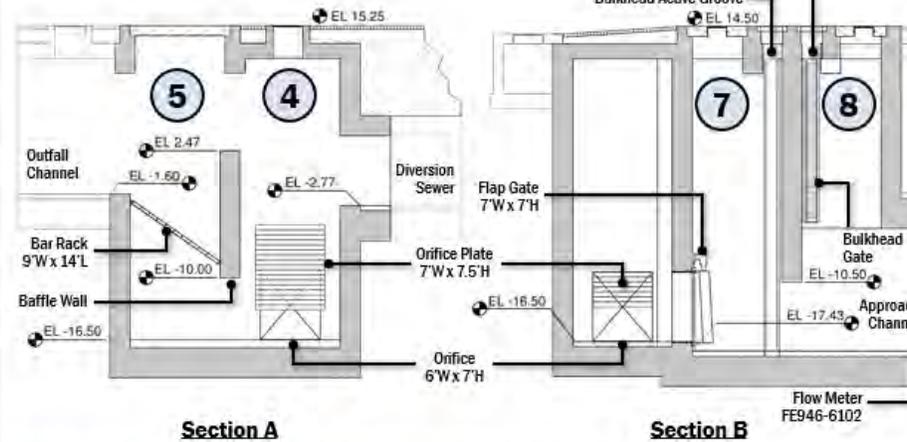
Tunnel System Playbook

The Operations and Maintenance Manual is a key tool for understanding what the system will need moving forward. The manual includes detailed operations and control settings, maintenance procedures, and equipment operating manuals to serve as a reference to staff throughout system operations.



3D View

Interior Plan View



Section A

Section B

CSO 019 DIVERSION FACILITY

DIVERSION CHAMBER

General narrative:

A weir at the CSO 019 Regulator diverts dry weather flow to the 30-in Potomac Interceptor. During wet weather, flows overtop the weir and are conveyed by the 12-ft x 12-ft CSO 019 Diversion Sewer to the CSO 019 Diversion Chamber. The Diversion Chamber directs wet weather flows through an orifice and a flap gate to the 10-ft x 13-ft CSO 019 Approach Channel to the CSO 019 Drop Shaft. Flows exceeding the orifice capacity overflow through a bar rack to the 14-ft x 14-ft CSO 019 Outfall Channel.

Inspection requirements:

Location	Access	Equipment	Activity
4	36-in MH	Orifice 6-ft W x 7-ft H	- Visually inspect; ensure orifice plate and flow areas are clear - Clean debris and sediment, if needed
5	(5) 2-ft square hinged covers	Orifice plate 7-ft W x 7.5-ft H (15) MC6x18	- Adjust orifice plate, if needed
6	24-in MH	Bar rack 9-ft W x 14-ft L 2-in spacing	- Visually inspect; ensure bar racks and flow areas are clear - Clean debris and sediment, if needed
7	24-in MH	Flap Gate 7-ft W x 7-ft H	- Visually inspect; ensure flap gate is not hung up; ensure bulkhead active grooves and flow areas are clear
8	(6) 2-ft square hinged covers	Bulkhead gate 10-ft W x 7-ft H	- Visually inspect, ensure bulkhead gate is in the storage position



Key Map

INSPECTION REQUIREMENTS

Specialty Contractors will do the Heavy Lifting

Many of the maintenance activities will be performed by specialty contractors with the necessary tools and training.

Inspect

- Tunnel
- Dampers in odor control vaults
- Overhead cranes and lifting systems
- Fire protection and life safety systems
- Photovoltaic System

Clean

- Tunnel
- Diversion bar racks
- Diversion sewers, channels, overflow structures, drop shafts

Service

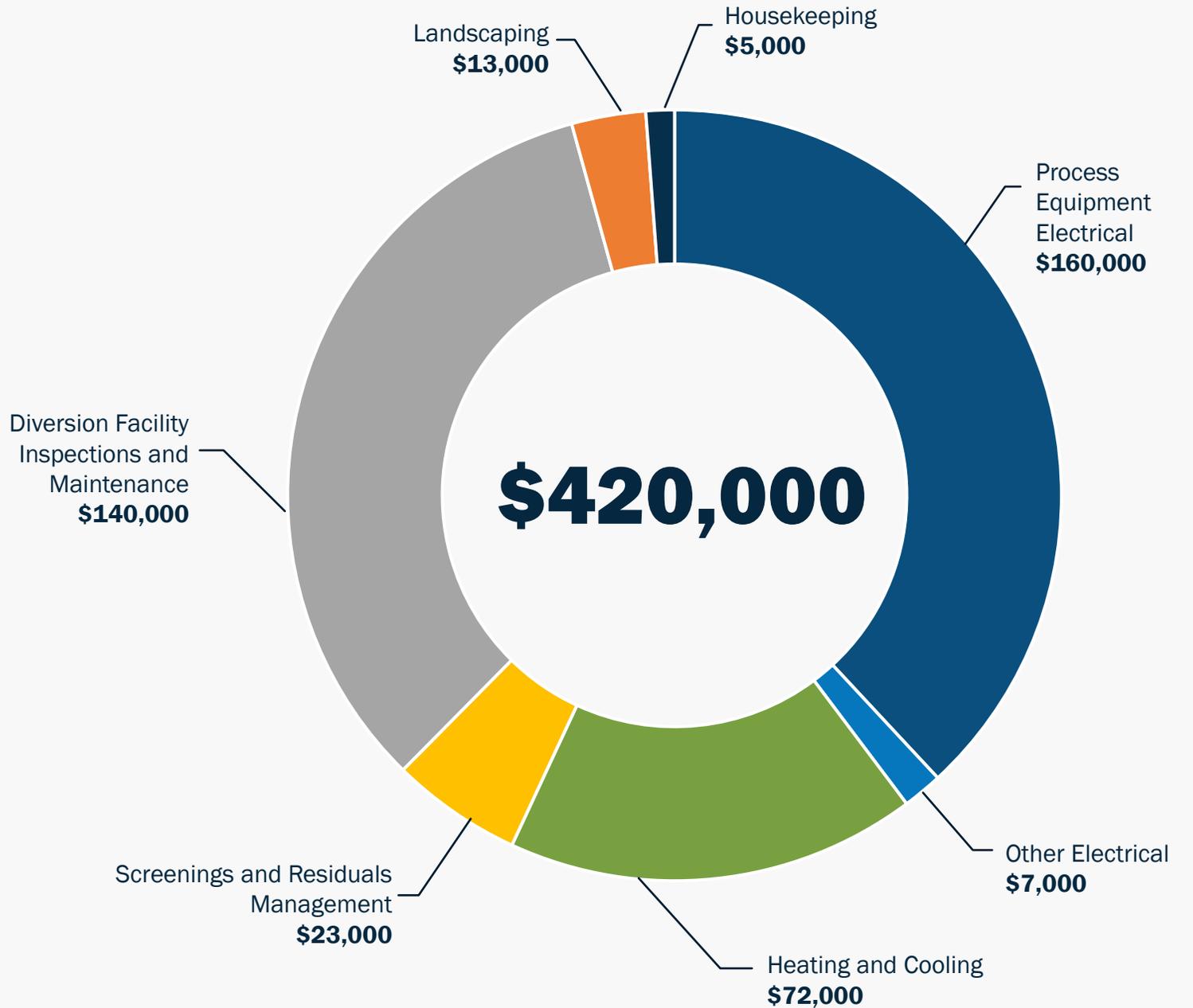
- Odor control units
- Overhead cranes
- Superstructure elevators
- Screenings disposal
- Superstructure green roof landscaping



Video of a sewer cleaning – similar in scope to the cleaning required for the tunnel

Tunnel System Operating Costs

Once operational, the tunnel system will be maintained by AlexRenew and several contractors. Costs to operate the system include monthly diversion facility and equipment inspections, electrical costs, screening and residuals management, and well as landscaping.



Permit Compliance Points

AlexRenew's discharge permit requires compliance at multiple points within the tunnel system and wastewater plant.

	Outfall	Compliance Requirement
Plant	001	<i>E.coli</i>
	002	None – being decommissioned
	101	Nutrients, BOD, TSS, etc
	102	Flow
CSO*	019	4-6 overflows
	020	80% volume reduction
	021	99% volume reduction
	022	99% volume reduction



* Based on annual monitoring

Wet Weather Permit Requirements

AlexRenew's permit includes requirements for demonstrating compliance with the CSO law.

Monthly eDMR

- CSO 102 activation (UV Treatment)
- Monthly geometric mean at Outfall 001

Annual Report

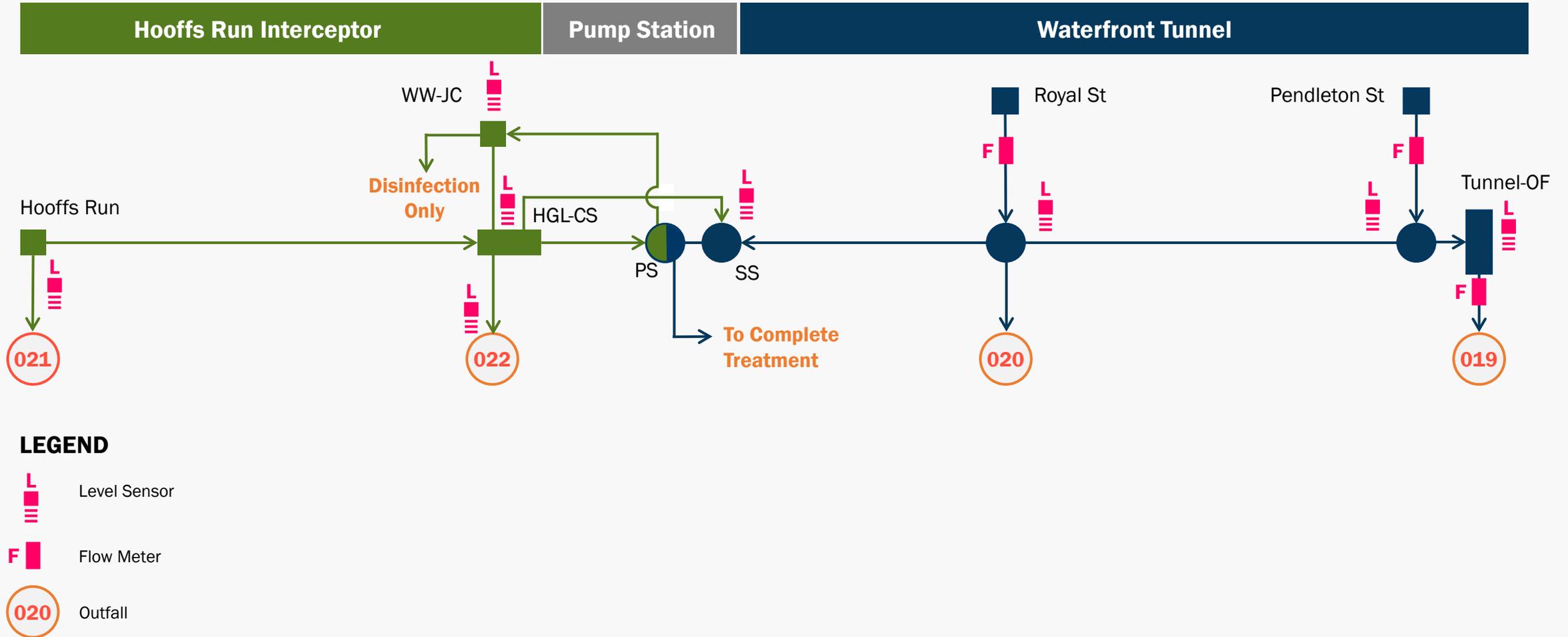
- Summary of wastewater plant operations maximizing wet weather treatment
- Document overflows and bacteria loading in terms of TMDL WLA at CSO Outfall 019, 020, 021, and 022

CSO Notification Website

- Show CSO locations
- Indicate CSO overflow event within previous 24-hrs
- Include listserv sign up for overflow notifications

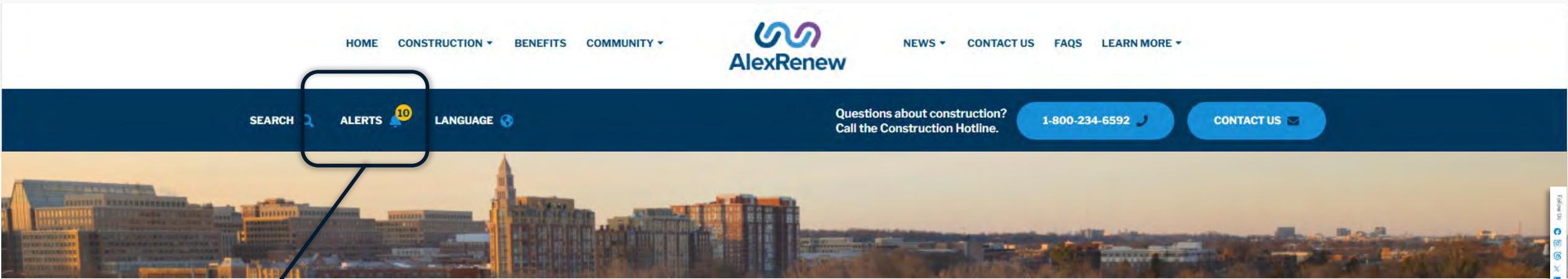
General Instrumentation Layout

The Tunnel System includes instruments that allow AlexRenew to monitor the system and maintain a public facing CSO notification website.



Community CSO Reporting Webpage

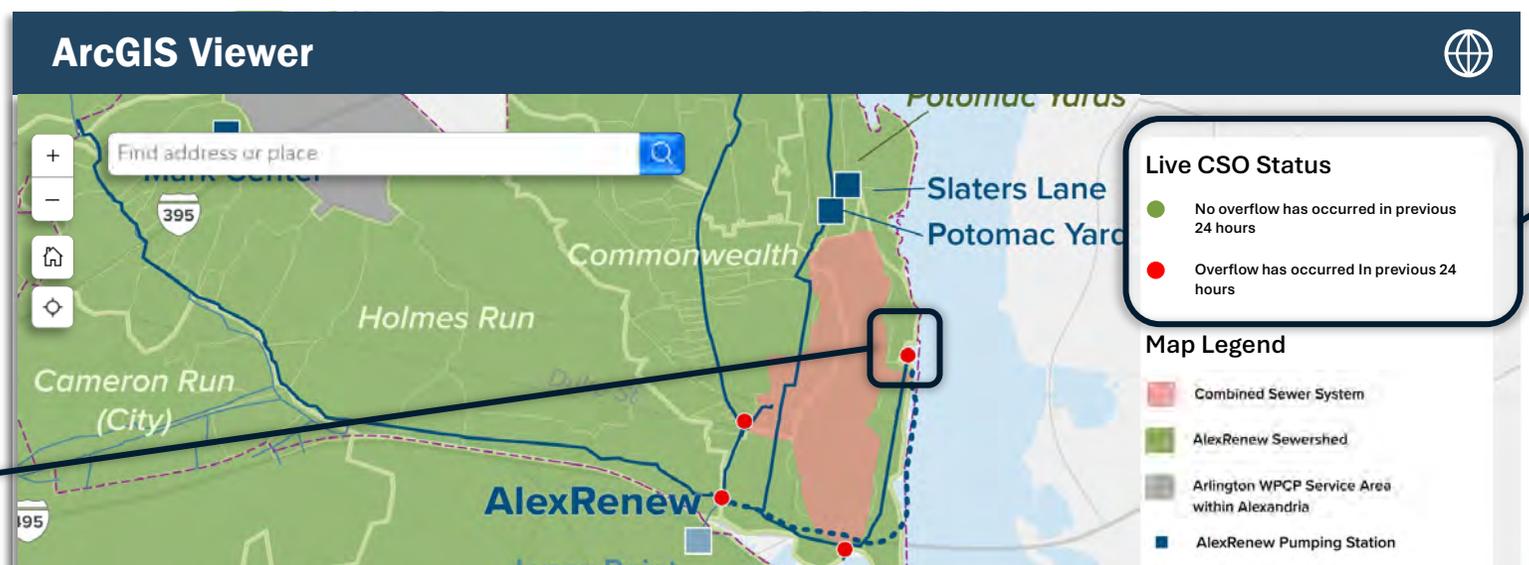
AlexRenew's website will include a webpage to provide the community with updates on the occurrence of CSO events.



AlexRenew Live CSO Monitoring

Ability for users to sign up for overflow notifications

Shows CSO locations on a map



Indicates whether a CSO event has occurred within the previous 24-hours

A Lasting Community Legacy

The benefits of cleaner waterways will be felt for generations of Alexandrians to come.





AlexRenew



Clean Rivers Project – Lessons Learned after 8 Years of Operation

AlexRenew Board Retreat
February 21, 2026

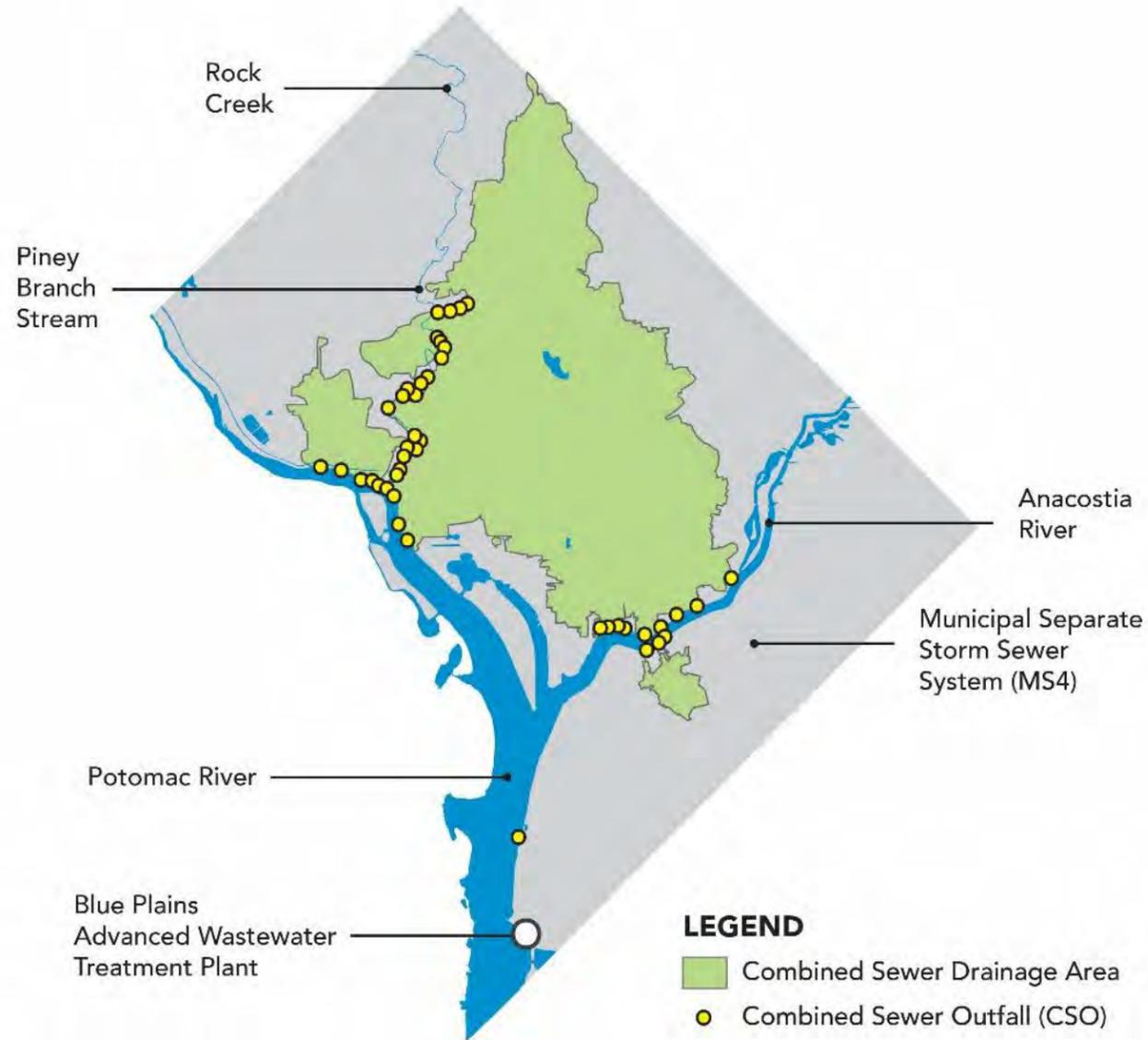


Nick Passarelli, Vice President, Wastewater Operations
John Cassidy, DC Clean Rivers Program Manager

Clean Rivers Project Overview



Combined Sewer System in the District



- 1/3 of area within District is served by combined sewers (12,478 acres)
- Combined Sewer Overflow (CSO) outfalls
 - 15 to Anacostia River
 - 10 to Potomac River
 - 23 to Rock Creek



Three Principal Project Objectives

CSO Control

- 96% reduction avg year CSO volume systemwide
- 98% reduction avg year CSO volume on Anacostia River
- Complete by 2030

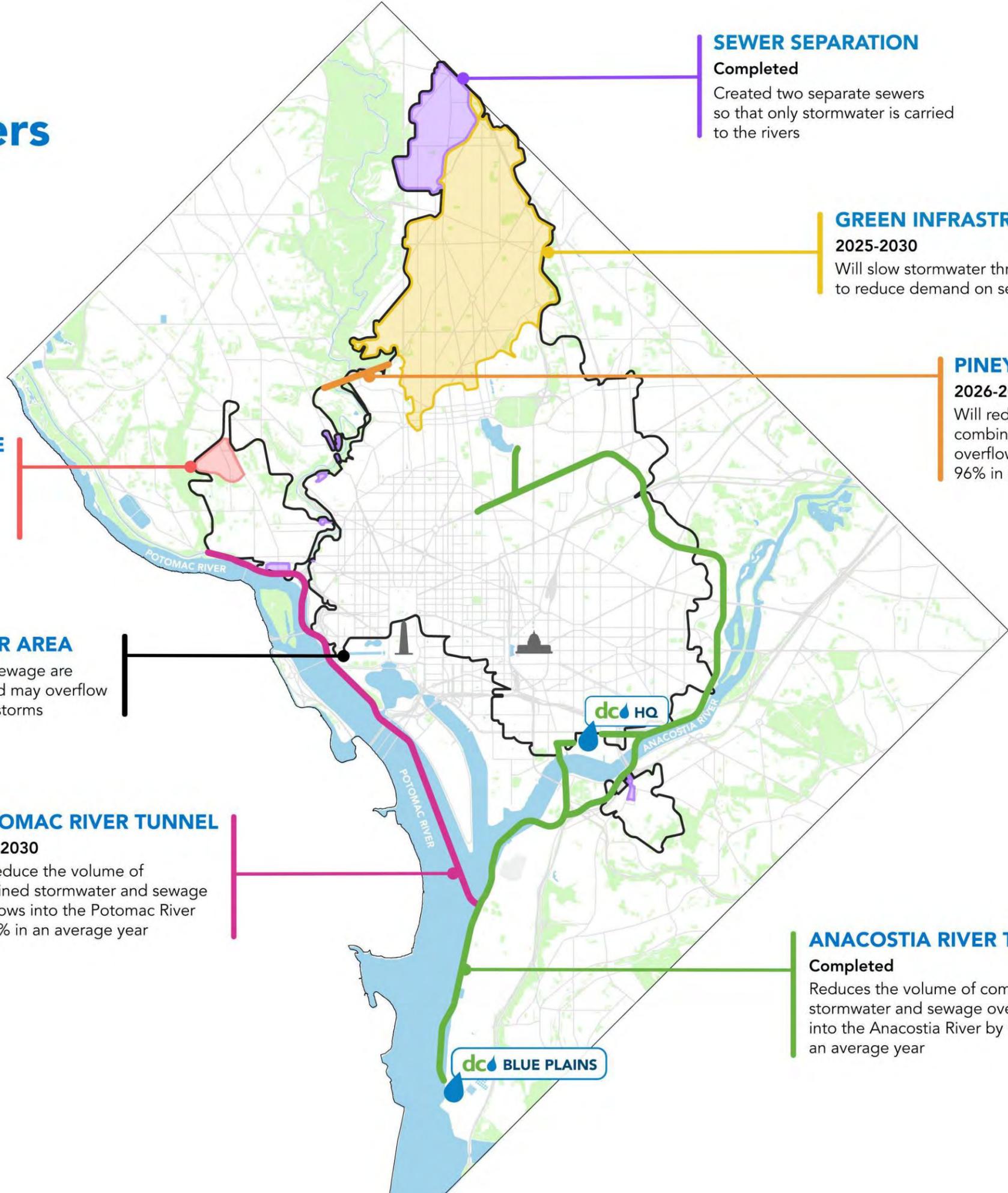
Flood Mitigation in Northeast Boundary

- Mitigate flooding in specific chronic areas of Northeast Boundary
- Bring up capacity from 2 – 5-year storm to 15-year, 24-hour storm (current standard)
- Completed September 2023, ahead of March 2025 Consent Decree deadline

Peak Flow Reduction at Blue Plains

- Reduce Blue Plains peak complete treatment from 740 mgd to 555 mgd
- Store peak flows in tunnel to reduce nutrient removal costs
- Saves more than \$900 M

dc
Clean Rivers Project



SEWER SEPARATION

Completed
 Created two separate sewers so that only stormwater is carried to the rivers

GREEN INFRASTRUCTURE

2025-2030
 Will slow stormwater through infiltration to reduce demand on sewer system

PINEY BRANCH TUNNEL

2026-2030
 Will reduce the volume of combined stormwater and sewage overflows into Piney Branch by 96% in an average year

GREEN INFRASTRUCTURE

Completed
 Slows stormwater through infiltration to reduce demand on sewer system

COMBINED SEWER AREA

Where stormwater and sewage are collected in one pipe and may overflow into rivers during heavy storms

POTOMAC RIVER TUNNEL

2024-2030
 Will reduce the volume of combined stormwater and sewage overflows into the Potomac River by 93% in an average year

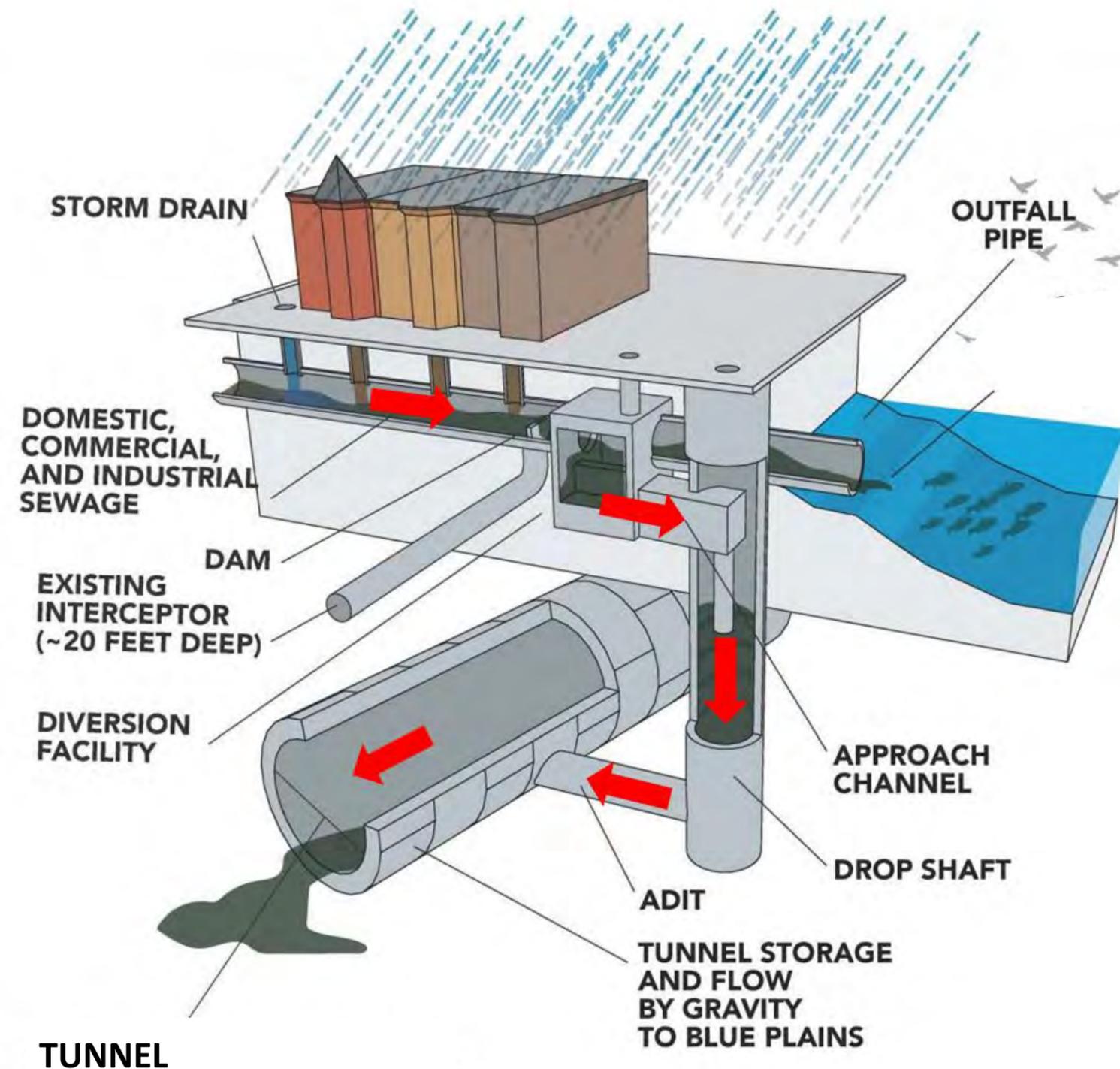
ANACOSTIA RIVER TUNNEL

Completed
 Reduces the volume of combined stormwater and sewage overflows into the Anacostia River by 98% in an average year

- **Clean Rivers: \$3.29 Billion**
- **Nitrogen Removal: \$950M**
- **Total > \$ 4.2 Billion**
- **25 yr implementation (2005 – 2030)**
- **96% reduction in CSOs**
- **Approximately 1 million lbs/yr nitrogen reduction**



Clean Rivers Performance – Average Year of Rainfall



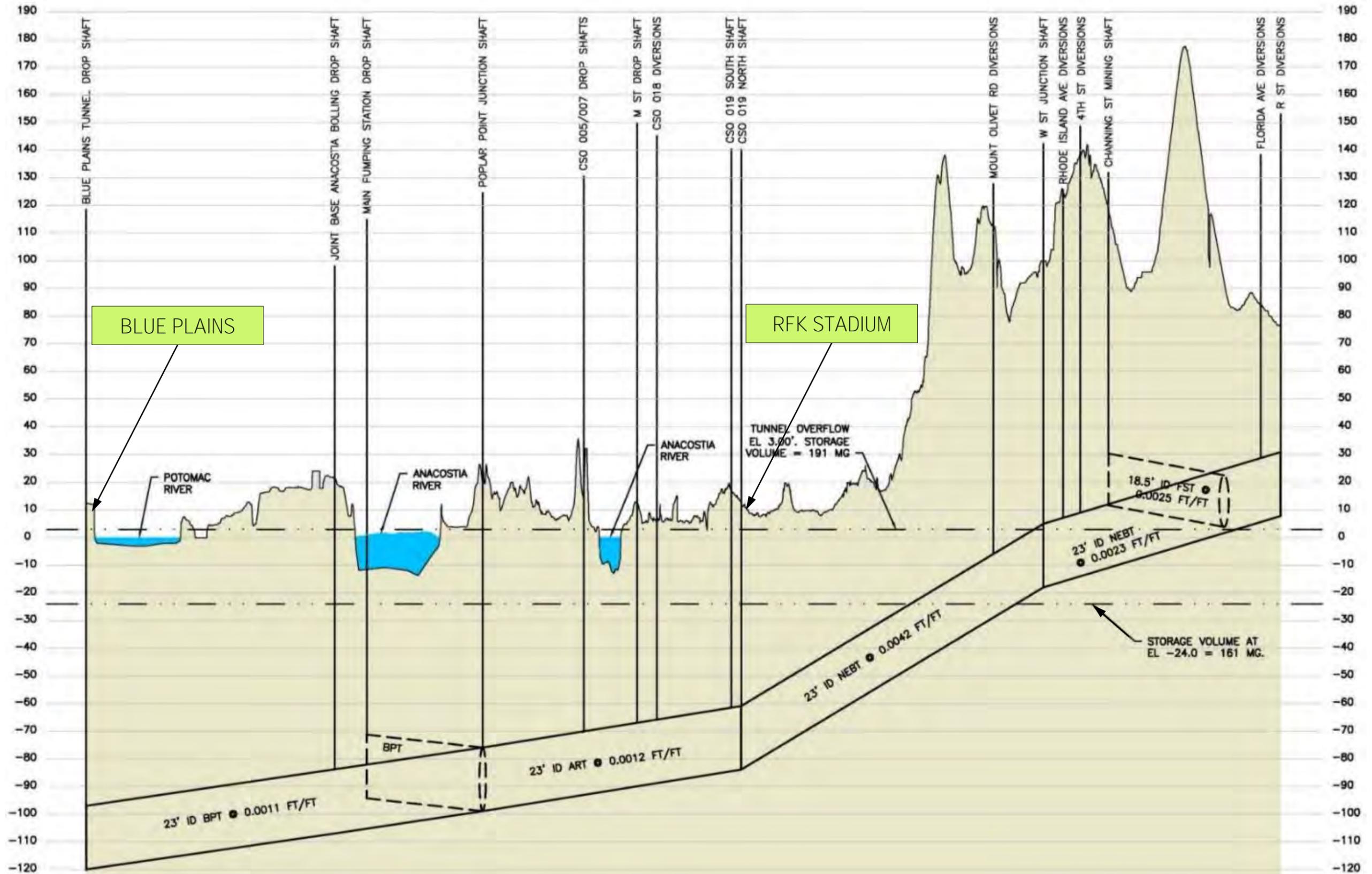
Parameter	Condition	Anacostia River	Potomac River	Rock Creek	Total
CSO Volume (mg/avg year)	1996 – DCW created	2,142	1,063	49	3,254
	LTCP Complete	54	79	5	138
CSO Frequency (#/avg yr)	1996 – DCW created	82	74	30	82
	LTCP Complete	2	4	1 / 4 ¹	4

¹One at Piney Branch, four at the other Rock Creek CSOs

- **3.2 billion gallons/avg year at start of program**
- **98% volume reduction on Anacostia**
- **96% volume reduction system-wide**

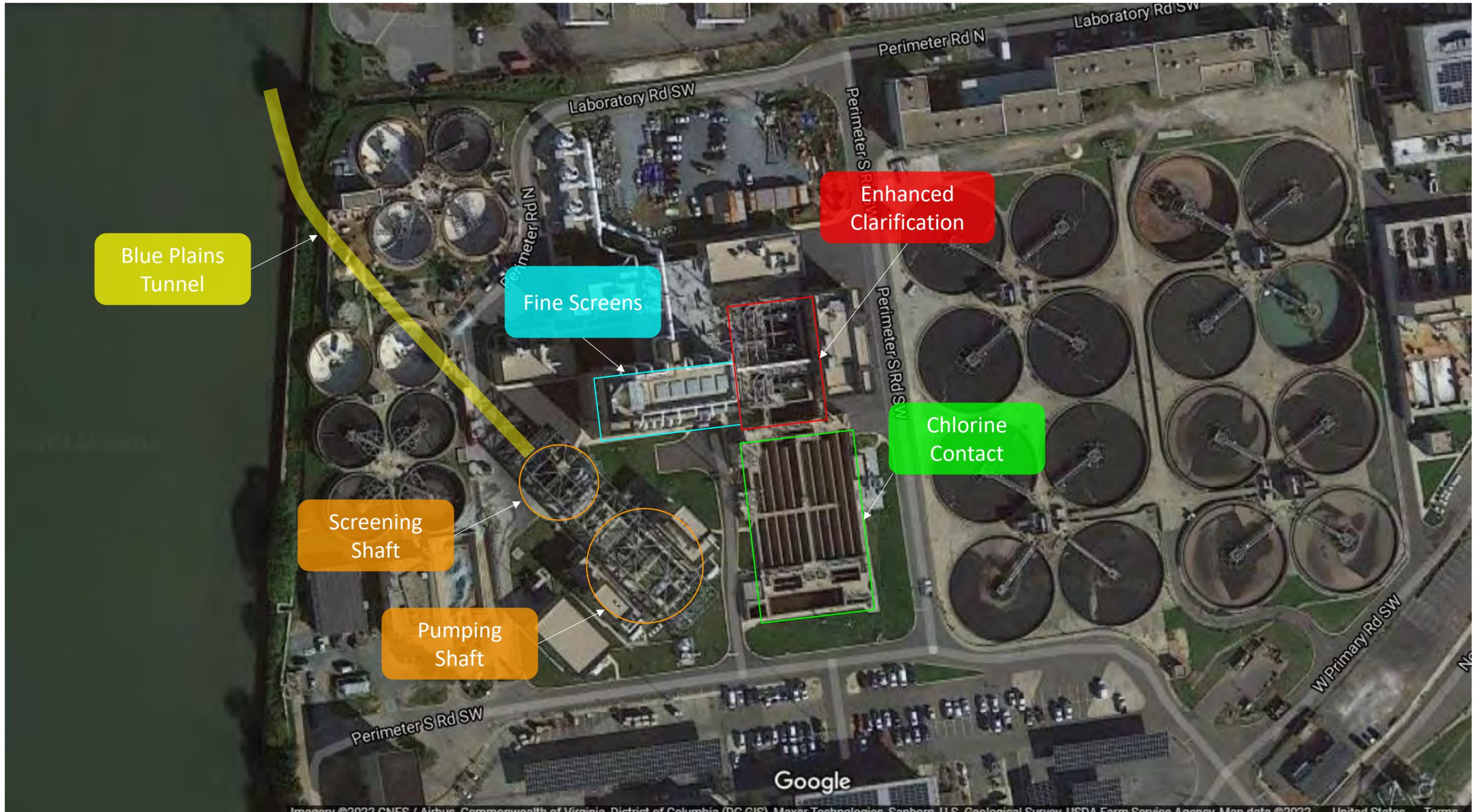


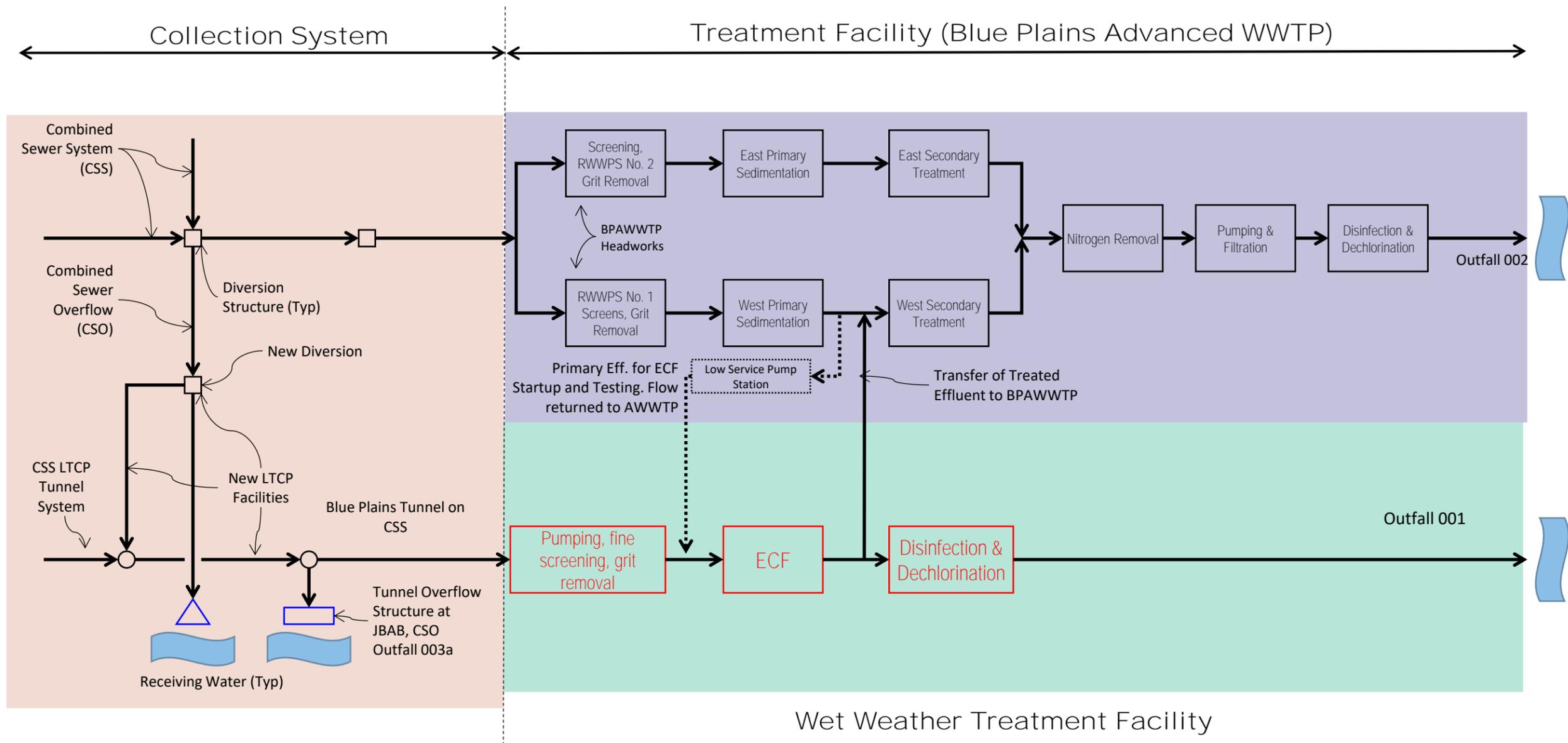
Anacostia Tunnel System Profile





New 225 mgd Wet Weather Treatment Facility at End of Tunnel

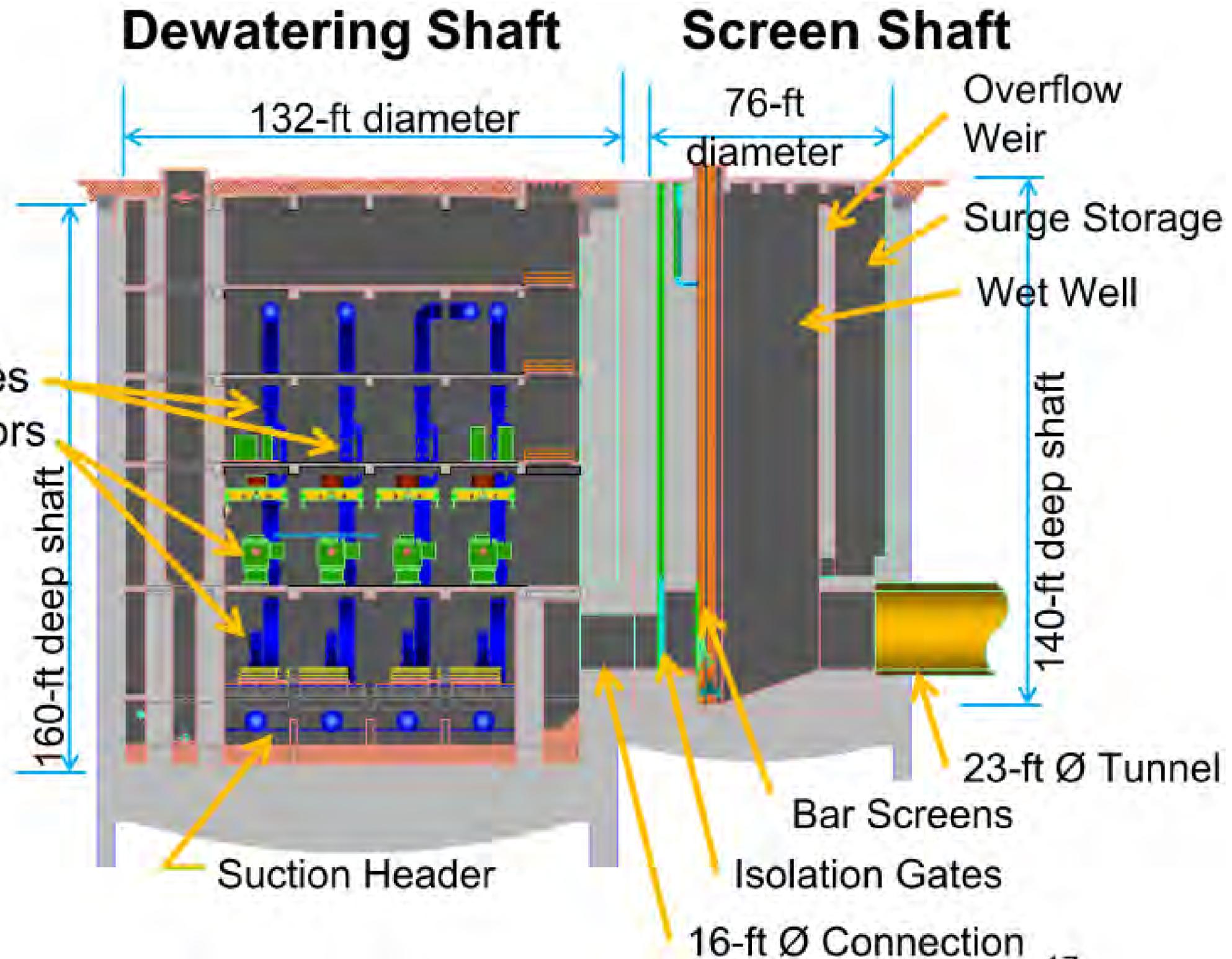




Provides flexibility to empty tunnel to main plant (complete treatment) or to new Wet Weather Treatment Facility

➤ **Equipment / Systems**

- Plumbing & HVAC
- Electrical & Controls
- Piping & Valves
- Pumps & Motors





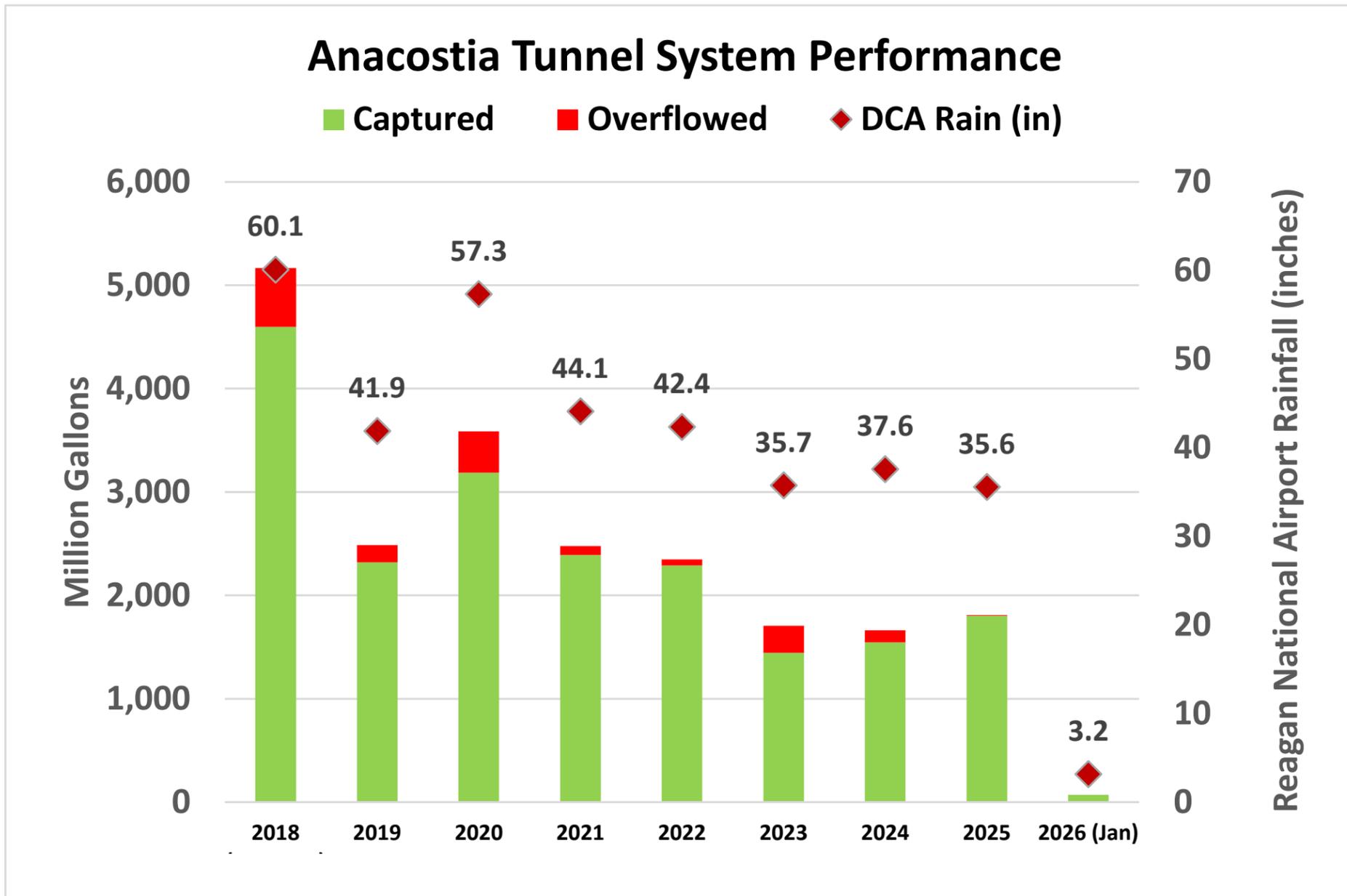
AlexRenew and DC Water are Similar in Configuration, Different in Scale

Parameter	AlexRenew	DCW – Anacostia Tunnel
Diameter & length	12' dia, 2.2 miles	23' dia, 12.5 miles
# Shafts	4	21
Storage volume	12 million gal	190 million gal
Tunnel Dewatering Pump Station	40 mgd dewatering 180 mgd wet weather	225 mgd
Treatment (small events)	Complete treatment (main plant)	Complete treatment (main plant)
Treatment (large events)	40 mgd wet weather treatment facility	225 mgd wet weather treatment facility
Operational concept	By gravity, no active controls	By gravity, no active controls



Anacostia Tunnel System Performance

Over **19.6 billion gallons of CSOs and 12,536 tons of trash, debris, and other solids** captured Mar 2018 – Jan 2025



Trash, Debris and Solids Removal from Screening Shaft at Tunnel Dewatering Pumping Station



Transition from Construction to Operations

- Pump Station and Wet Weather Treatment Facility
 - Design Builder operated these facilities for approximately 1 year after placing in operation
 - DC Water staff shadowed Design Builder during operations
 - Gradual transition to DC Water Operations
- Near Surface Structures (Diversions, Overflows, Ventilation and Odor Control)
 - DC Water took responsibility
 - Similar to existing CSO control structures
 - Training by Construction Contractor
 - Program Manager staff accompanied crews first couple of months
- Tunnel and Drop Shafts
 - Planned inspections via specialty contractor (CIP)
 - Planned every 10 – 15 years

Lesson Plans

Class Room Training

Field Training

Materials for Training Future Staff

- Written plan
- Videos
- 3-D cutaway renderings

Sessions targeted for:

- **Mechanical**
- **Electrical**
- **Instrumentation**
- **Preventive Maintenance**

Training performed by Design-Builder as part of facilities turnover + follow-up training by DC Water staff
(repetition is beneficial)



Staffing/ Operational Impact

Facility	Change in Staffing	Drivers
Pump Station and Wet Weather Treatment Facility	<ul style="list-style-type: none">• Added 1 FTE Operator to our Primary/Secondary Crews (From 5- to 6-man crew)• Dedicated 1 Senior Process Control Specialist to oversee TDPS/WWTF• Prioritized operator tasking during wet weather events to shift staff to provide for operation of the WWTF	<ul style="list-style-type: none">• CSO facilities only run part time. Hiring/dedicating staff assigned just to CSO facilities not practical• Cross training with existing operations and O&M staff more practical
Near Surface Structures	<p>1 additional crew</p> <ul style="list-style-type: none">• Tunnel facilities not full time• Shared with other new responsibilities	<ul style="list-style-type: none">• Added significant number of structures requiring monthly inspection• Other system needs (sections, emergencies, assistance for construction projects) also warranted additional staff

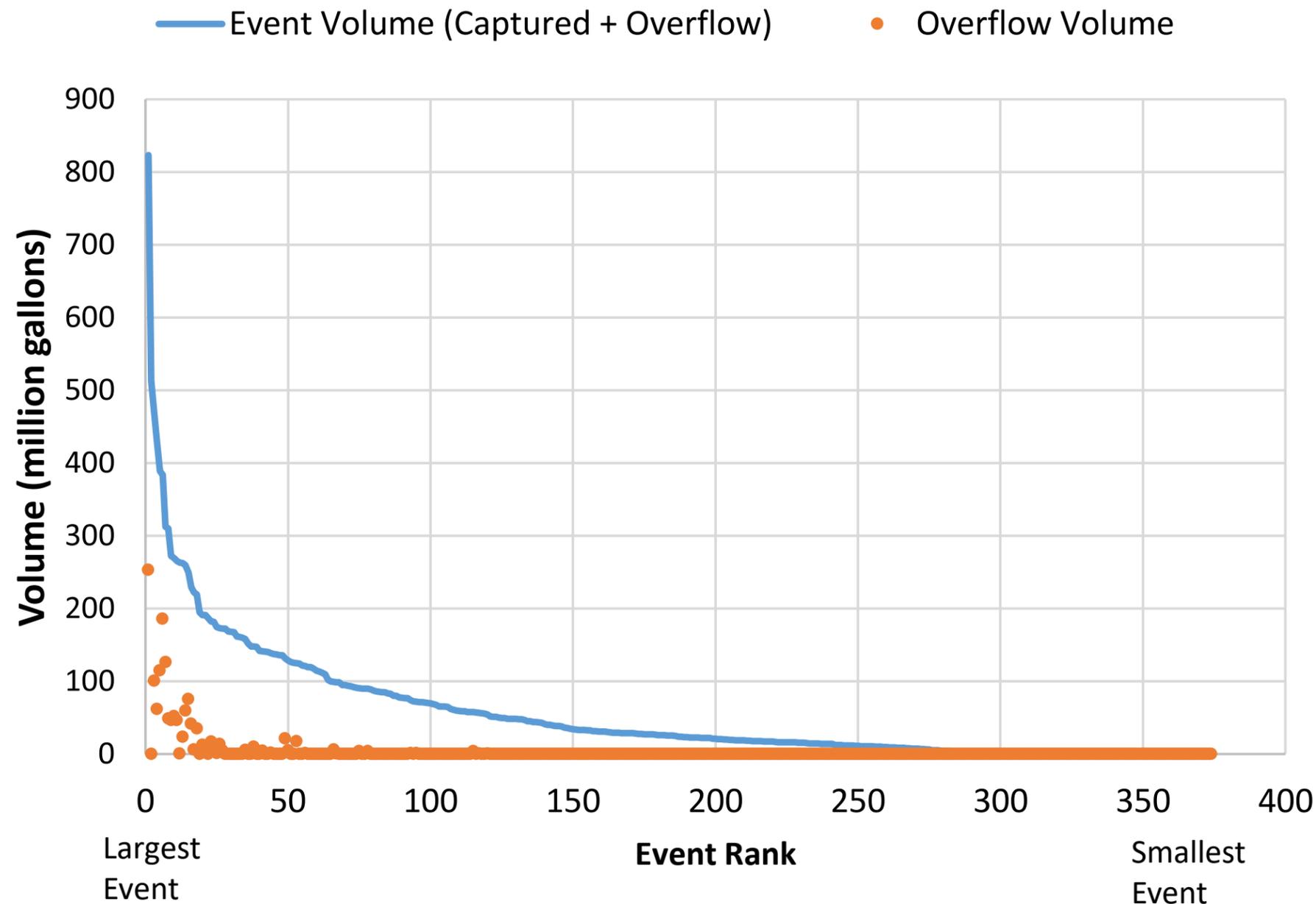


Financial Impact – Anacostia Tunnel System

Facility	Tunnel Dewatering PS and Wet Weather Treatment Facility	Tunnel – Near Surface Structures	Total
Estimated Total O&M Cost (Average year)	\$5.4 M	\$0.6 M	\$6M
	90%	10%	

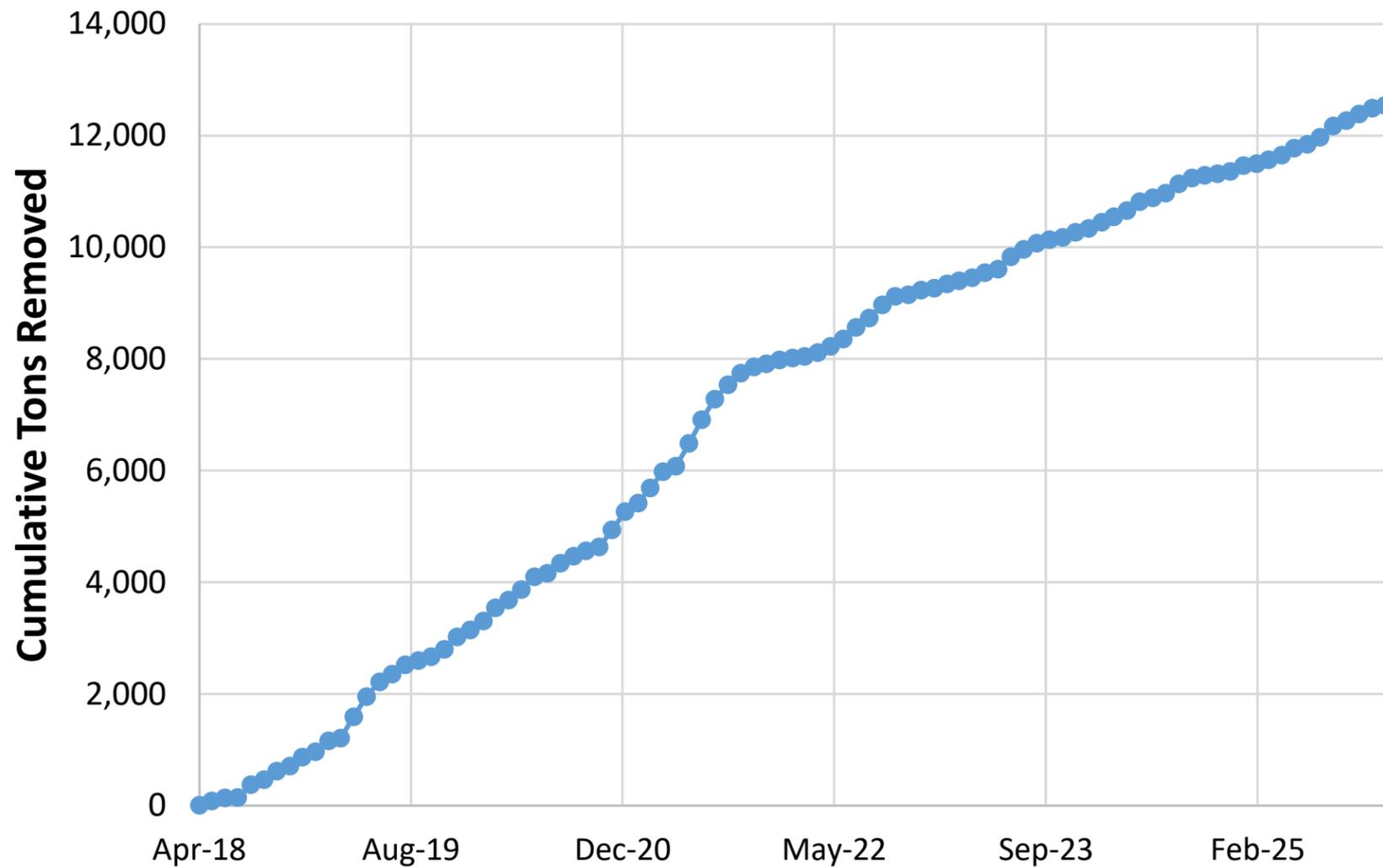
Lessons Learned

Overflow Event Size

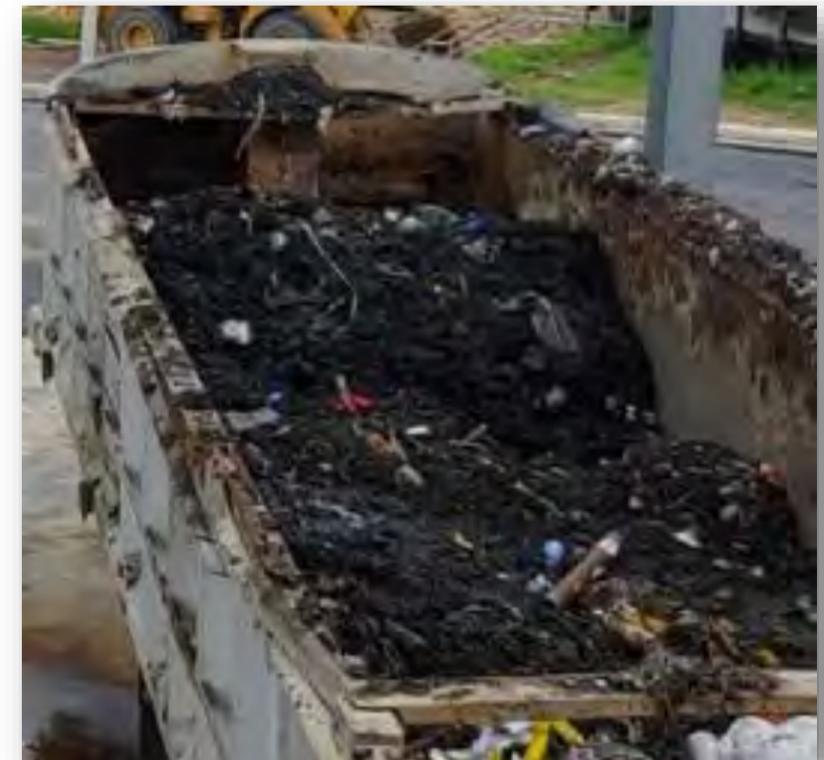


- Events can span multiple days
 - Back-to-back rain
 - Dewatering time
- Average about 50 events per year
- Most are small events
 - 80% of events fill less than half of tunnel
- Large events show extreme nature of rain that will be well beyond “average year” conditions

Solids, Trash & Debris Removal



- Average about 1,200 tons/yr
- Most of weight is grit/sludge. Floatables and trash weigh little
- Need to dry prior to disposal
- Benefit to regular removal even if no rain



- Will take 2 to 3 years to learn how system responds
 - Need full range of wet weather events
 - Some trial and error inherent in the process
- Operators will learn to optimize system
 - Over time, operators learn how system responds and do an excellent job
 - Can perform better than hard and fast rule
- Expect immediate information requests during large events
 - Media/NGO/Gov requests for how system performed during major events
 - Typically ask before the event ends
 - Little time to review data
 - Staff should be prepared to make preliminary estimate

Experience:

- Much attention in initial 2 years after placing in operation
- Regular requests for data on performance, especially after larger storms – from media, NGOs, people who use the river
- Tracking pollution and river lights
- Trust

- NGOs have seen noticed change in river, especially trash
- Trust developed on performance of facilities over time

How addressed

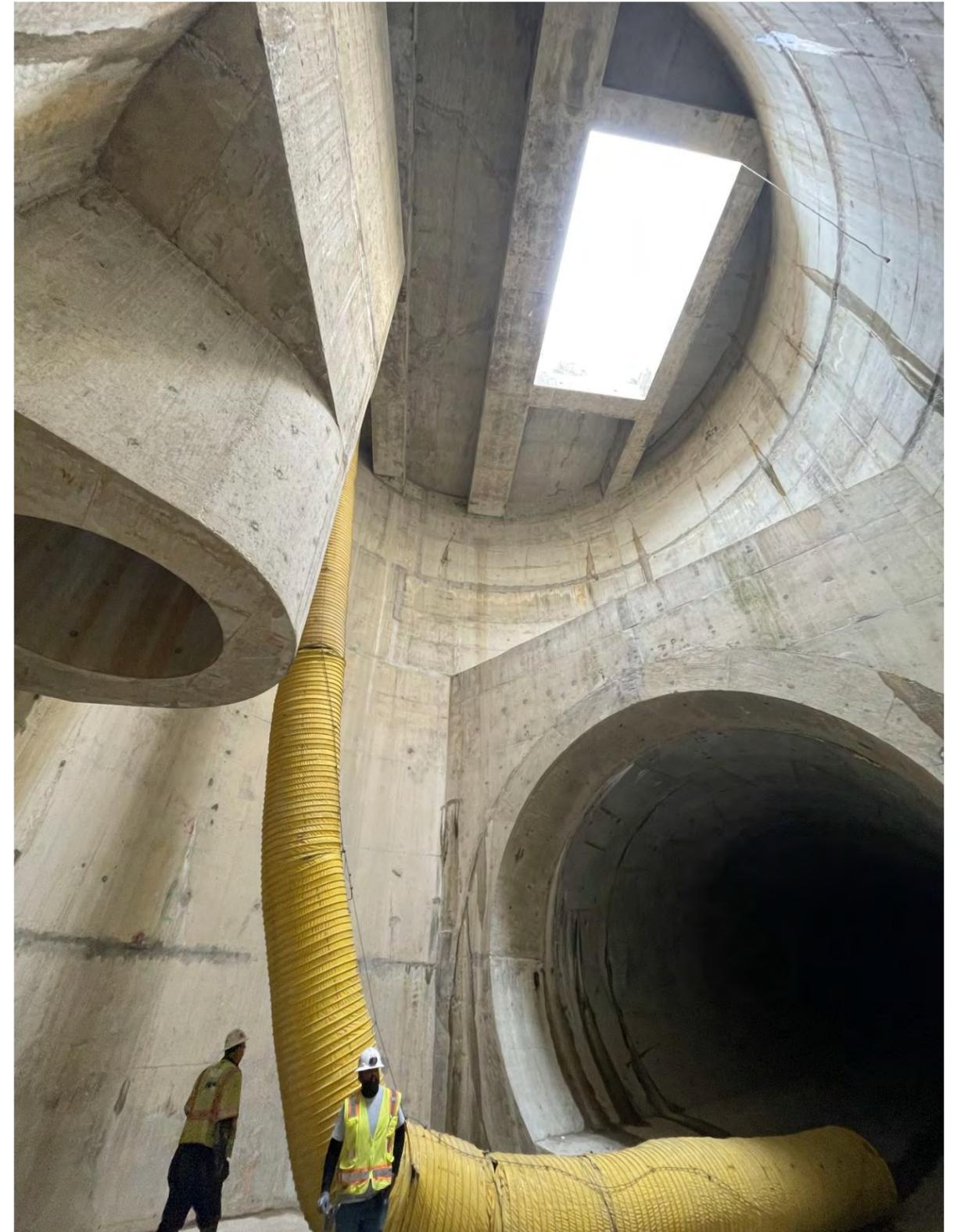
- Data on web site
- Monthly reports to Board on performance that are on web site
- Develop standard reporting graphic
- Attention wanes after trust is built in performance of facilities

- No way to avoid
- Develop procedure on how to make estimates
- Have multiple staff trained on how to do it, caveat prelim data

- On many occasions, we've been asked if there were CSOs due to observed river pollution (no 99% of time) Have multiple staff trained on how to do it
- River lights receive high attention, public notification of remaining overflows has been a matter for debate

- Instrumentation system can be a challenge
 - Difficult environment, especially areas subject to tidal flows/debris
 - Developed ranges for reliable data on a CSO-by-CSO basis – discounted data outside of these ranges
 - Even then, a best professional judgement review is required each month
- Odors have not been problematic (yet)
 - Passive odor controls (dampers/flap gates) have been effective
 - Odor control system not operated
 - May be needed in the event of maintenance/emergency
- System helps during emergency/outages
 - No dry weather overflows on Anacostia River since tunnel in service
 - Provides redundancy – e.g., in the case of pump station outages, problem dry weather regulators

- There will be events that cause overflows when tunnel is not full
 - Very intense thunderstorms in summer that exceed ability to get flow into tunnel
 - Infrequent, but does occur
- There will still be overflows, albeit greatly reduced
 - Messaging needs to be consistent that the system is not designed to eliminate overflows
 - Tie performance back to average year or design condition → there will be wet and dry years
 - It will take multiple years to assess overall performance
- Trash reduction and water quality have noticeably improved





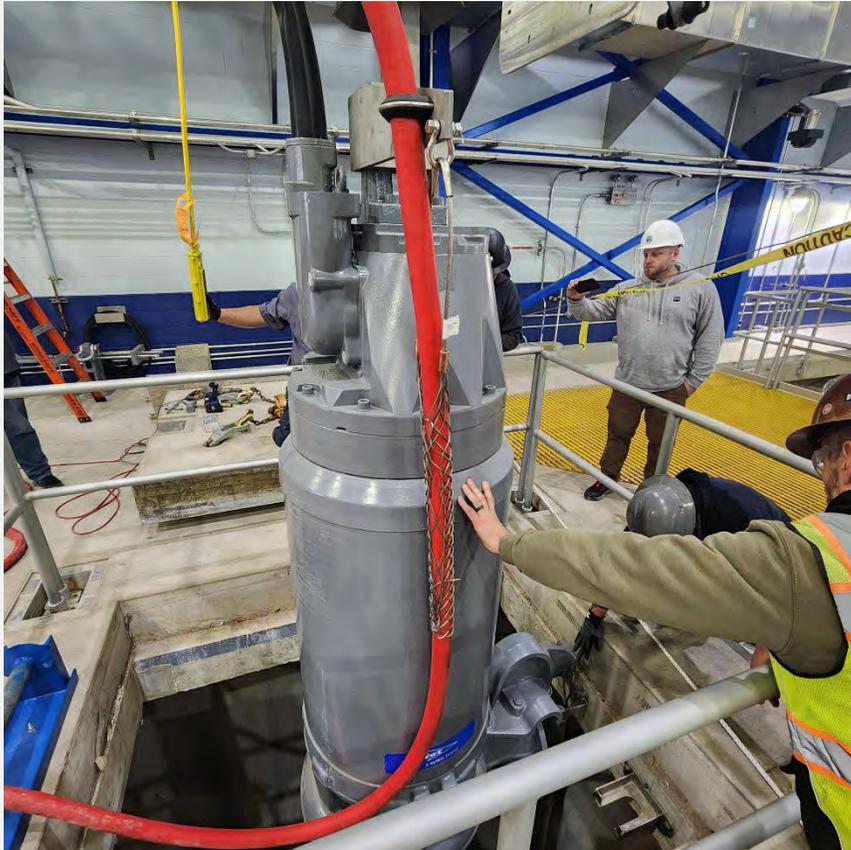
NEORSD PROJECT CLEAN LAKE: OPERATIONAL READINESS LESSONS LEARNED

BOARD OF DIRECTORS RETREAT | FEBRUARY 21, 2026



**PROJECT
CLEAN LAKE**

Presentation Overview



01 NEORSD Background

Service area, mission, Project Clean Lake, Westerly Tunnel System

02 Operational Readiness Implementation

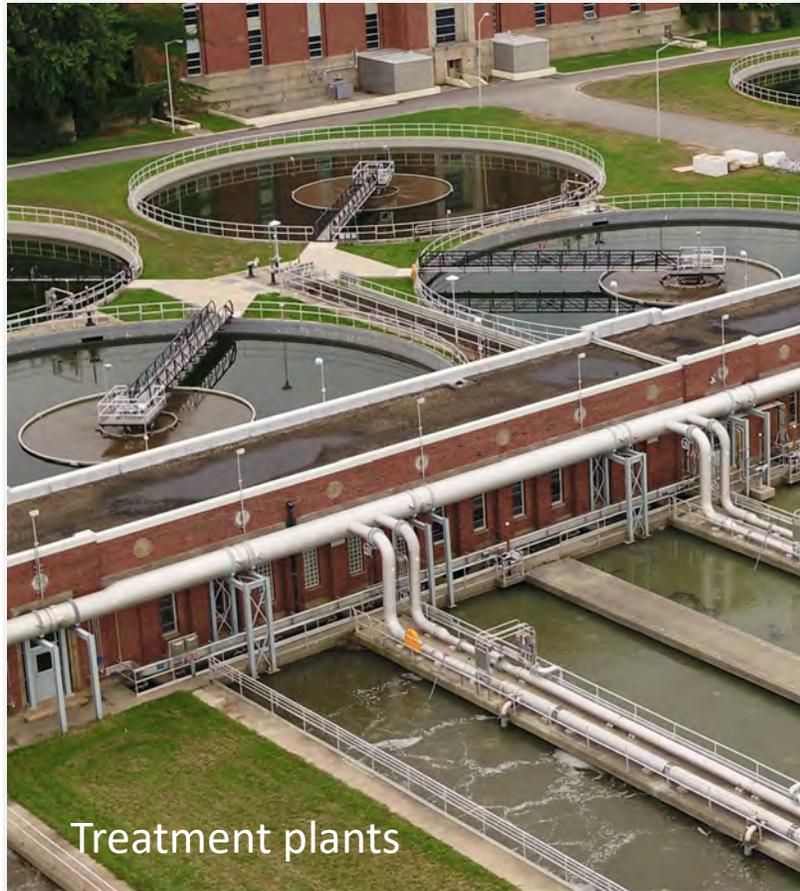
Framework: design, construction and handoff to operations and maintenance

03 Westerly Tunnel System–What have they Learned?

Key takeaways: lessons learned and continuous improvements

04 NEORSD Considerations for RiverRenew

Tunnel inspection/cleaning, safety, staff development training programs



Treatment plants

Easterly Wastewater Treatment Plant

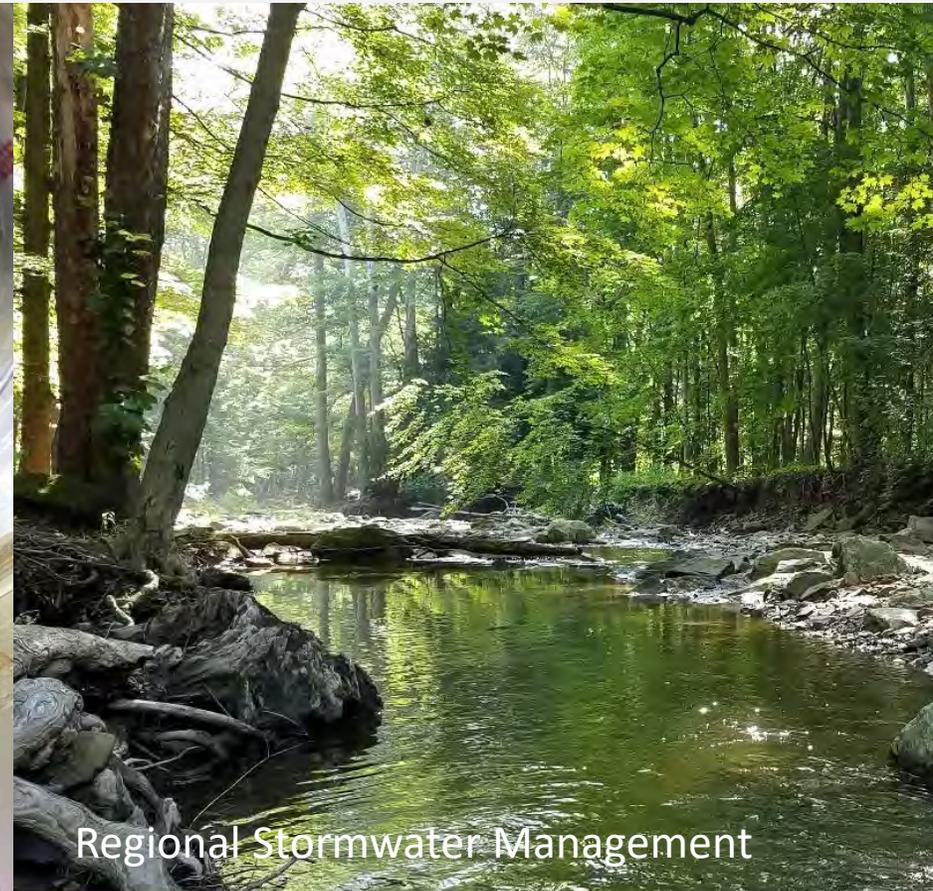
Wastewater treatment



CSO control

Doan Valley Tunnel construction

Project Clean Lake



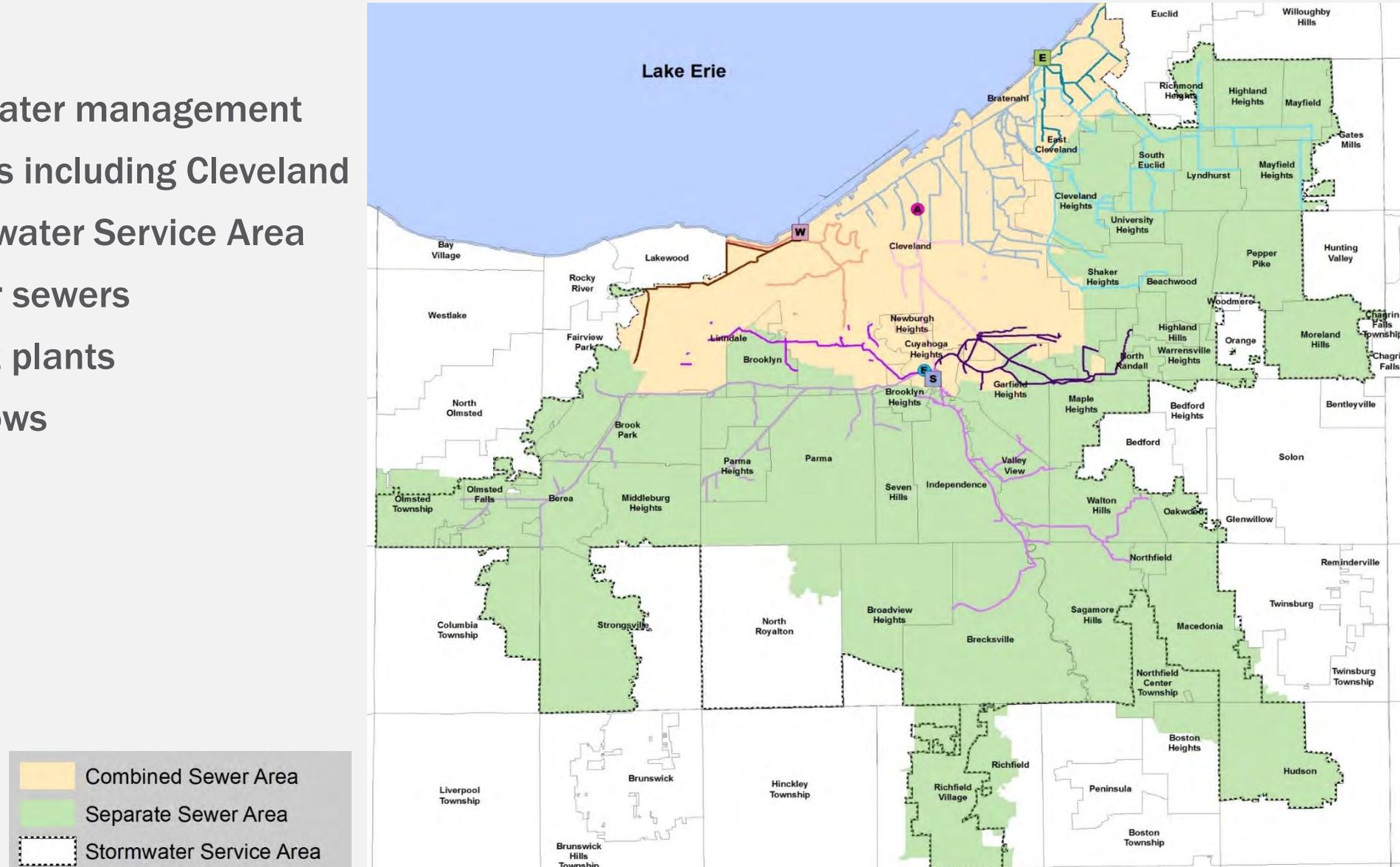
Regional Stormwater Management

Willey Creek, Moreland Hills

Addressing flooding, erosion, water quality

NEORSD Wastewater Responsibilities & Obligations

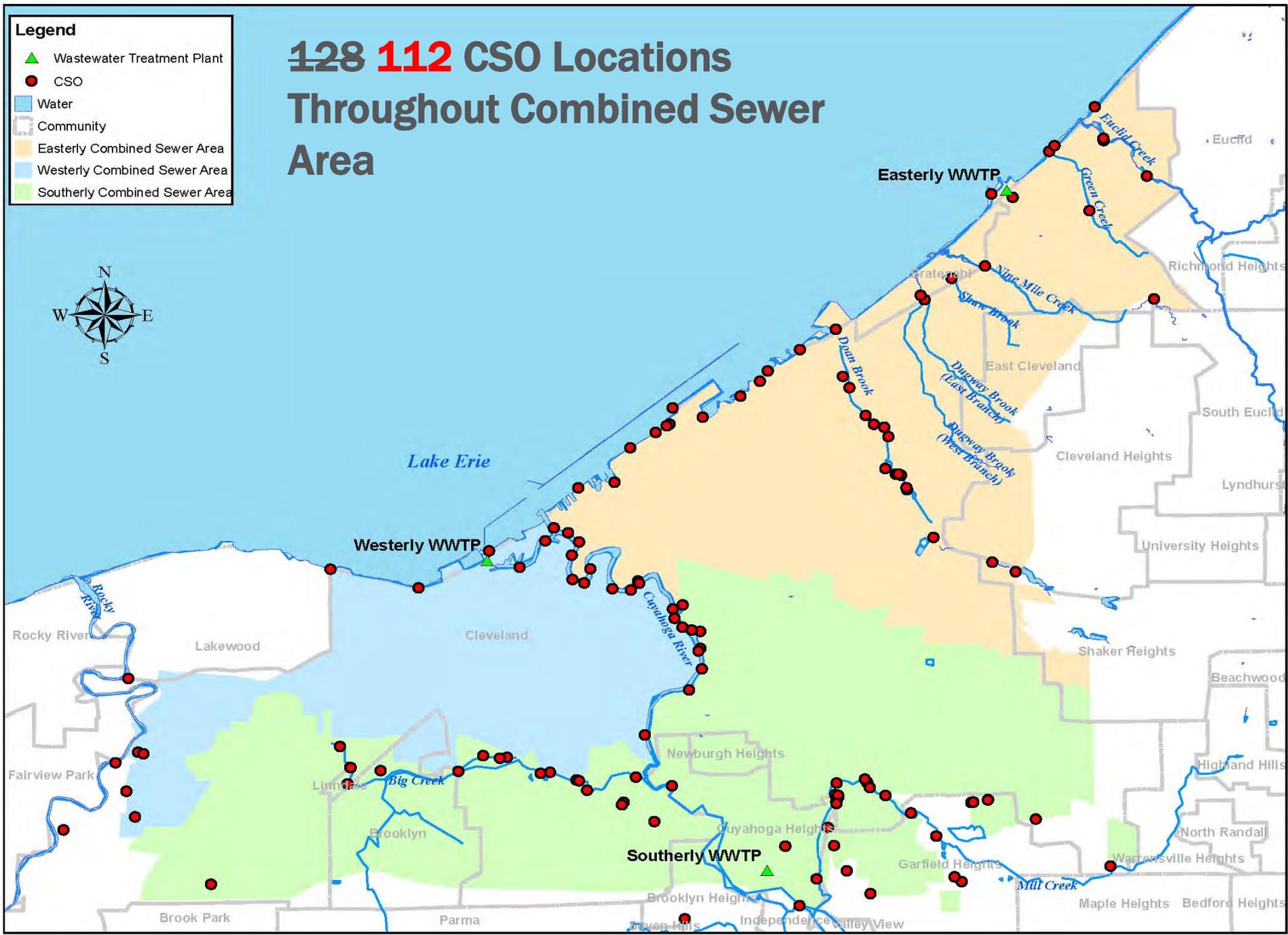
- Regional sewer/stormwater management
- Serving 63 Communities including Cleveland
- 363 square mile Wastewater Service Area
- 341 miles of interceptor sewers
- 3 wastewater treatment plants
- Combined sewer overflows
- Project Clean Lake



Legend

- ▲ Wastewater Treatment Plant
- CSO
- Water
- Community
- Easterly Combined Sewer Area
- Westerly Combined Sewer Area
- Southerly Combined Sewer Area

128 112 CSO Locations Throughout Combined Sewer Area

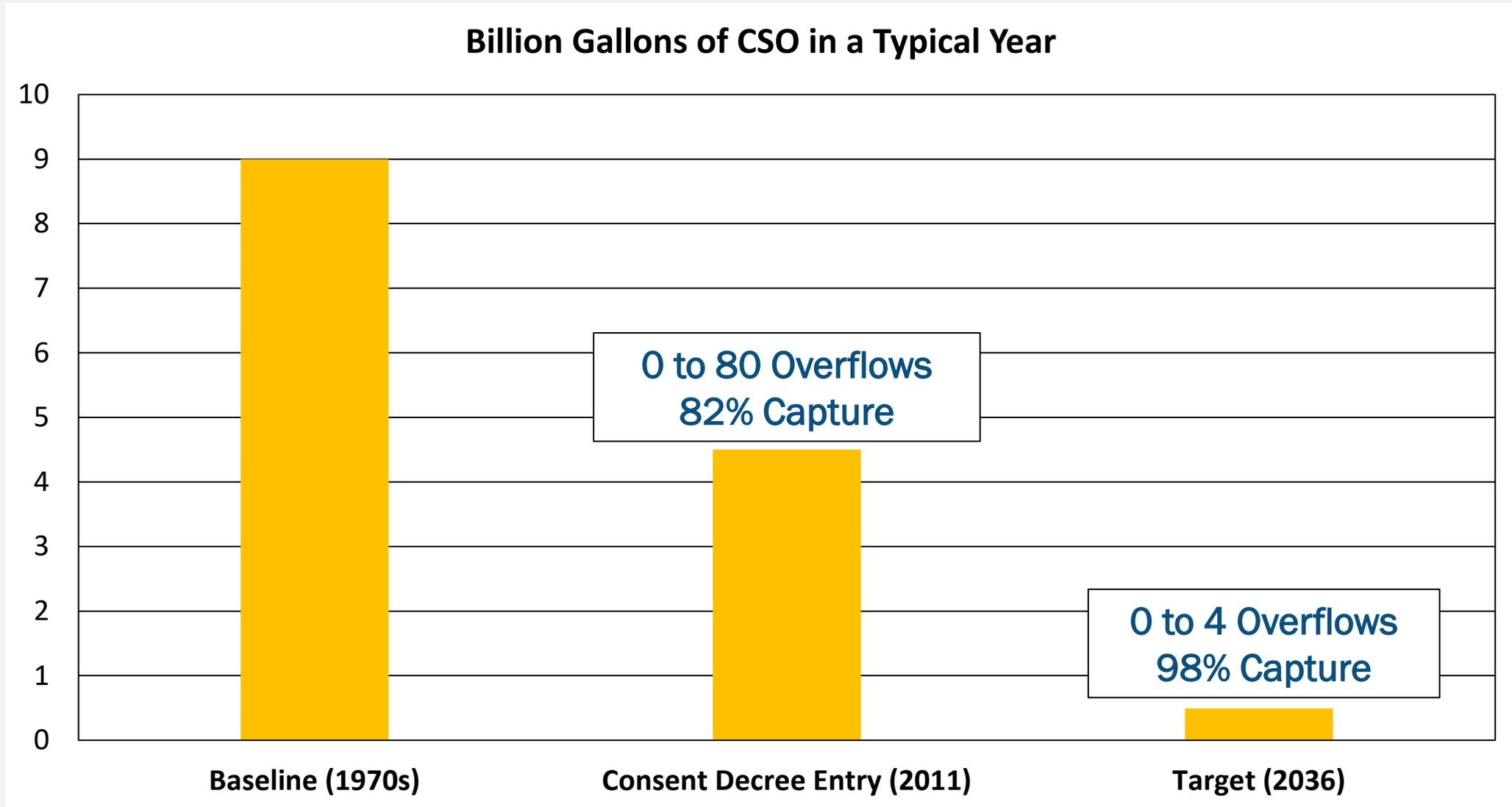


NEORSD Consent Decree: *Project Clean Lake*

- **\$3 Billion Investment (\$2009)**
- **24 Year Program**
- **25 Control Measures**
 - 7 Large Tunnels
 - Relief Sewers
 - WWTP Improvements
 - Green Infrastructure



Historical CSO & Consent Decree Requirement



NEORSD Project Clean Lake Large Tunnel and Pump Station Program

- 7 tunnels
- 18-ft to 25-ft diameter
- 9,000 to 22,000 feet long
- 100-ft to 270-ft deep
- 3 Large Pump Stations
- Operations (Plant) upgrades

Today: 4TH of 7 Tunnel Systems,
Westerly Storage Tunnel / Westerly
Tunnel Dewatering Pump Station



Westerly Storage Tunnel (WST) (\$135M)

Westerly Tunnel Dewatering Pump Station (WTDPS) (\$35M)



- 9,600 LF of 25-ft ID Tunnel, 3 shafts
- 36 MGD Dewatering Pump Station
- Avg. depth of 200 FT
- 1st West Side Tunnel, largest diameter

- 280 MG of Annual CSO capture
- Construction Costs:
 - \$135M WST (bid)
 - \$35M WTDPS (bid)

Westerly Tunnel Dewatering Pump Station (WTDPS)



August 2022



December 2024

Operational Readiness Implementation (ORI) Framework - LOTS OF MEETINGS!!!

- Design Phase
 - ORI Meetings at 30%, 60%
 - SSMO Collaborative Participation at ALL monthly Progress & Technical Meetings
 - SSMO Review of Design Deliverables (Mainly Drawings)
 - 3D Renderings of Structures, Access Points
- Construction Phase
- E&C Handoff to Ops and Maintenance

Key Takeaway: Until it's built, and you start operating the system, it's hard to envision, so EXPECT TO CONTINUOUSLY LEARN / IMPROVE

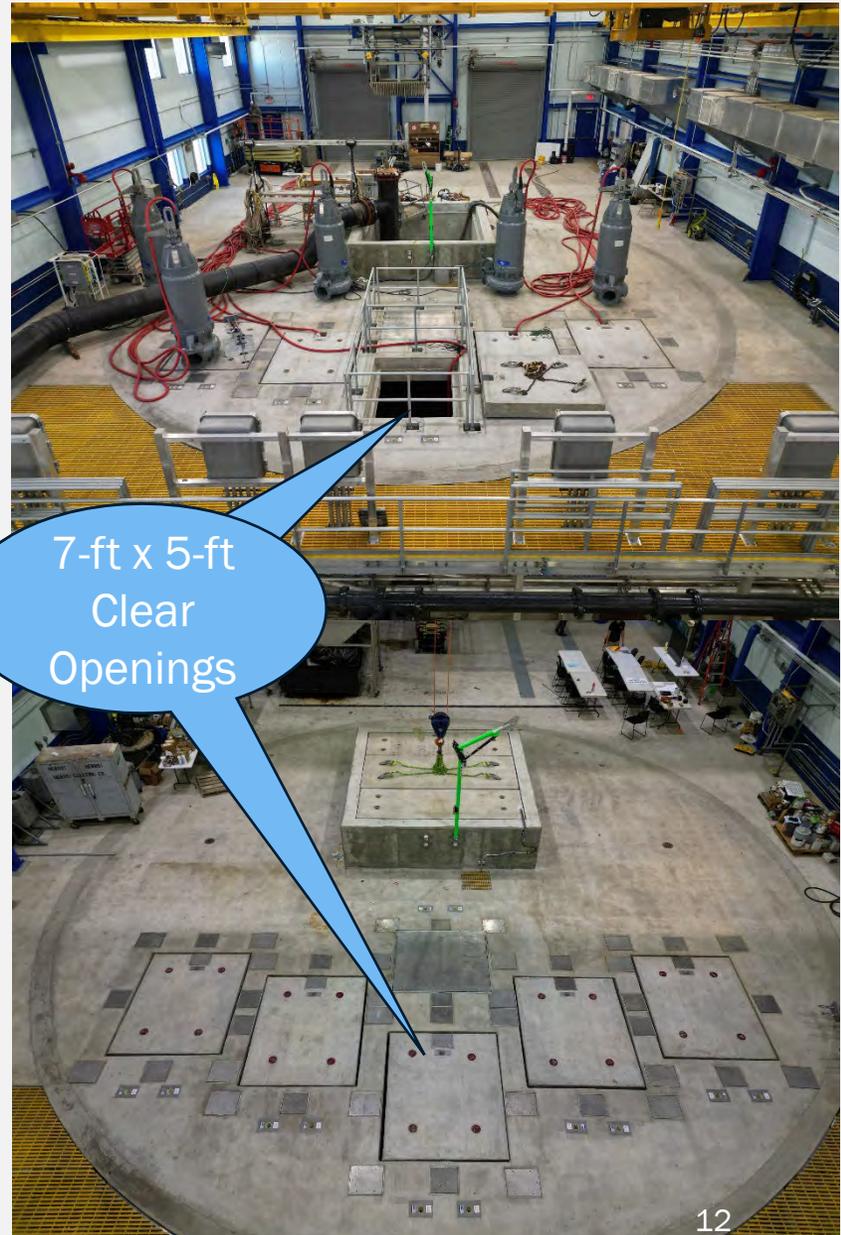
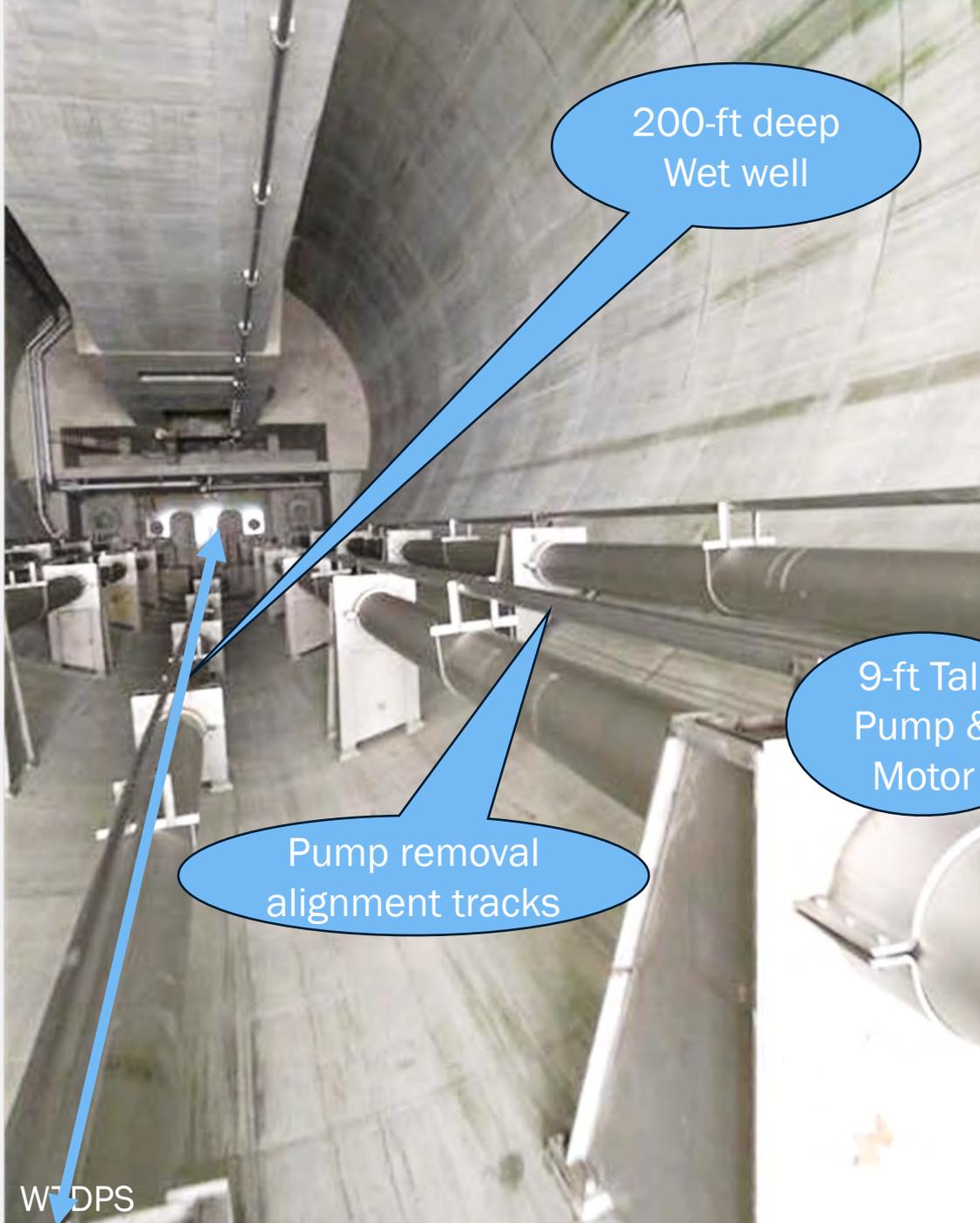


WTDPS 3D Renderings During Design
Site Prep and Shaft Construction

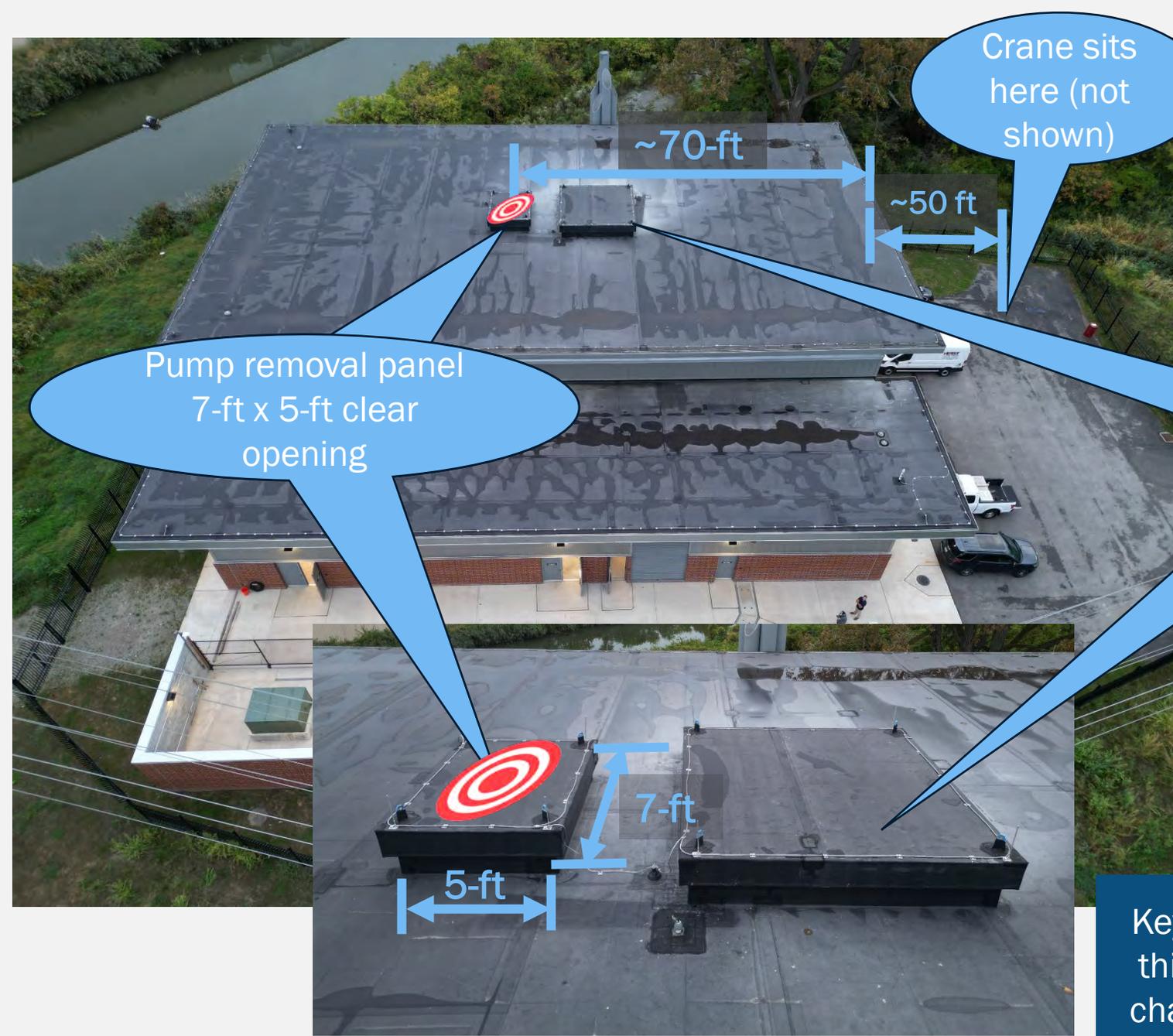


WTDPS 3D Renderings During Design
Building and Vent Construction

Example: Large heavy pumps, in a deep hole - how to remove for off-site service?



Offsite Service of Pumps & Access into Tunnel: Thread that Needle through the Roof!



11-ft x 9.5-ft
Clear Opening
Tunnel
Access

Building ~30-
ft Tall PLUS
200-ft Deep
Wet Well

Key Takeaway: There will be things you won't be able to change, adopt a continuous improvement mindset



Operational Readiness Implementation (ORI) Framework During Construction Phase - EVEN MORE MEETINGS!!!

○ Construction Phase

- 14 Points of Operational Readiness ahead of ODT
- Separate Focused Workshops w/Individual Ops Depts
- LET THEM SEE IT – Offer Site Visits during late phases
- Trainings, trainings, trainings (Vendor, E&C / Consultant Hands-on trainings)
- O&M Review of SOPs/Operational Posters/Manuals
- LOTS of Coordination w-WWTP Staff ahead of ODT
- Operational Demonstration Testing w-WWTP

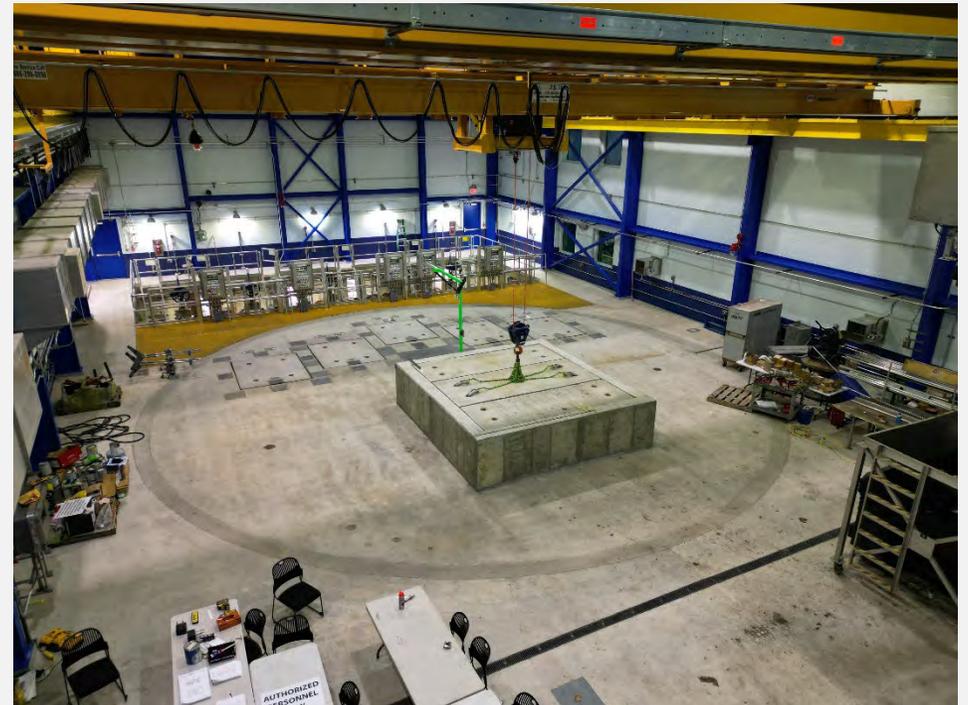
○ Engineering & Construction dept Handoff to Ops and Maintenance

Key Takeaway: Take the time to give all Departments the chance to touch/feel/see the system at work, the earlier the better

Construction Supervisor's 14 Points of Operational Readiness:

1	Safety & Security
2	<i>Project Design</i>
3	Staffing Analysis
4	Budgetary Needs
5	Contingency Plans
6	Contracts
7	Asset Database

8	Standard Operating Procedures
9	<i>Maintenance Plans & Procedures</i>
10	Automation Strategies
11	Building Services
12	Warranty
13	<i>Spare Parts & Specialty Tools</i>
14	Document Management

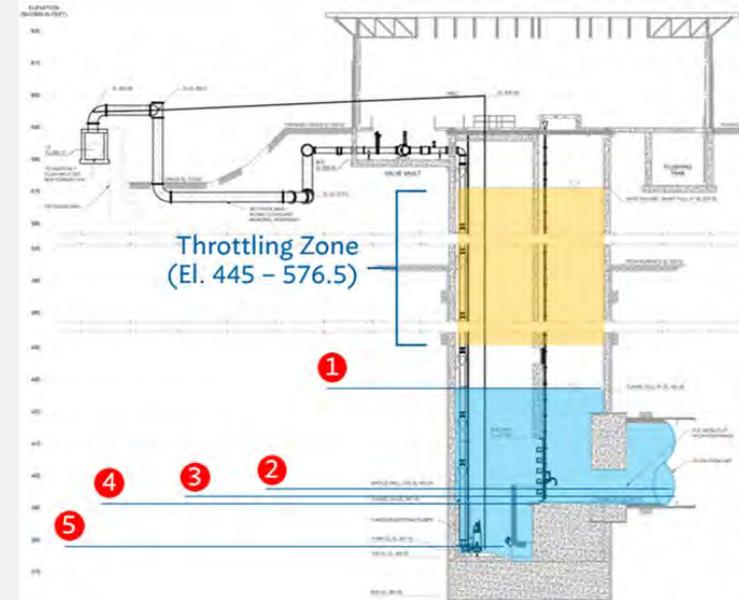


Operational Readiness Implementation (ORI) Framework – CONTINUOUS IMPROVEMENT MINDSET

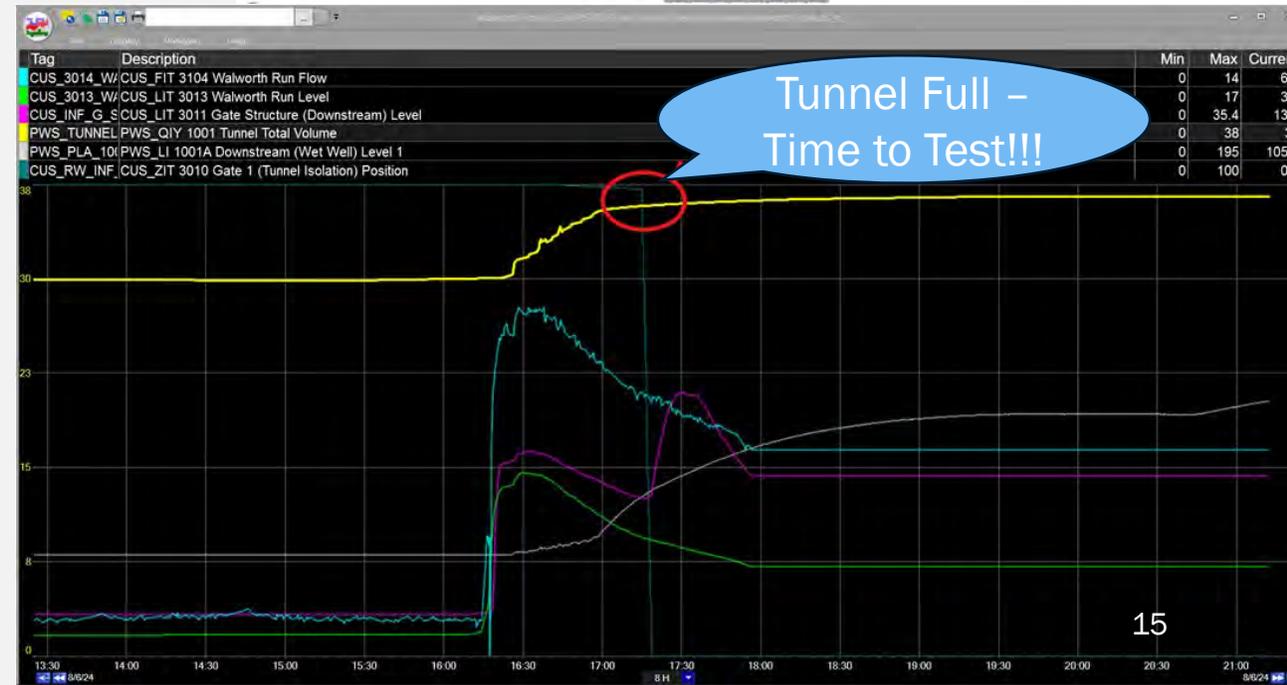
- Engineering & Construction (E&C) dept Handoff to Ops and Maintenance
 - Additional Trainings / Support Provided:
 - Vendor as needed – Hands on is best
 - 360 Water (virtual / video)
 - E&C / Consultant trainings &/or re-trainings
 - E&C Commissioning Manager Monitors (to this day)
 - Finalize SOPs/O&M Manuals/Operational Posters
 - Staffing Plan adjustment: 2 New SUMPS and Maintenance Training Program

Key Takeaway: With 1-Year Amendment in Place, take advantage of expertise provide to guide AlexRenew Ops staff towards full system understanding

Tunnel Drawdown – Key Hydraulic Elevations



- 1 El. 432' - Tunnel Full (4 Pumps)
- 2 El. 401' - 4th pump shuts off (3 pumps)
- 3 El. 399' - 3rd pump shuts off (2 pumps)
- 4 El. 397' - 2nd pump shuts off (1 pump)
- 5 El. 384' - End of Dewatering



NEORSD Westerly Storage Tunnel System: What have they Learned?

Learning the system: Plant Ops & Sewer System Maintenance & Operations (SSMO) Interface during 24-Hr Tunnel Dewatering:

- Ops calls for pumps based on Plant capacity
- SSMO Maintenance removes debris in wet well

Issue: Pumps remove grit, but it's not getting there.

- Debris removal SOP Adjusted; WWTP starts pumps early, SSMO runs rake at 6-hr mark on day shift & then at regular intervals;
- Staff OT & move shifts w-24-hr dewatering cycle
- More Storms than anticipated – 580 MG CSO Captured by WST/WTDPs last year vs. 277 MG anticipated for a Typical Year.

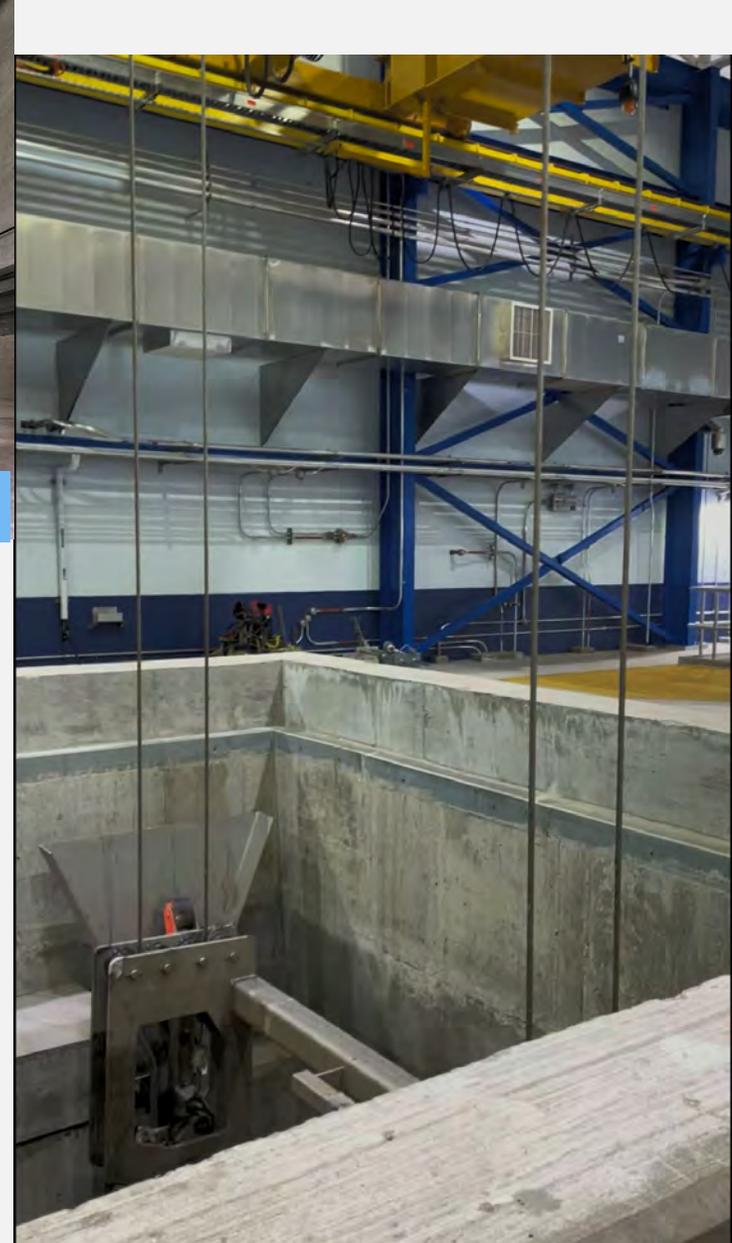
Key Takeaway: Expect to learn / tweak / add / remove processes as you go and be open to adjustments to how you work as a team.



WTDPs Rake down position



Grit Accumulation in Tunnel before SOP Adjustments



WTDPs Ovivo Bosker Automatic Rake

NEORSD Westerly Storage Tunnel System: What have they Learned?

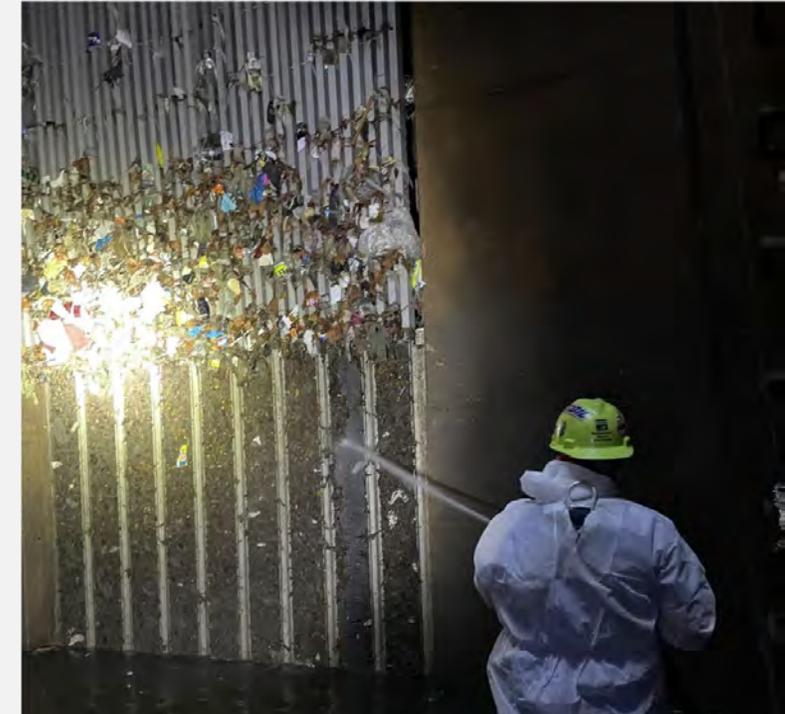
Learning the system: Solids Handling Staffing and Standard Procedures:

- Named an “Infrastructure Support Specialist” from exist staff.
 - Liasson between Solids Removal Contractor & SSMO;
 - Staff reports to them on debris levels to prevent over-filling dumpsters.
- Remote sites: Check bar racks more often, reduce efforts

Key Takeaway: Adjust staffing assignments as conditions warrant



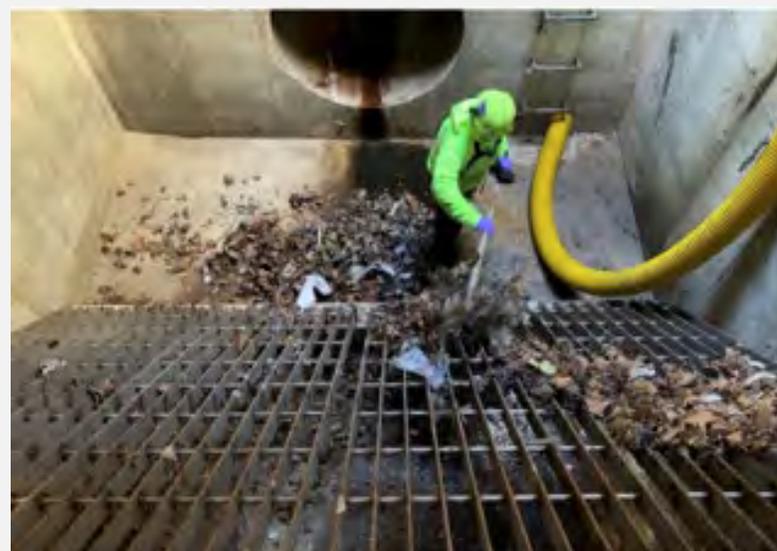
Bar Rake wet debris



DST Welded Wire / Bar Rack hose down



Bar Rake filling dumpsters



Bar Rack manual clean



Diversion Gate & Screening Structure

NEORSD Westerly Storage Tunnel System: What have they Learned?

Class I / Div I (i.e., “explosion-proof equipment) Lessons:

- Did you grow up in a Barn? Yes? Good!
→ Keep all exterior building doors open OR all doors closed, NOT a mix of the two. Otherwise, positive pressure of HVAC system draws tunnel gases into the building, starts to alarm!

Key Takeaway: You will have to learn your unique system.



Local Pump Control Panels in Explosion Proof Cases



Air Compressor Panel in Explosion Proof Case

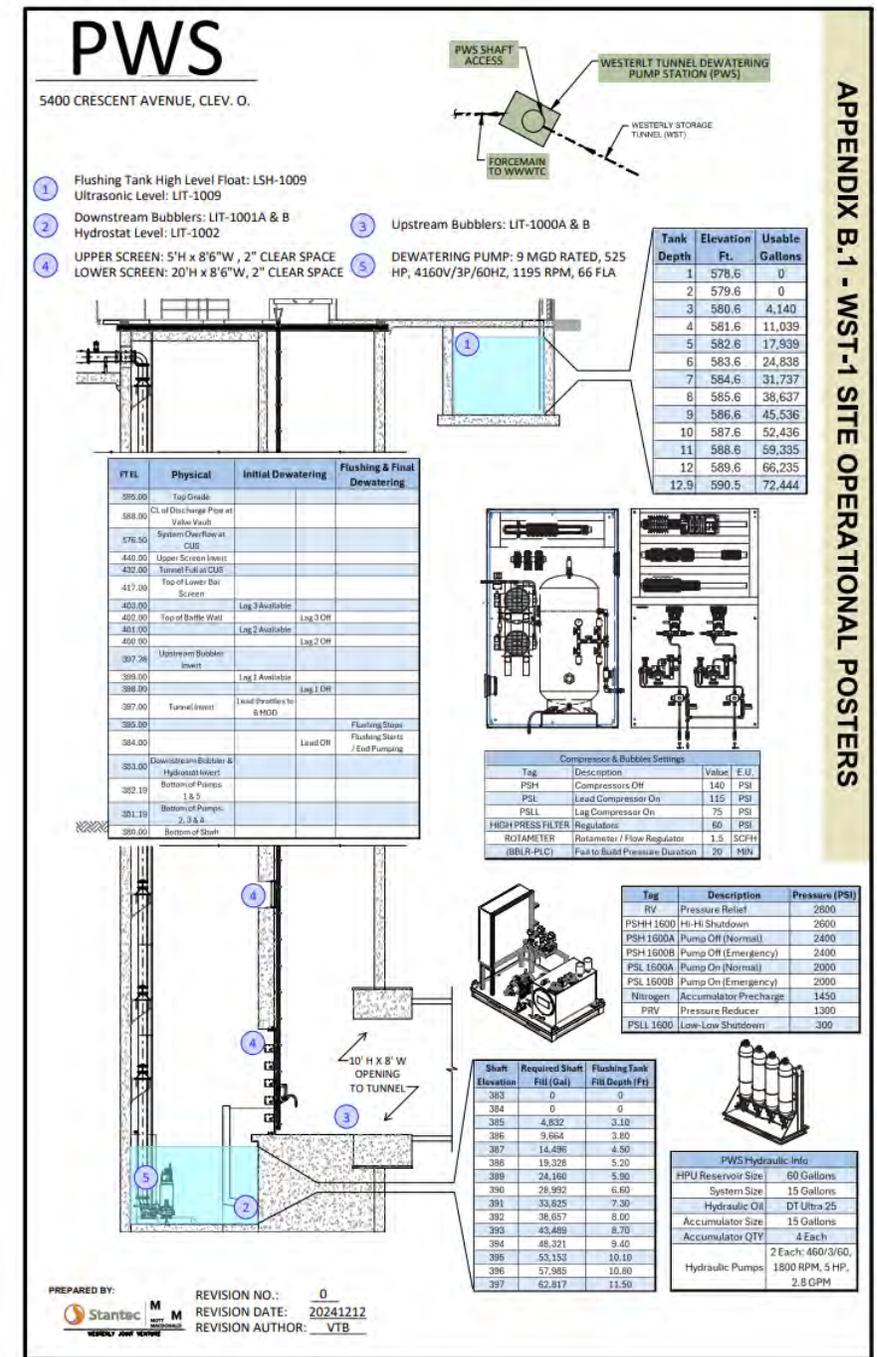


HVAC Control Panel in Explosion Proof Case

NEORSD Westerly Storage Tunnel System: What have they Learned?

Staffing and Training Takeaways for RiverRenew:

- LET THEM SEE/FEEL/TOUCH before official trainings (Shift changes is a good time)
- KNOW YOUR STAFF: What can they handle? Offer opportunities to those with initiative
- CHECK CREDENTIALS: e.g., Match staff licensed to deal with voltage of new equipment
- LEVERAGE: Hold official Vendor trainings until the training materials are project-specific AND assets labeled to support hands-on trainings
- O&M MATERIALS PREFERENCES: Give Ops and Maintenance time to review O&M materials, take preferences into account.
- GIVE IT TIME: If trainings are assumed for an hour, book it for TWO! Different disciplines (elect, HVAC, pump, etc.) will ask different Qs.



APPENDIX B.1 - WST-1 SITE OPERATIONAL POSTERS

NEORSD Considerations for RiverRenew

Continuous Safety Improvements:

- Consider external safety contract
- As SSMO uses equipment, Outside Safety Contract Available to review / design / install safety improvements they notice like swing gates, anchor points, guardrails, etc.
- Installations are consistent across NEORSD and Contract Safety Staff are always on call for ongoing concerns / improvements.



WTDPs Well Room

NEORSD Considerations for RiverRenew

Future Tunnel Inspections / Cleanings

- Eight large diameter tunnels in their system, NEORSD developed Tunnel Inspection CIP program every 10 – 25 years.
- Cleaning needs assessed and contracted separately.
- Professional Service Contracts with Contractor support subs

Staff Development Training programs

- SSMO *existing* Maintenance training program supports succession planning and introduces new assets, but it's more or less “Business as Usual” (OK, a few more Preventative Maintenance stops).

Keep in mind: It's still a sewer system

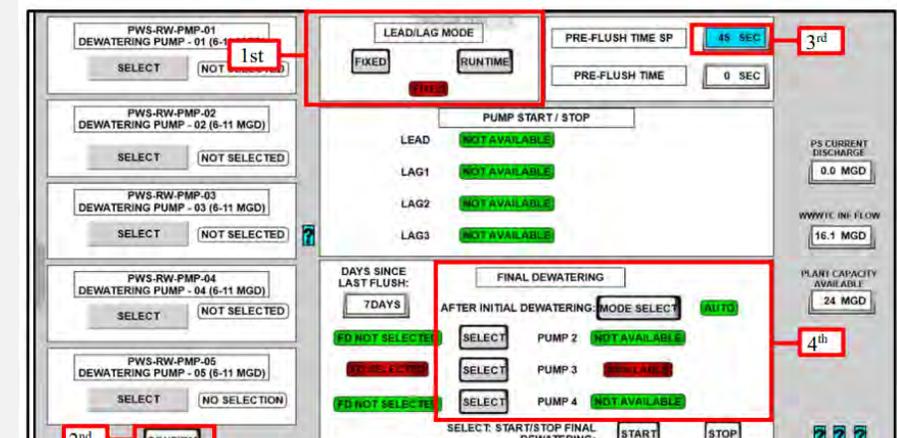
- The new system **still** has underground sewers and weir structures, pumps, control panels, Human Machine Interface (HMI) screens, electrical, HVAC, communications, security equip., process valves, gates and other equipment, just more of it with newer models.

So, simply put, AlexRenew –
YOU GOT THIS!



24-ft dia. lined tunnel

Dugway Storage Tunnel–Completed 2020; Inspect 2030



WTDPs Pumps Lead / Lag HMI Screen

Acknowledgements

Thanks to NEORSD for their valuable input:

Jarrold Lewis

Manager of Sewer System Maintenance and Operations (not pictured – camera shy!)

Josh Dress

Assistant Manager of Sewer System Maintenance and Operations (pictured left)

Matt Waite

Engineering and Construction (E&C) Commissioning Manager (pictured bottom right)

Doug Lopata

E&C Program Manager of Planning and Design (upper right & my former boss 😊)





AlexRenew

RIVERRENEW PUMPING STATION OPERATIONS – A DEEP DIVE

BOARD OF DIRECTORS RETREAT | FEBRUARY 21, 2026

Presentation Overview



01 Pumping Stations 101

Review of common types of pumping stations

02 Pumping Station Design

Detailed review of the design and features of the new tunnel system pumping station

03 Pumping Station Operations

Overview of how the pumping station operates

04 Ancillary Systems

Other major pumping station equipment and systems to support its operations

05 Safety Brief and Site Tour

Tour of the pumping station and superstructure



710.008

VOSS REPAIR

Types of Pumping Stations

There are different pump station styles with different maintenance requirements.



AlexRenew's Existing Pumping Stations

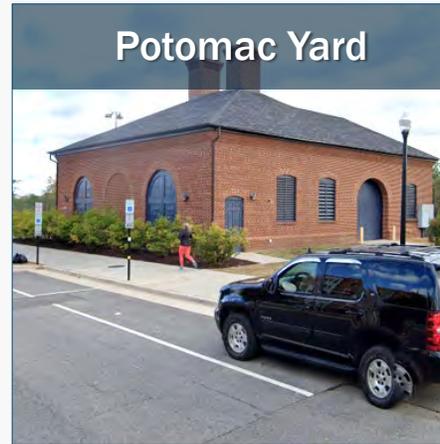
AlexRenew operates and maintains five pumping stations throughout Alexandria that pump flows from the collection system for conveyance to AlexRenew for treatment.



Four Mile Run



Slaters Lane



Potomac Yard



Mark Center



Innovation District

1954

Wet/Dry Well 9.4 mgd
Submersible 4.0 mgd

1997

Submersible 1.5 mgd

2007

Wet/Dry Well 10.4 mgd

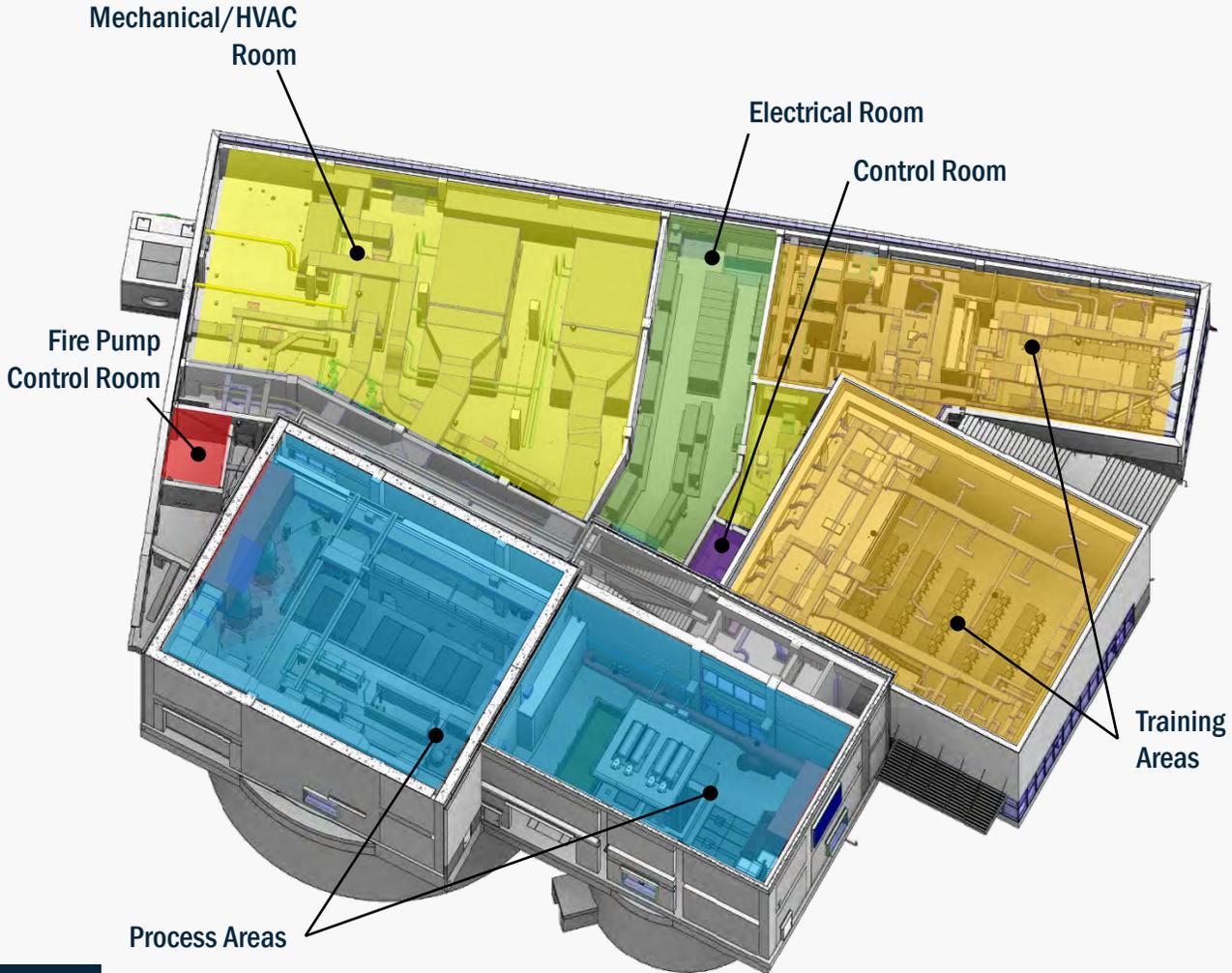
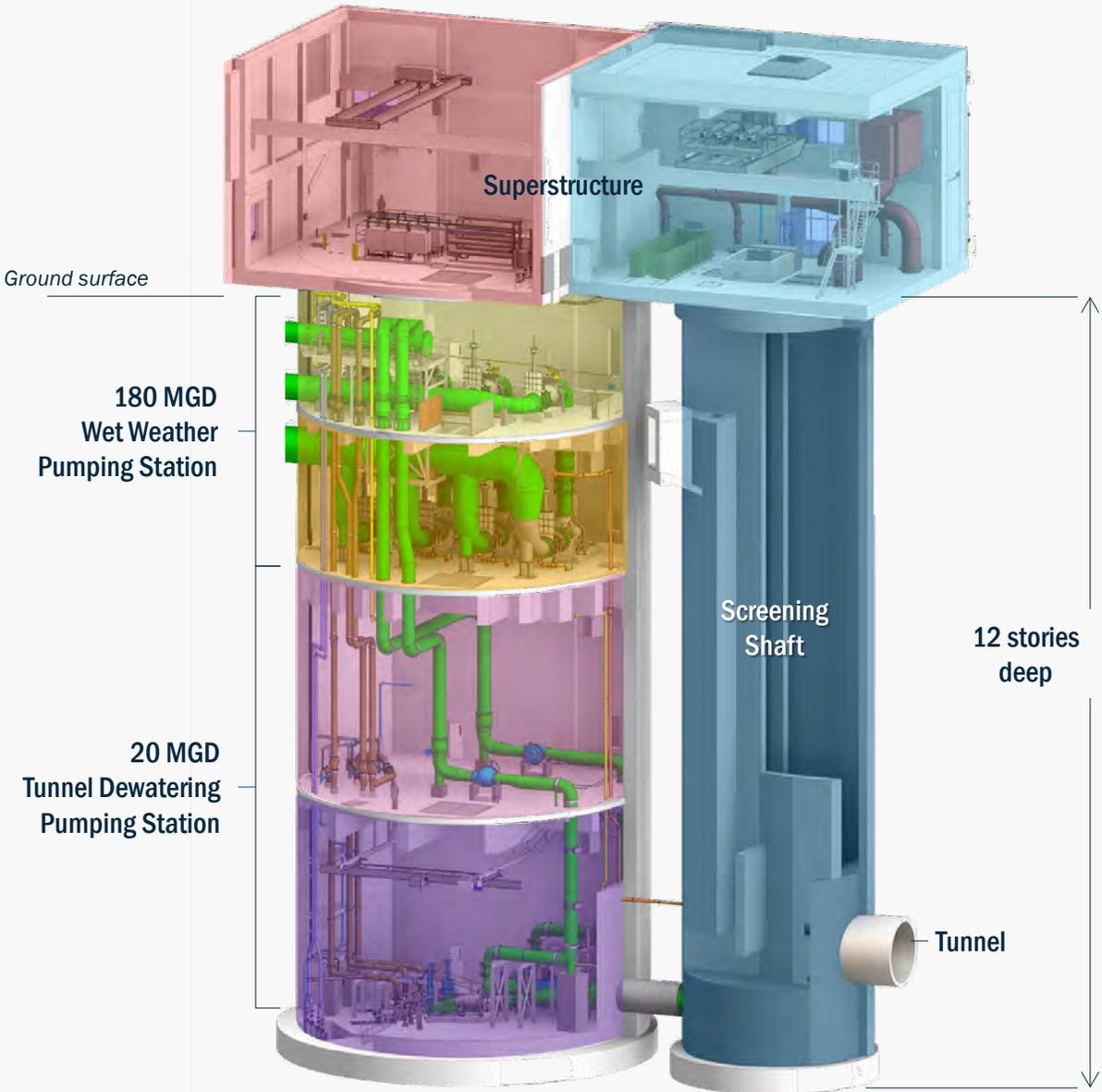
2011

Wet/Dry Well 1.62 mgd

2024

Wet/Dry Well 5.6 mgd

Tunnel Dewatering and Wet Weather Pumping Station



Illustrations of above-ground and underground portions of the pumping stations - the workhorse of the system



Design Goals for the Pumping Station

Significant efforts went into design of the pumping station that incorporated lessons learned from other deep pump stations.

- House 2 pumping stations within one shaft (maximize use of available space)
- Design a self cleaning wet well (manifold)
- Ensure pumps and associated equipment can be accessed and maintained (dry pit)
- Ensure pumping station can operate if flooded
- Remotely operate screening and residuals system (staff will not have to enter shaft for normal operation)
- Ensure system is self cleaning (flushing)
- Scheme for exercising wet weather pumps
- Ensure pumps can pass solids
- Achieve LEED Silver Certification

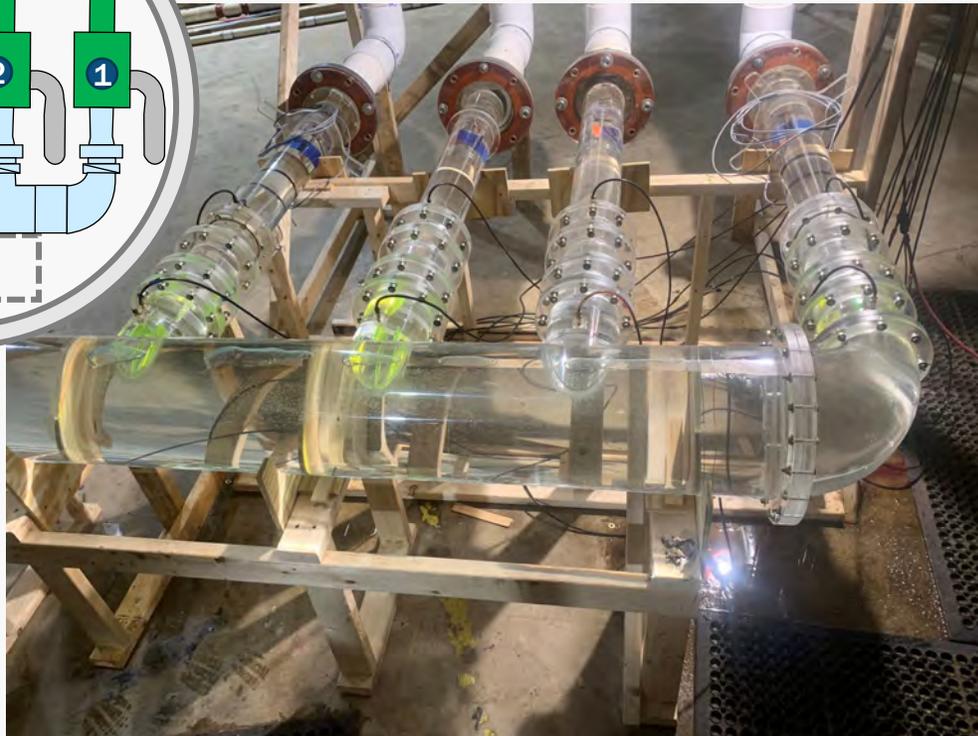
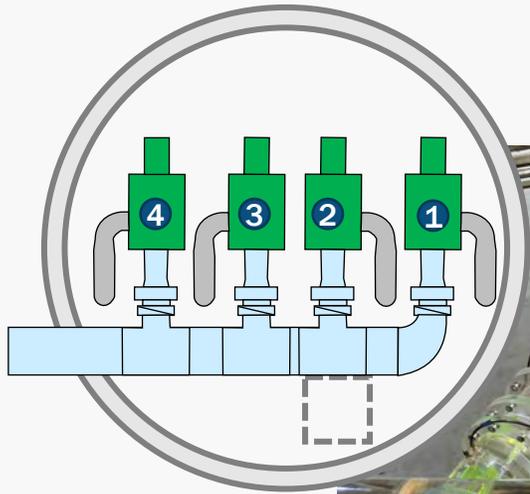
Pump Solids Handling Characteristics

Given that we are handling sewage, pumps are designed to pass up to 3" objects



Physical Modeling: Inlet Guide Vanes

Extensive physical modeling of the pump station was completed to ensure laminar flow into the pumps to reduce wear



Added straightening vanes to all four (4) pumps

- Reduces wear / noise during operation
- Improves reliability

Pump 4
with guide vanes

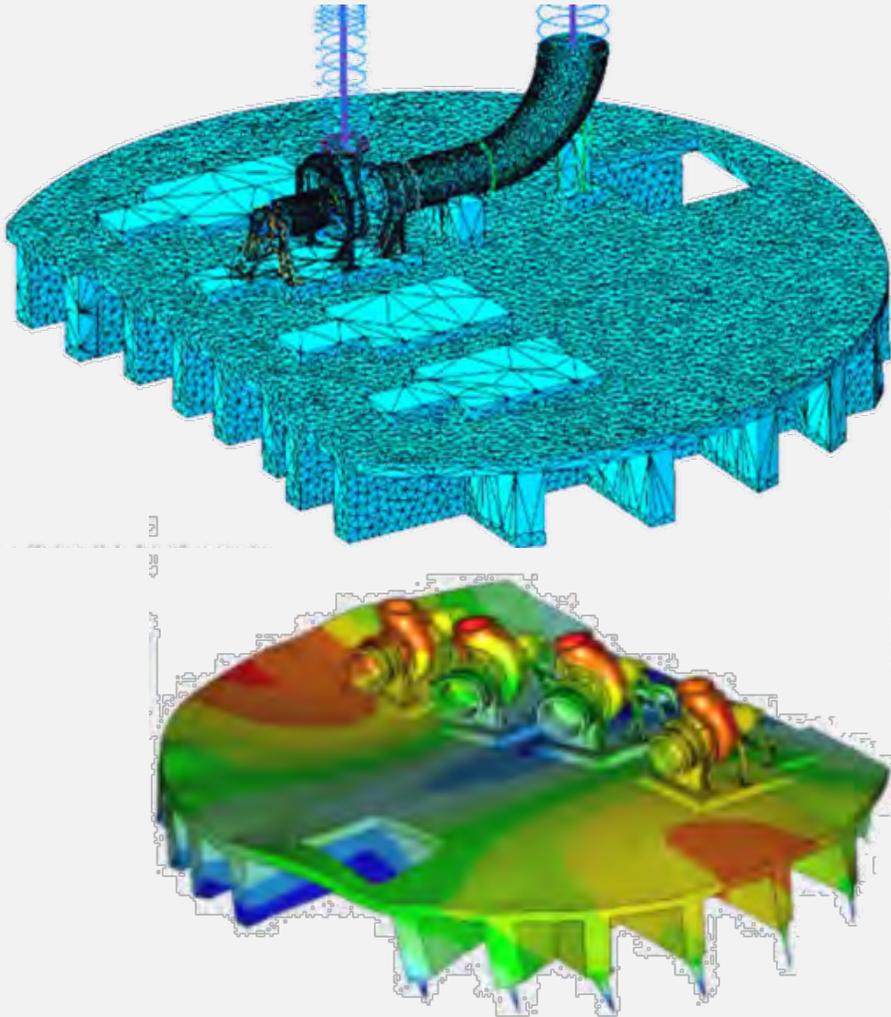


Pump 2
with no guide vanes



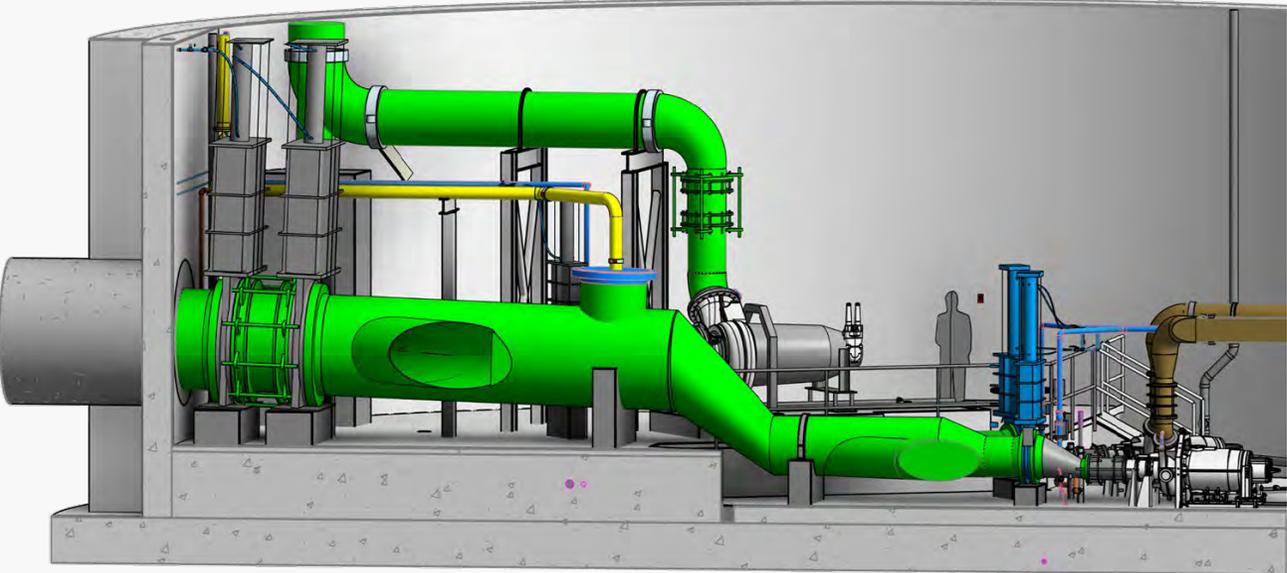
Structural Design to Reduce Vibration

Structural design of the pump station slabs addressed issues experienced in other AlexRenew pump stations.



Physical Modeling: Manifold

During the design phase, AlexRenew considered lessons learned to provide self cleaning facilities.



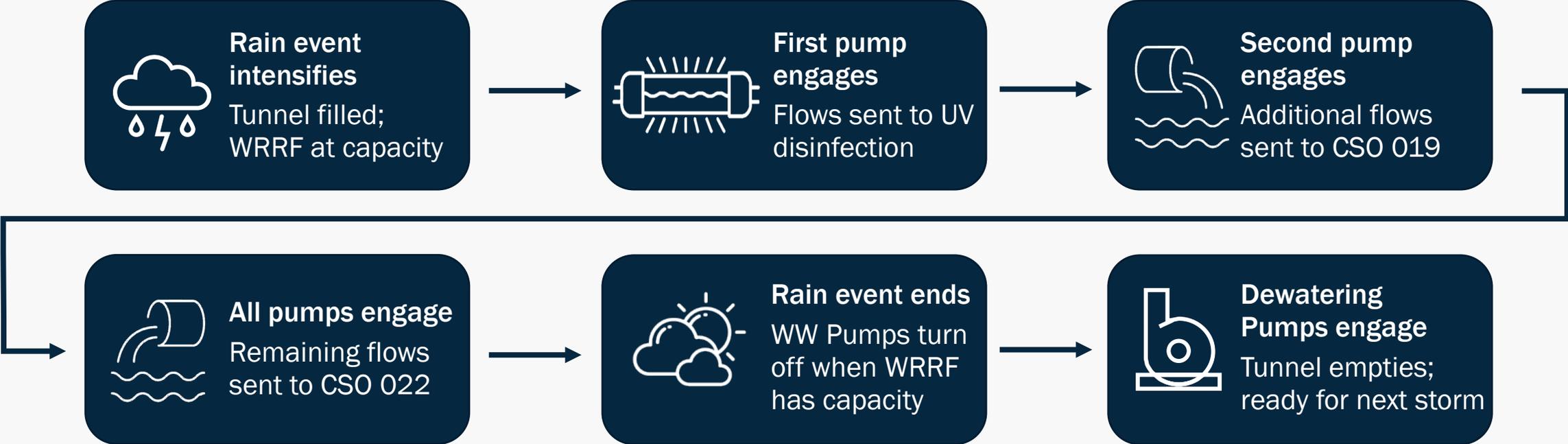
Operation of the Tunnel Dewatering Pumps

The Tunnel Dewatering Pumps lift captured combined sewage and direct flows to AlexRenew's headworks for complete treatment.



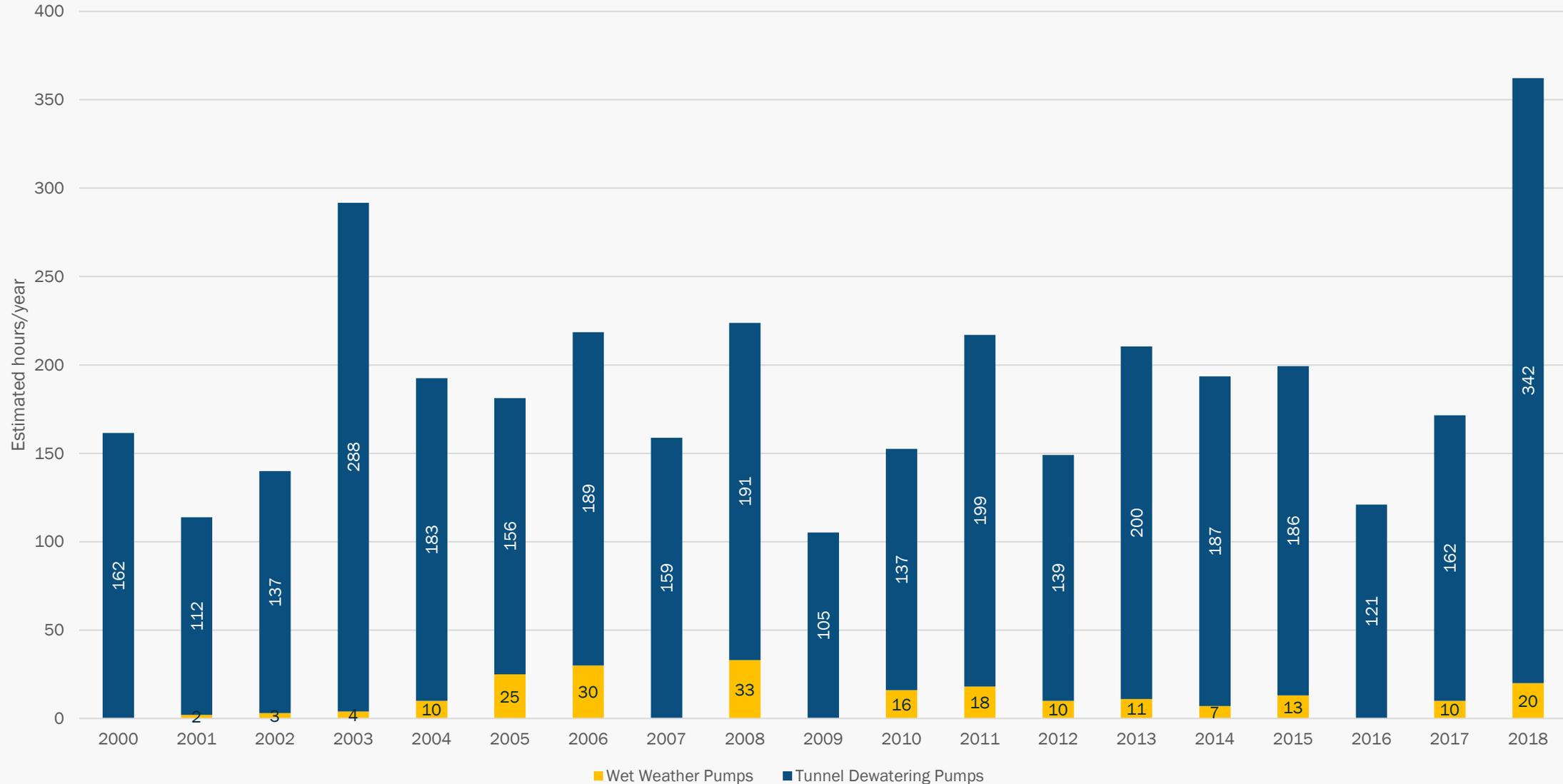
Operation of the Wet Weather Pumps

The Wet Weather Pumps will engage during more intense wet weather events and pump flow to the UV system for disinfection, to the Waterfront Tunnel, or to Outfall 022.

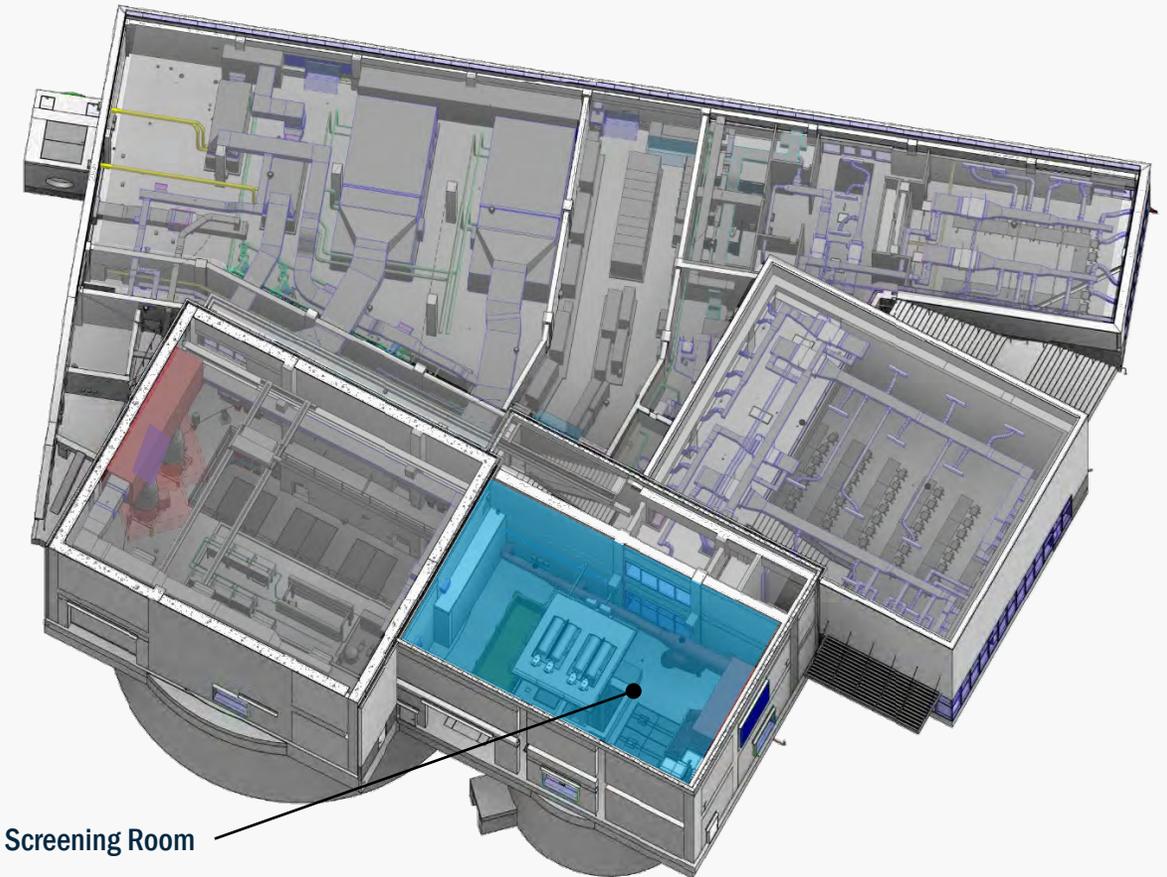
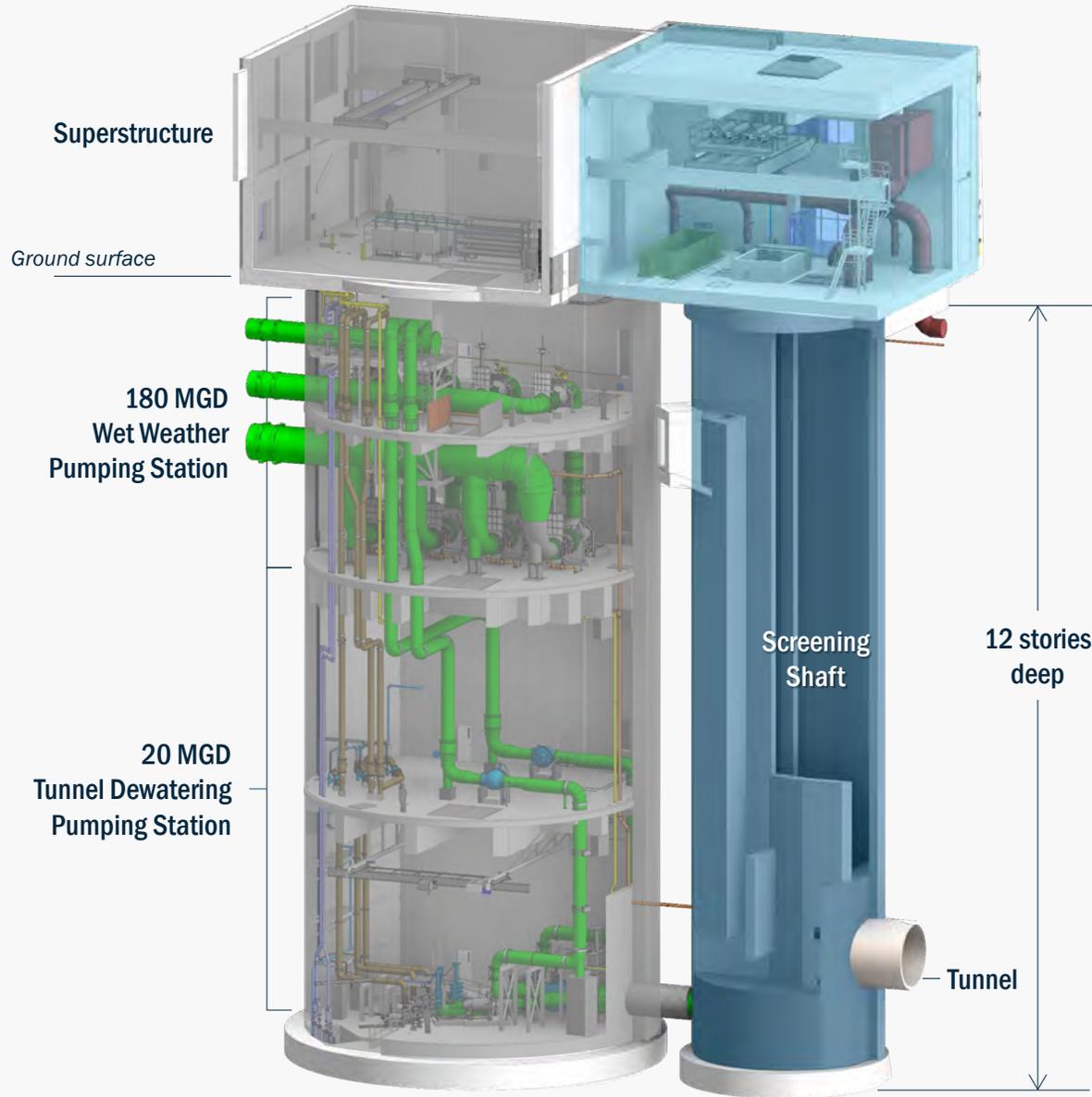


Estimated Annual Hours of Pumping

The Tunnel Dewatering Pumping Station will operate for an estimated 176 hours (7.3 days) per year on average, while the Wet Weather Pumps will operate for just a few hours per year.

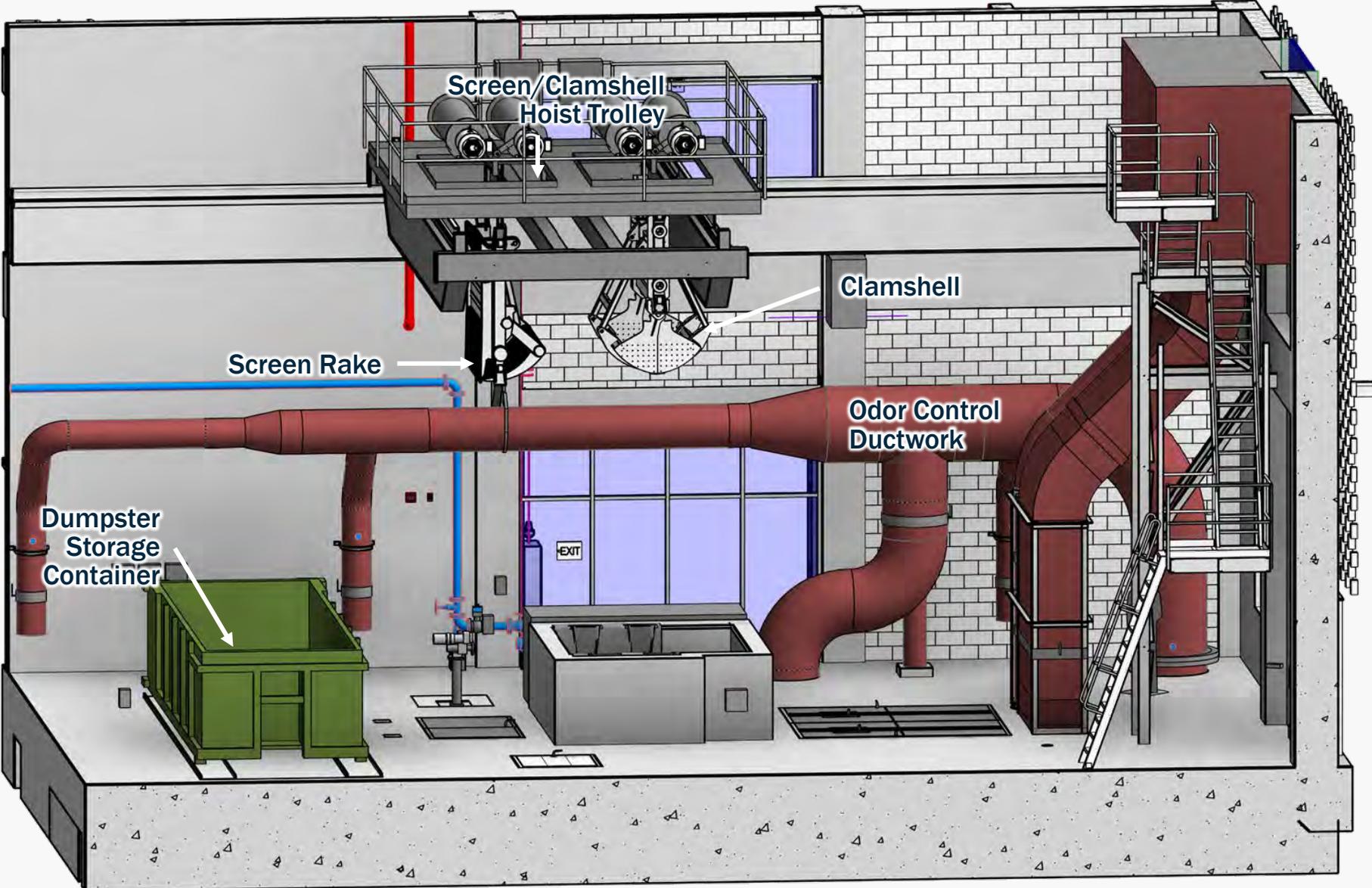


Solids Handling System

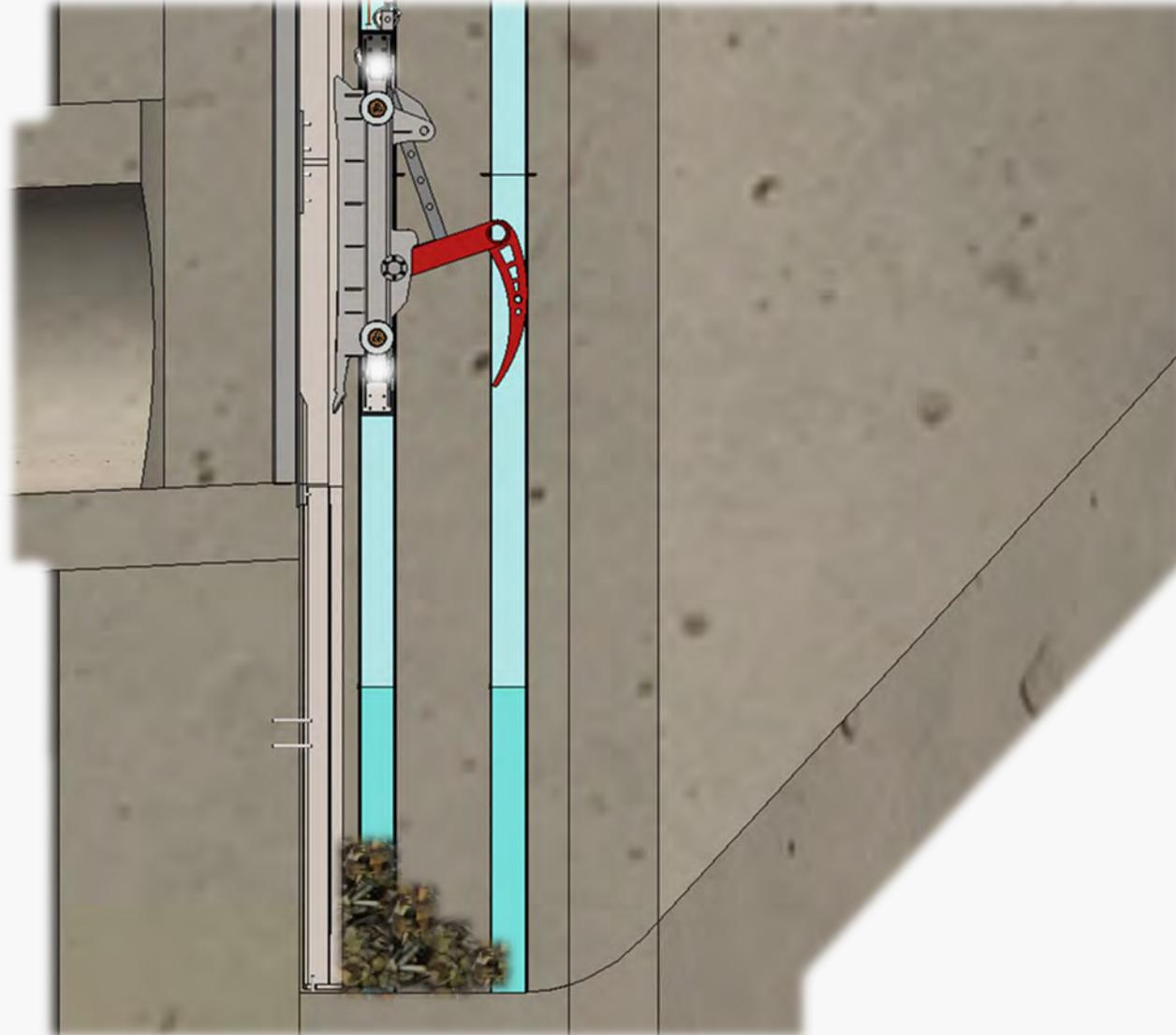


Screening Room

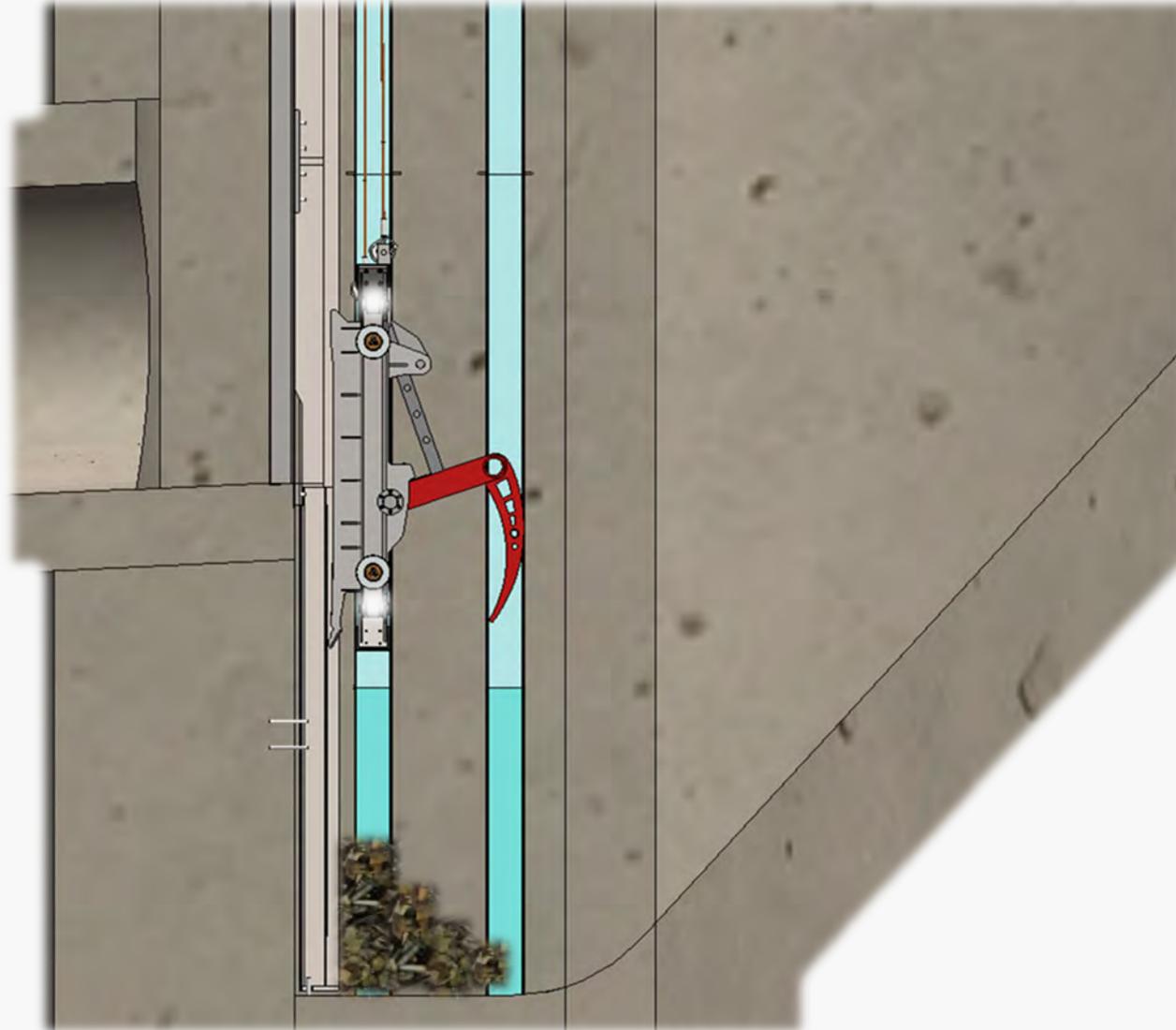
The Screen Rake and Clamshell System hoist out debris from the Screening Shaft. Removed material is placed into a roll-off dumpster.



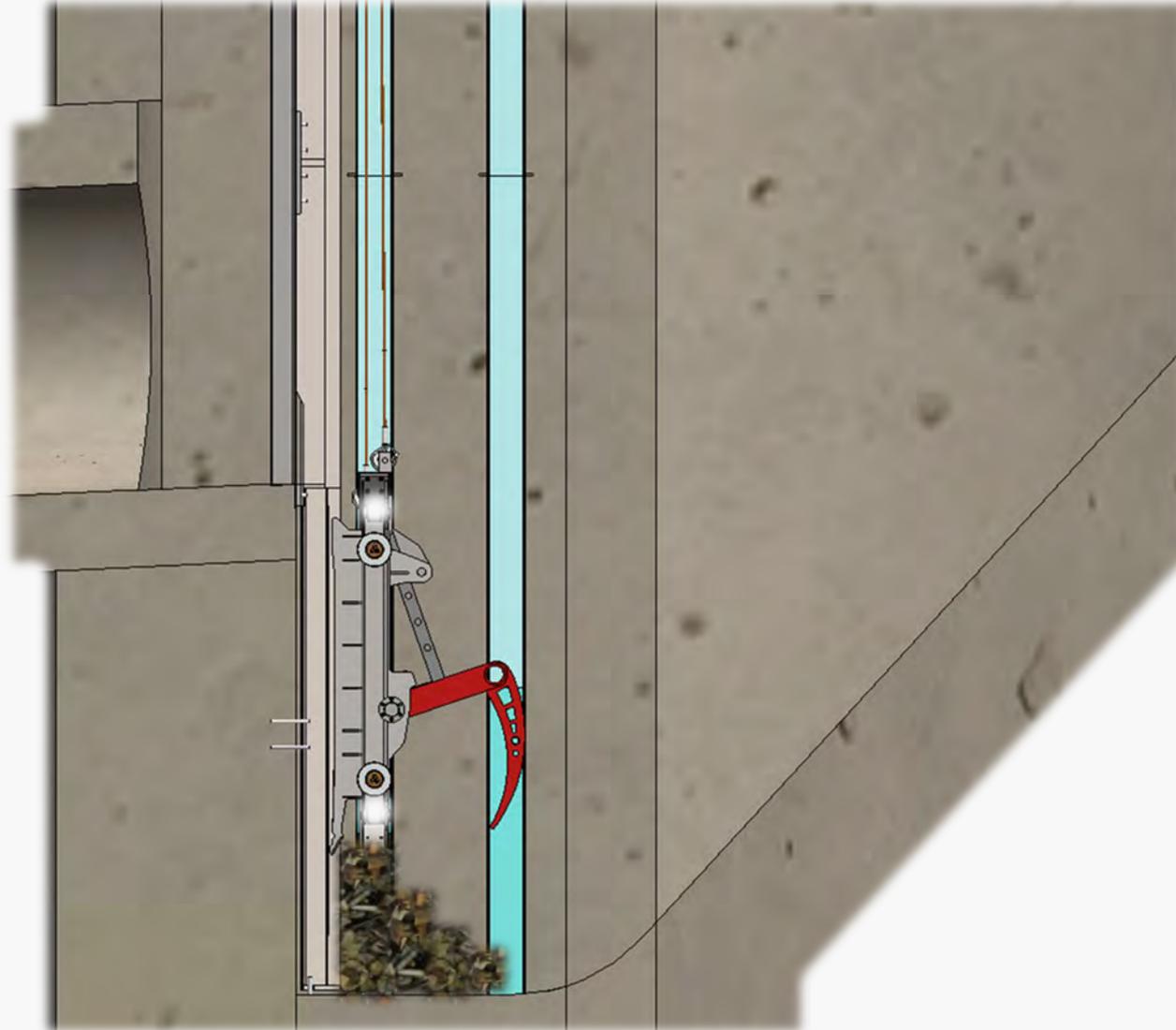
Sequence of Solids Removal



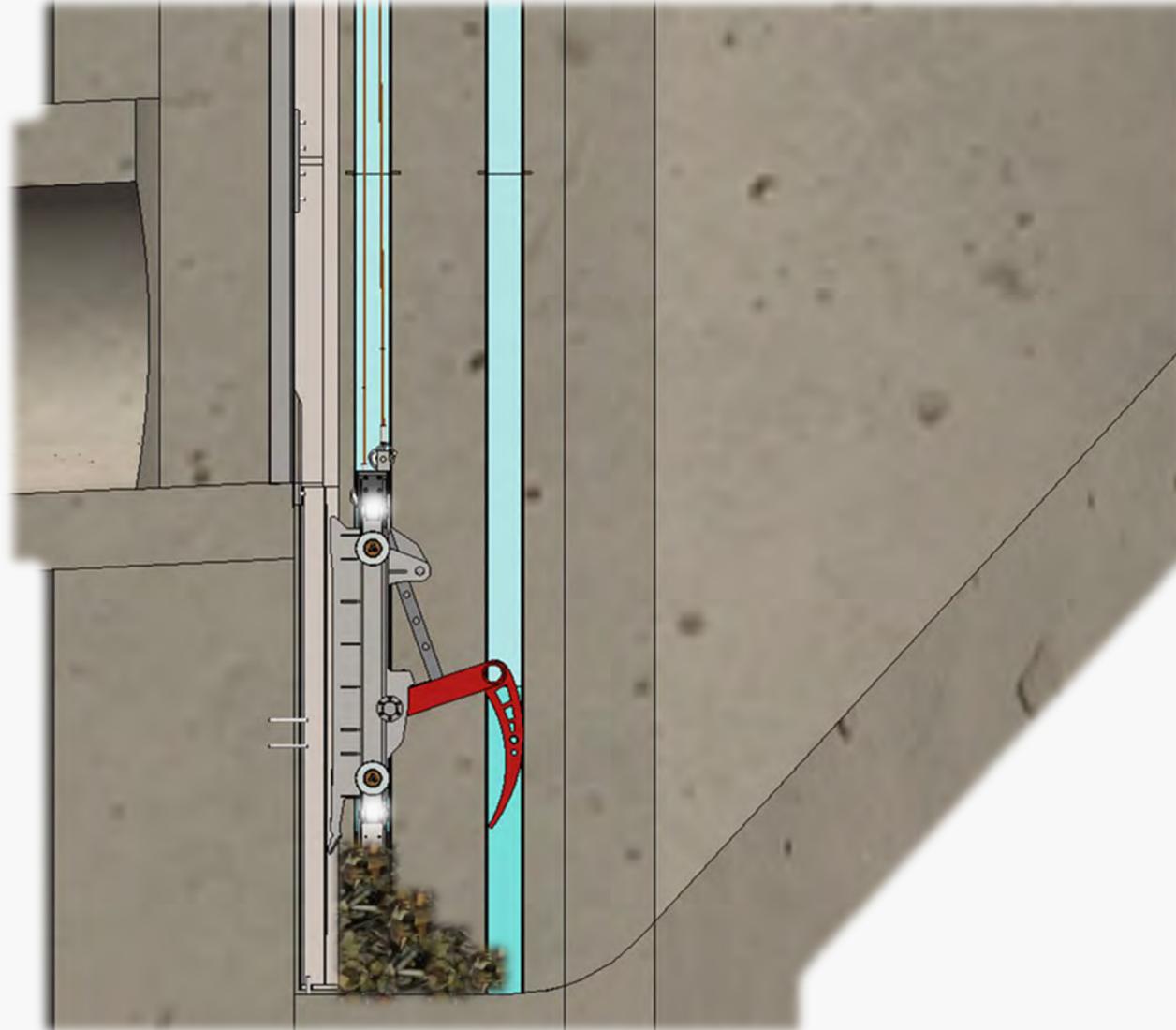
Sequence of Solids Removal



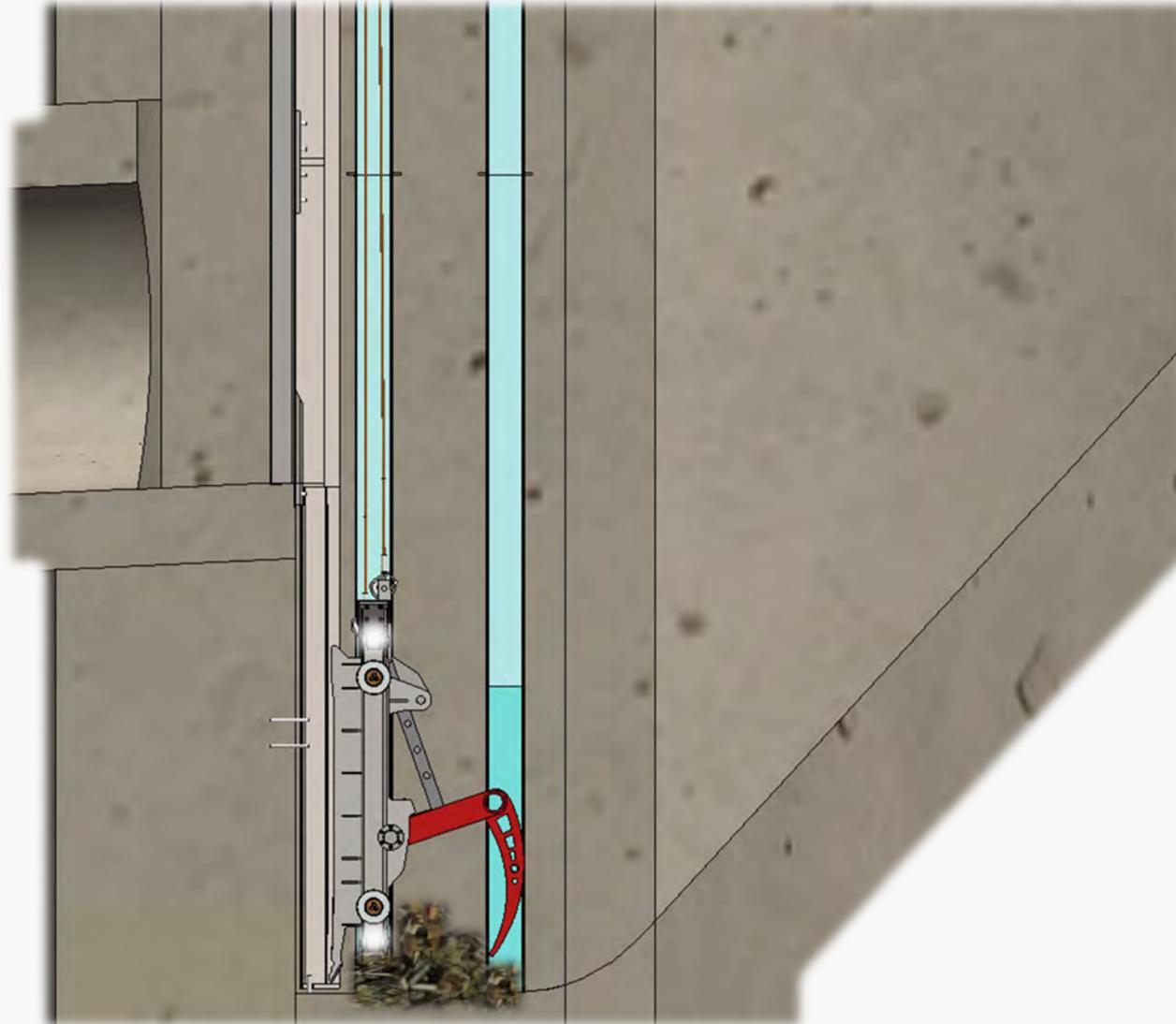
Sequence of Solids Removal



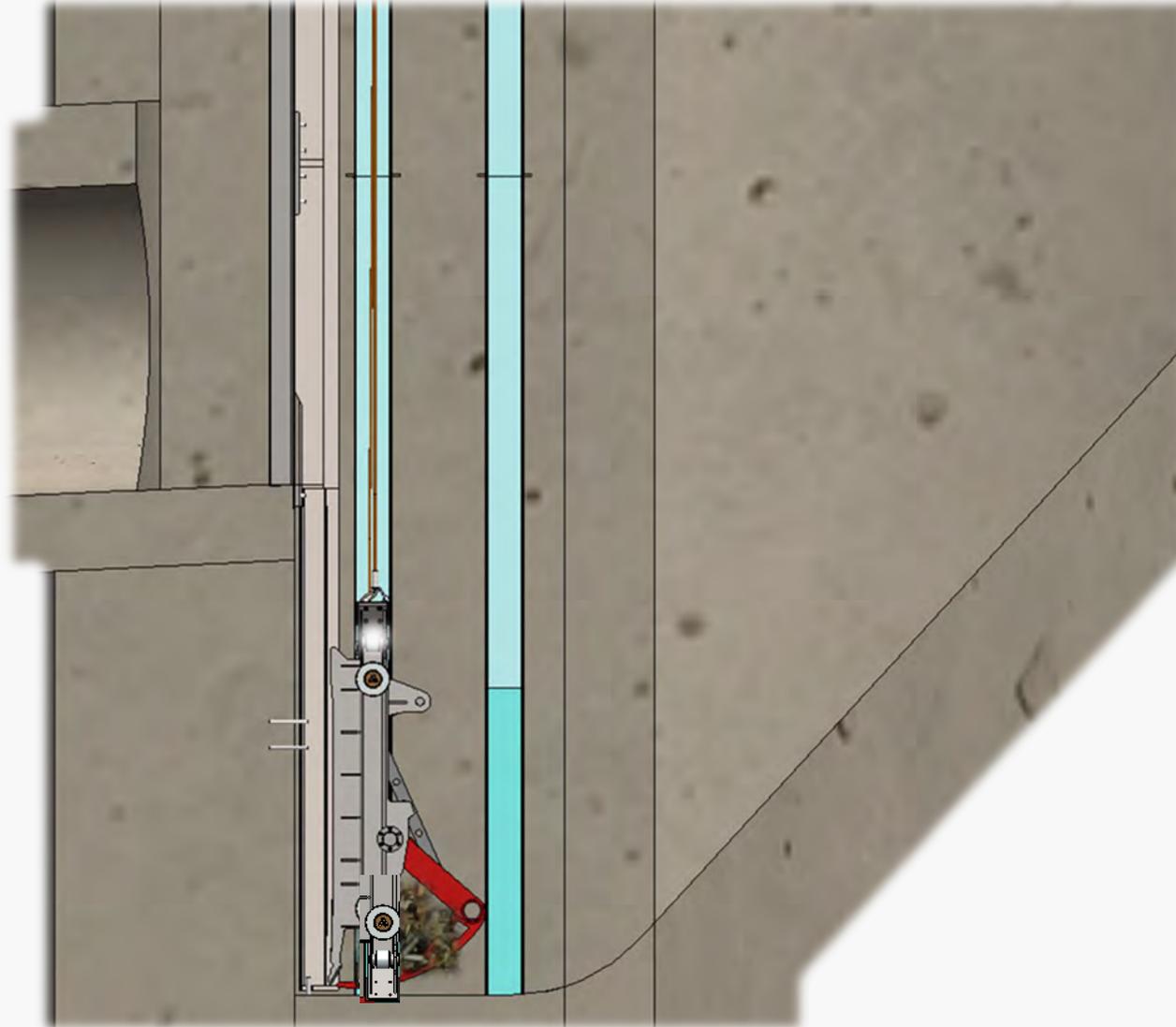
Sequence of Solids Removal



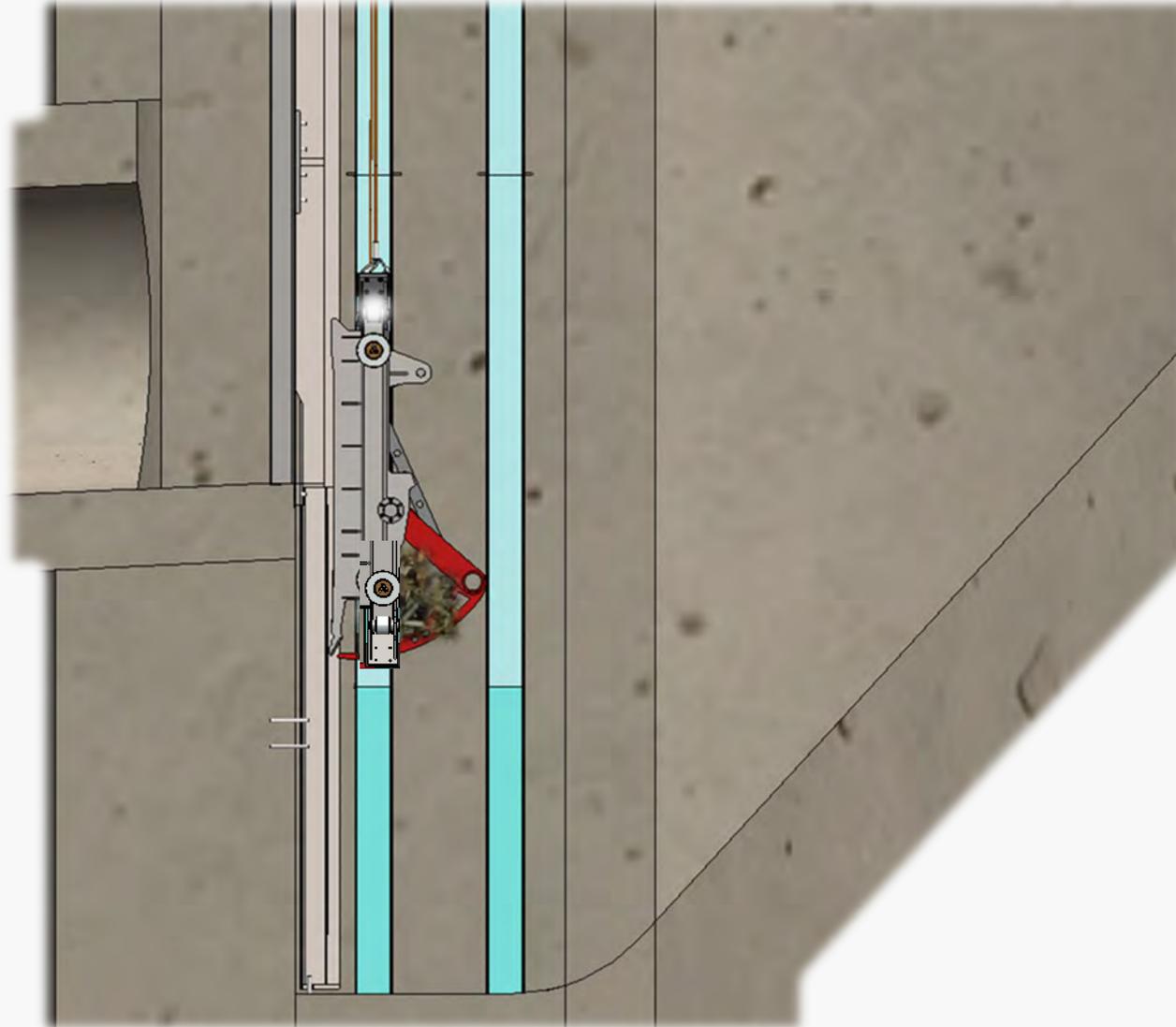
Sequence of Solids Removal



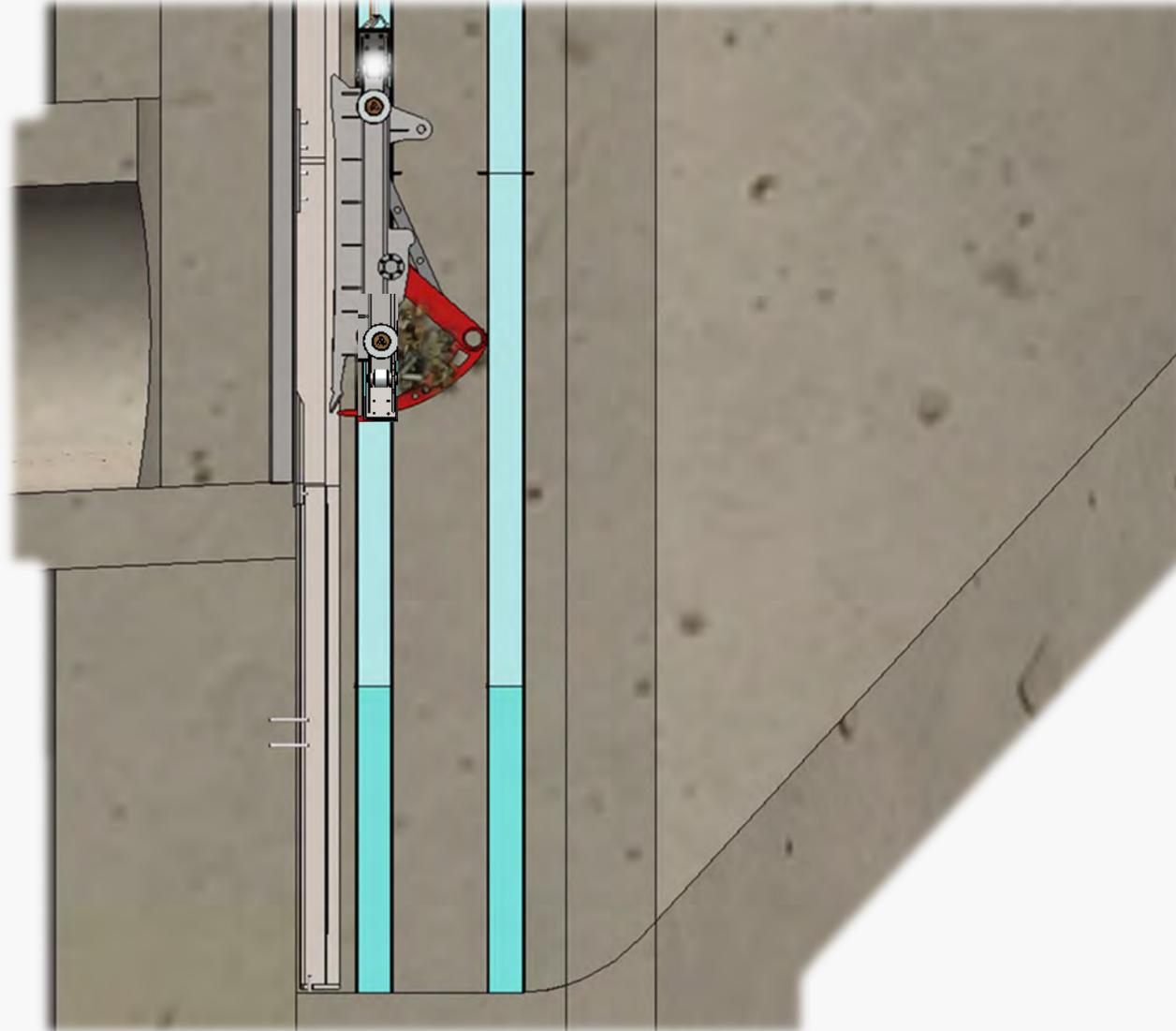
Sequence of Solids Removal



Sequence of Solids Removal



Sequence of Solids Removal



Sequence of Solids Removal



Sequence of Solids Removal



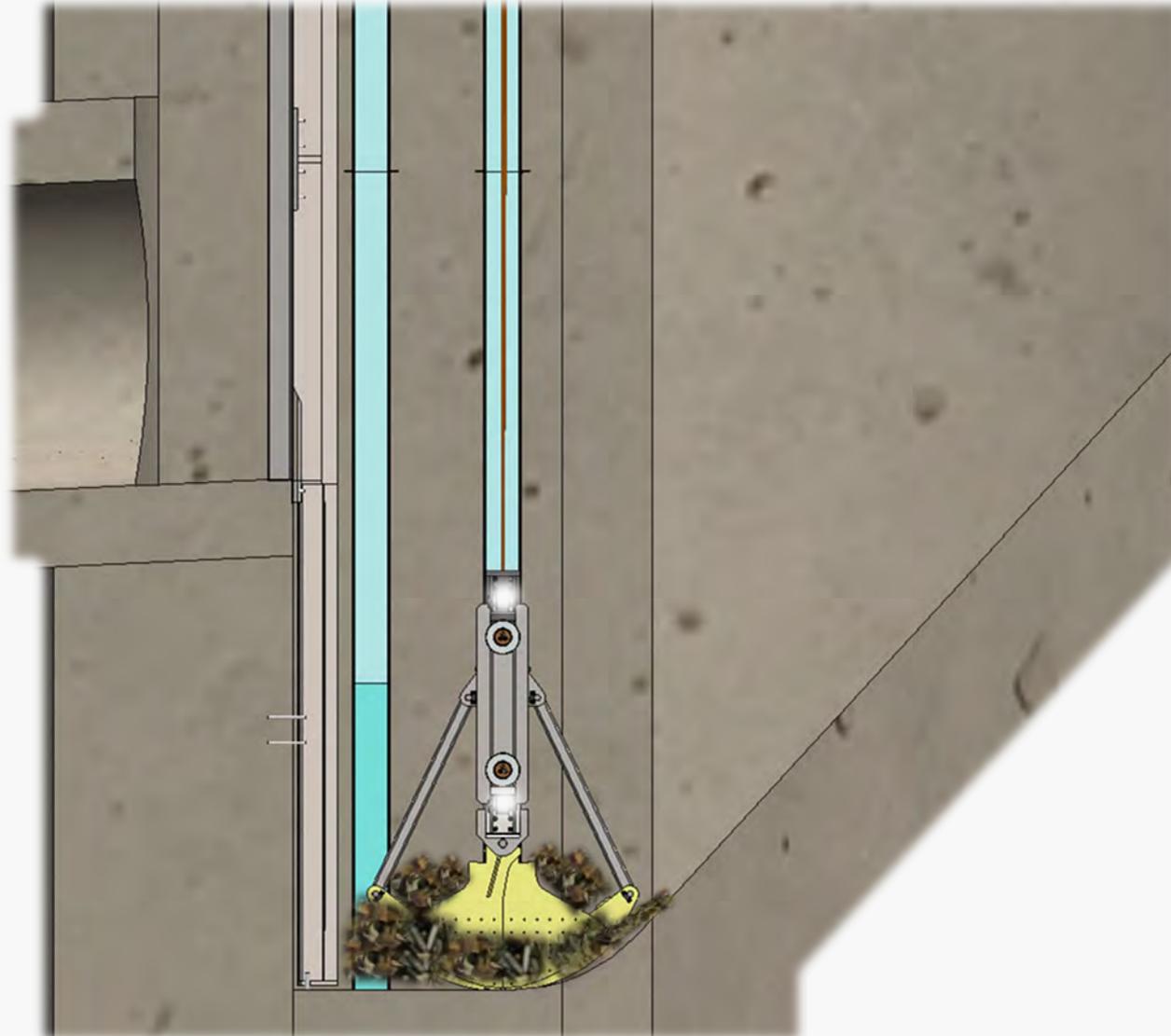
Sequence of Solids Removal



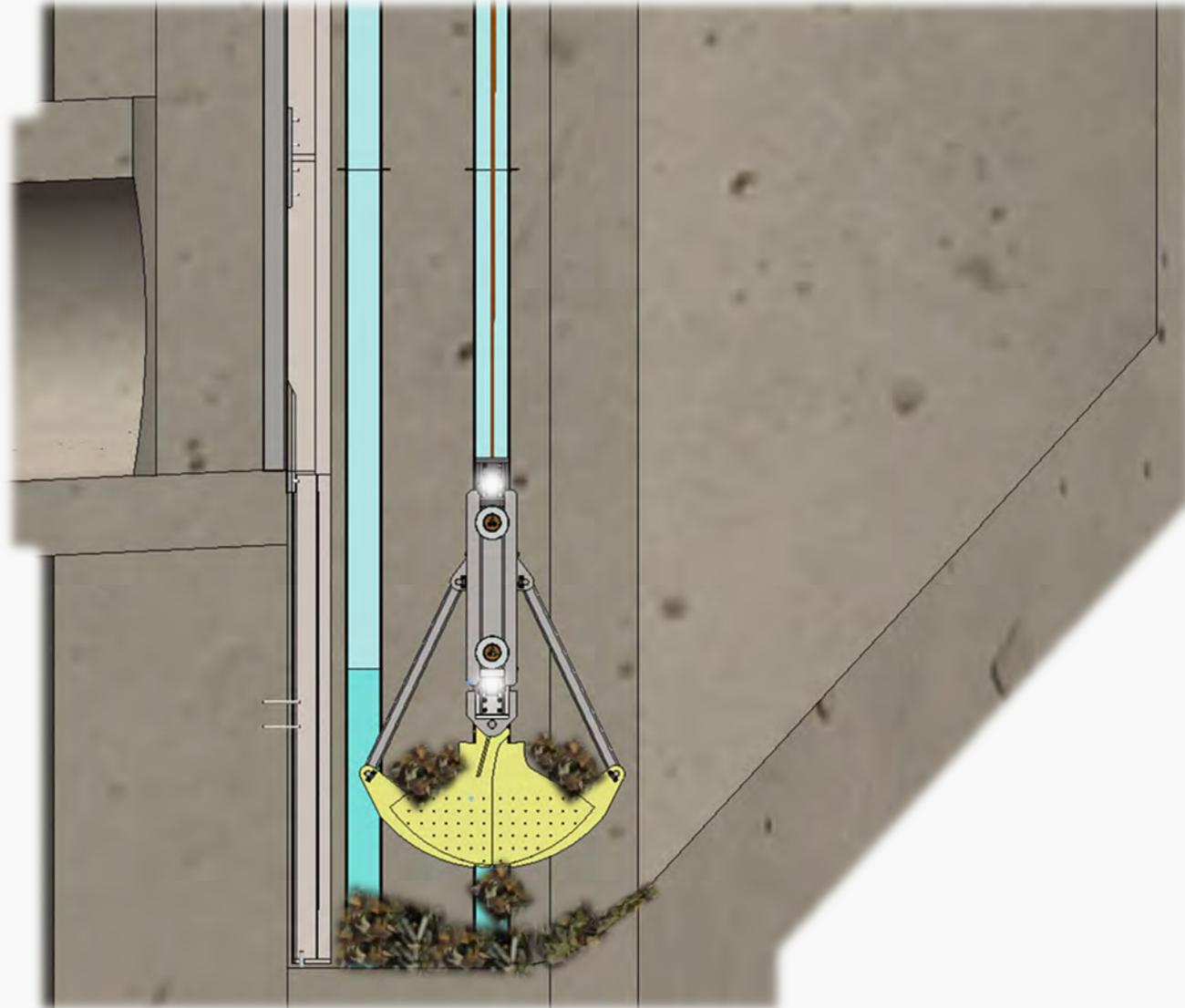
Sequence of Solids Removal



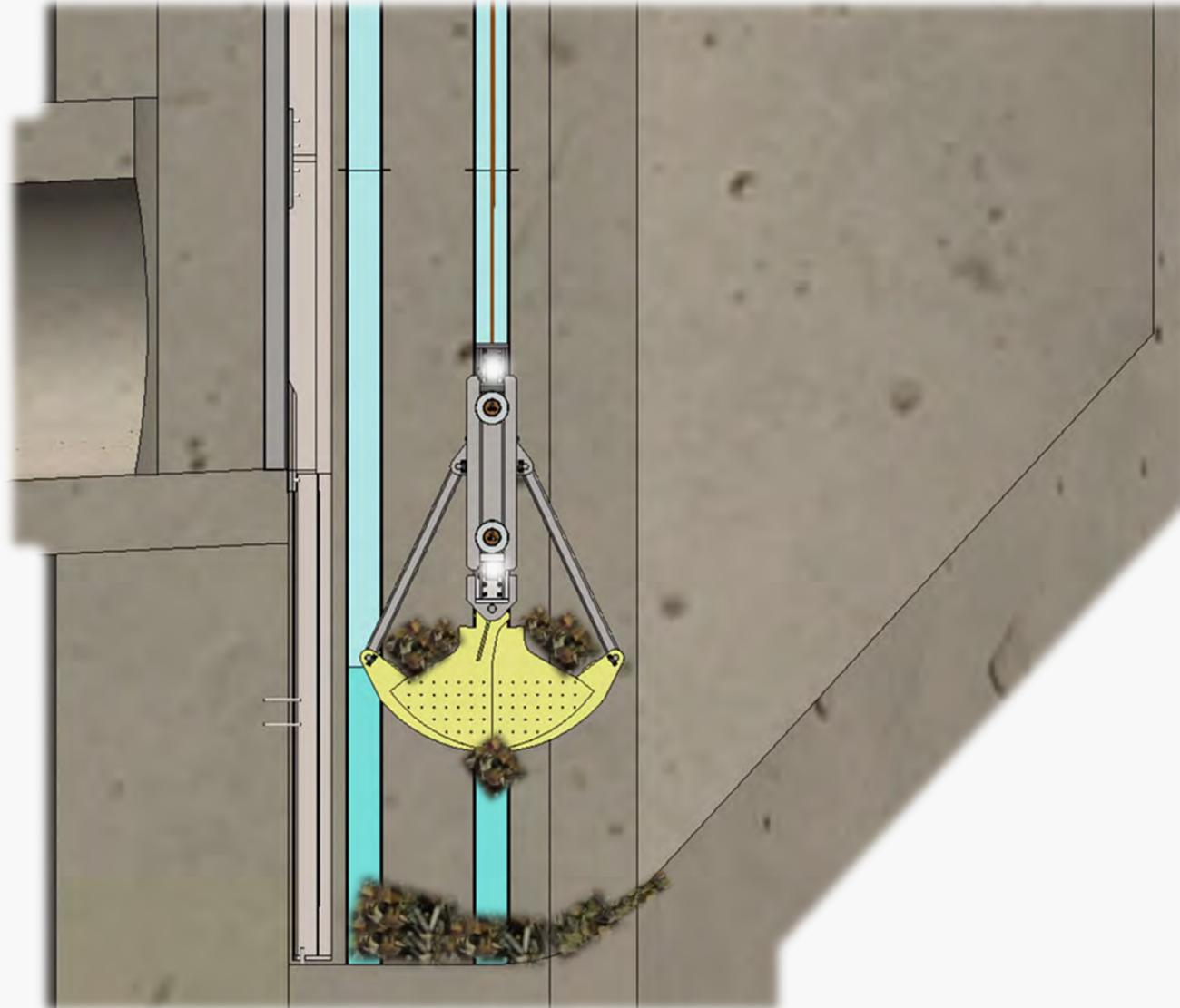
Sequence of Solids Removal



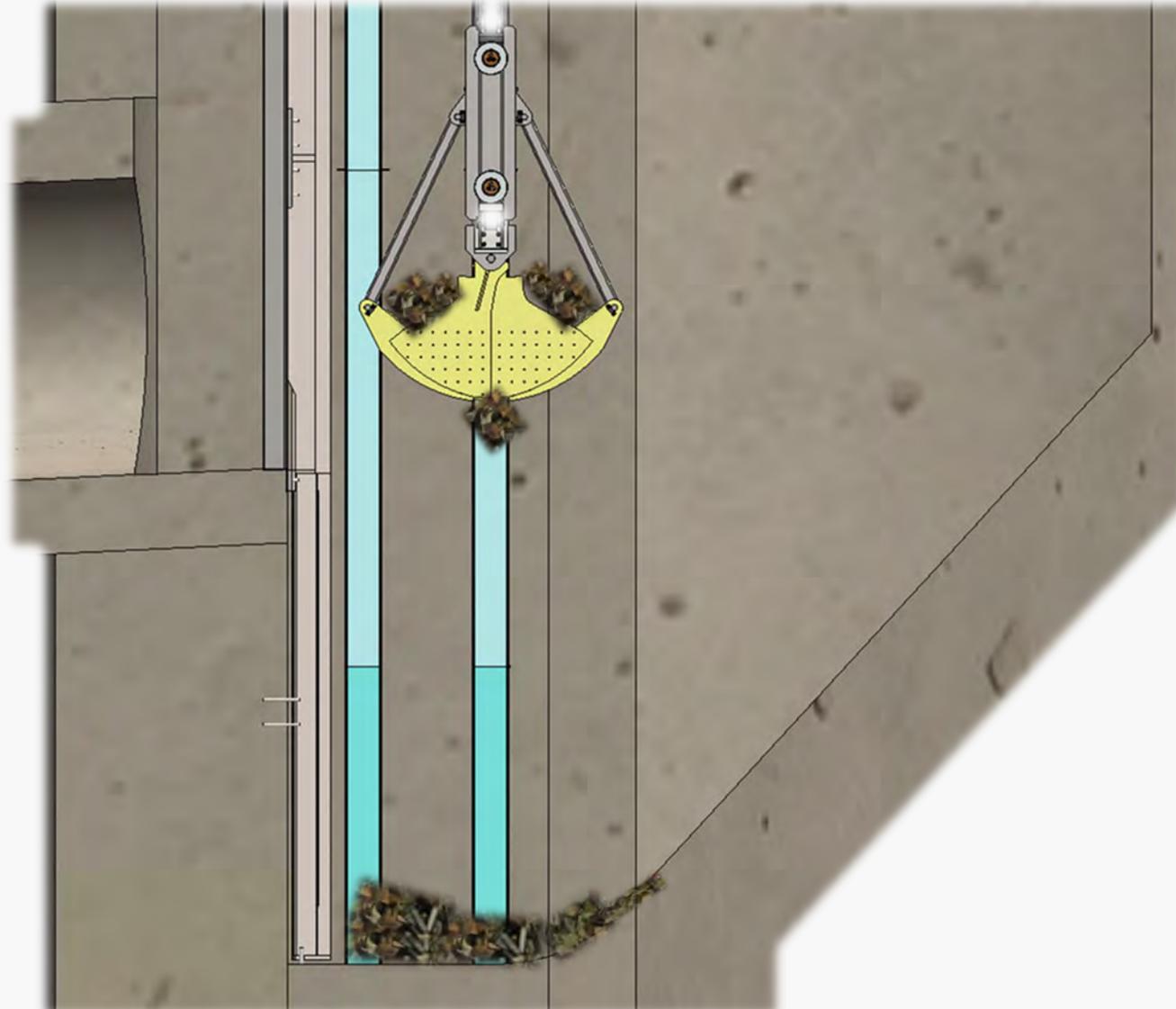
Sequence of Solids Removal



Sequence of Solids Removal



Sequence of Solids Removal



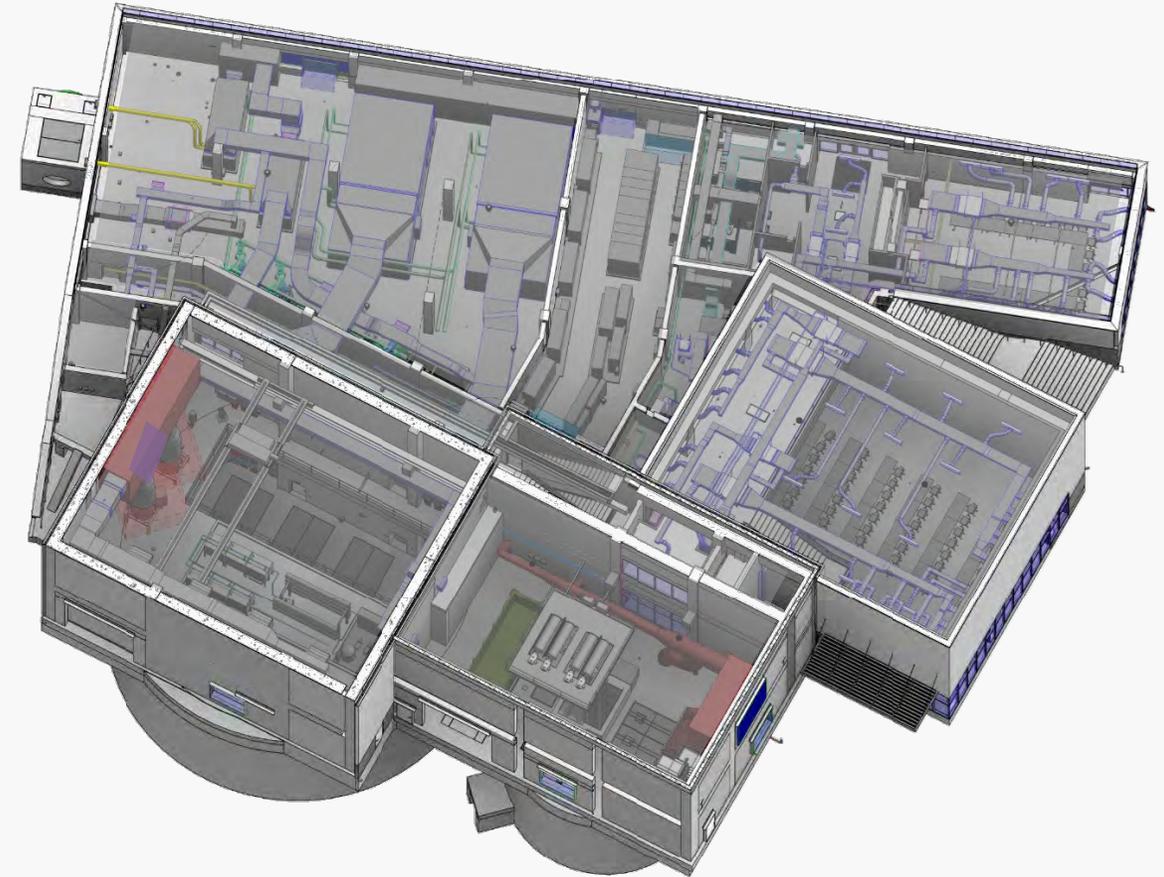
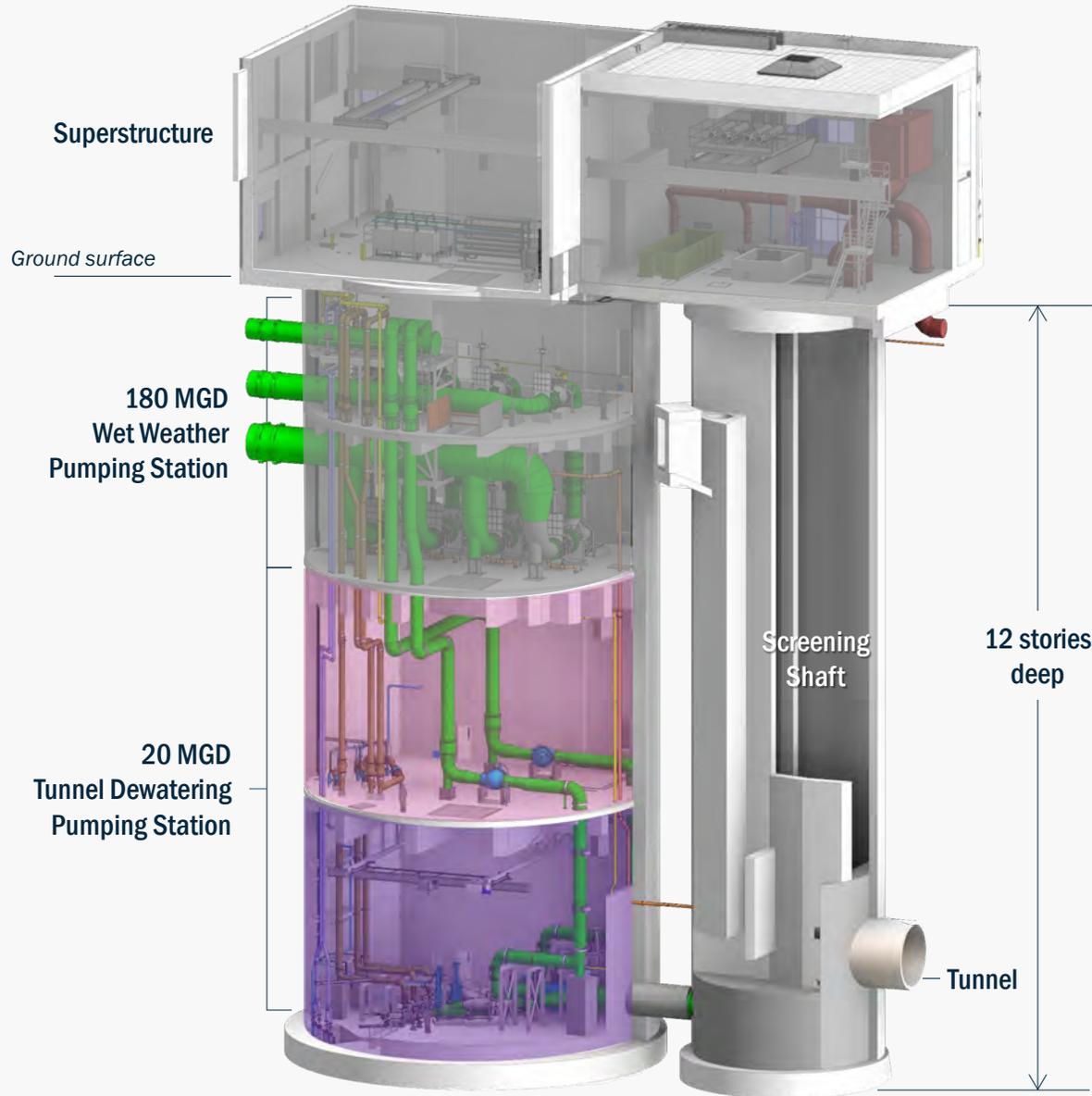


Narragansett Bay Commission Screen and Rake Facility



DC Water Tunnel Dewatering Pump Station Clamshell

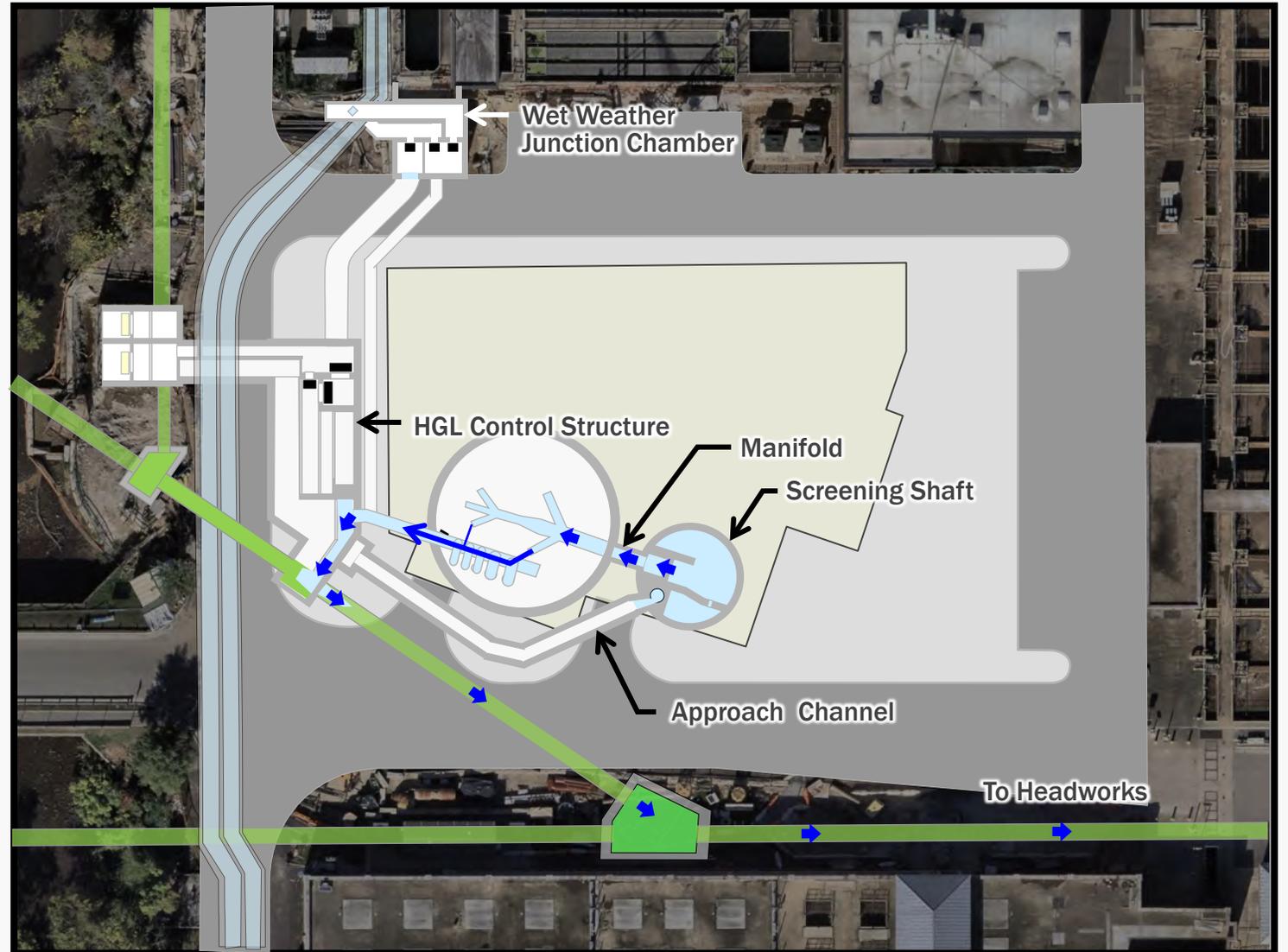
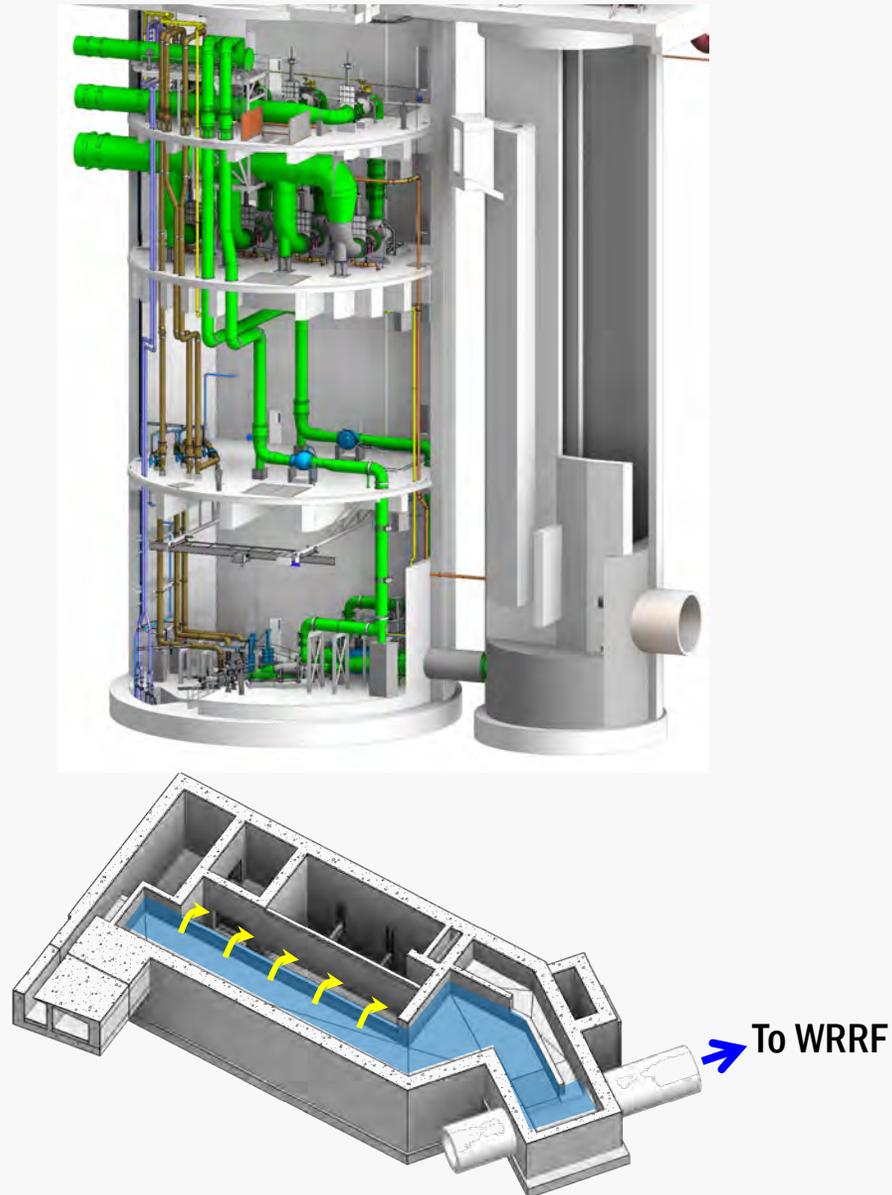
Tunnel Dewatering Pumping Station



3D cutaway of the new RiverRenew Pumping Station

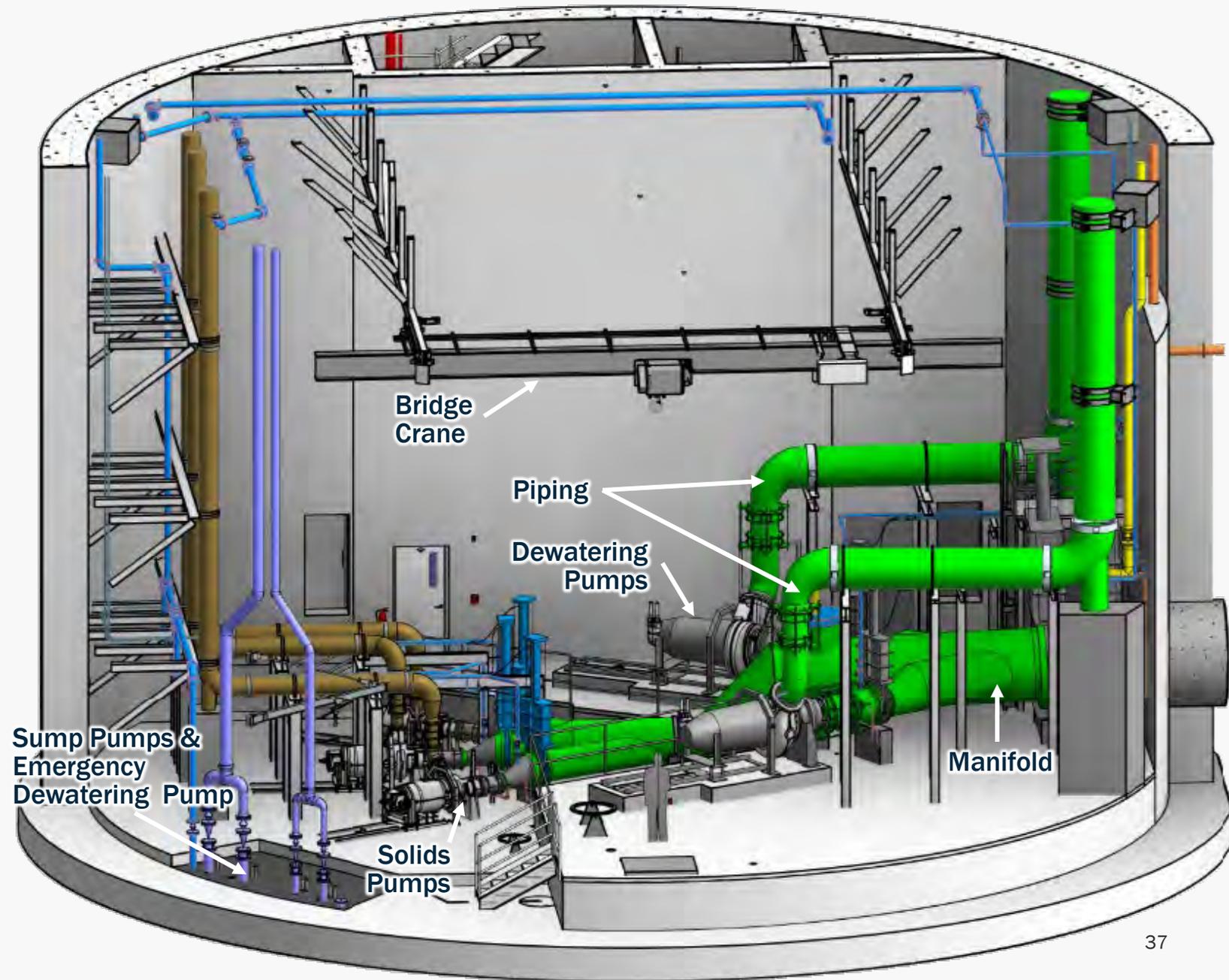
Tunnel Dewatering Pumping Station Controls

The Dewatering Pumps lift captured combined sewage and direct flows to AlexRenew's headworks for complete treatment.

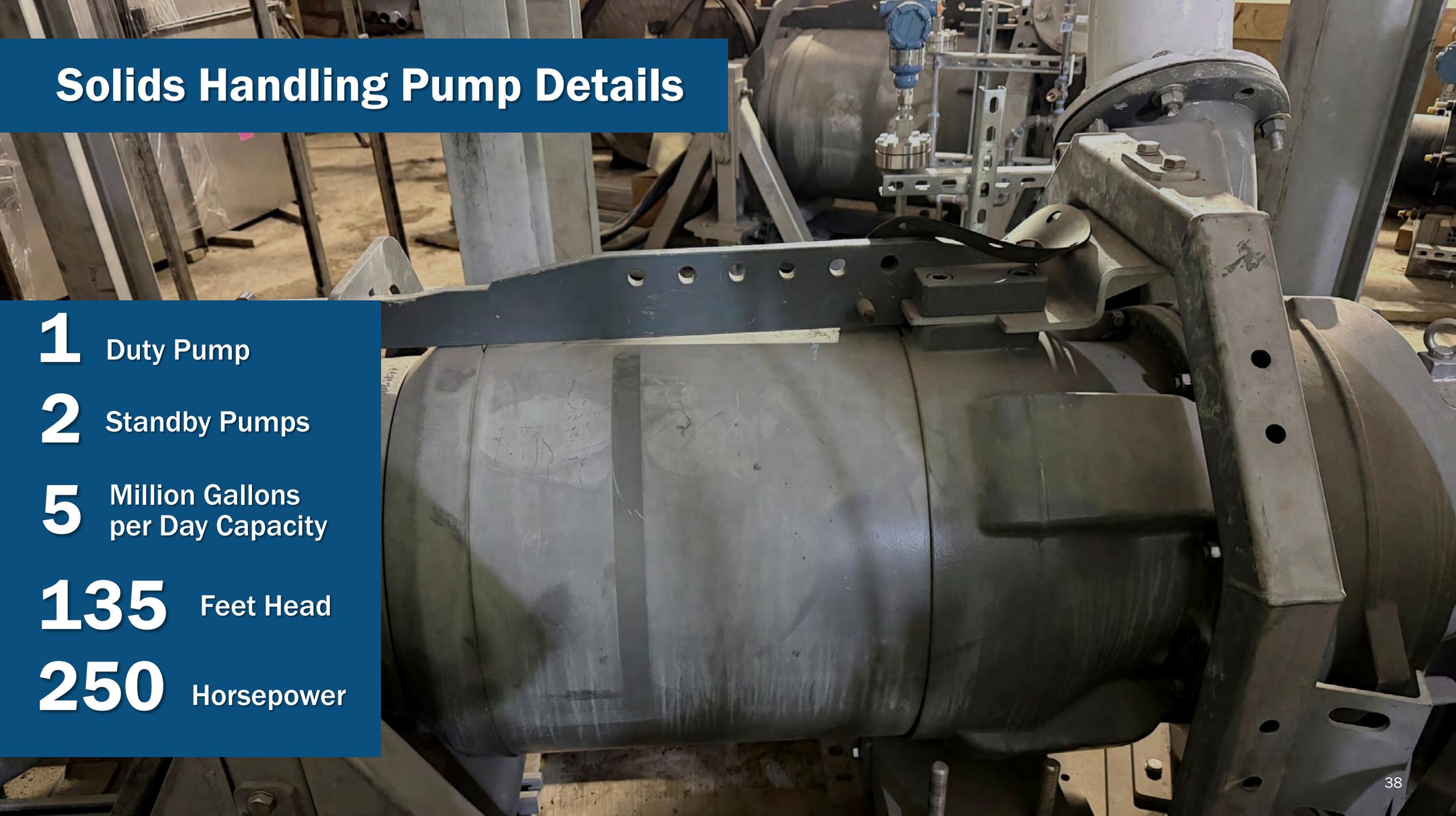


Tunnel Dewatering Pumping Station

The Tunnel Dewatering Pumps have the capacity to empty the entire Tunnel System in approximately 14 hours.



Solids Handling Pump Details



1 Duty Pump

2 Standby Pumps

5 Million Gallons
per Day Capacity

135 Feet Head

250 Horsepower

Tunnel Dewatering Pump Details

1 Duty Pump

1 Standby Pump

20 Million Gallons
per Day Capacity

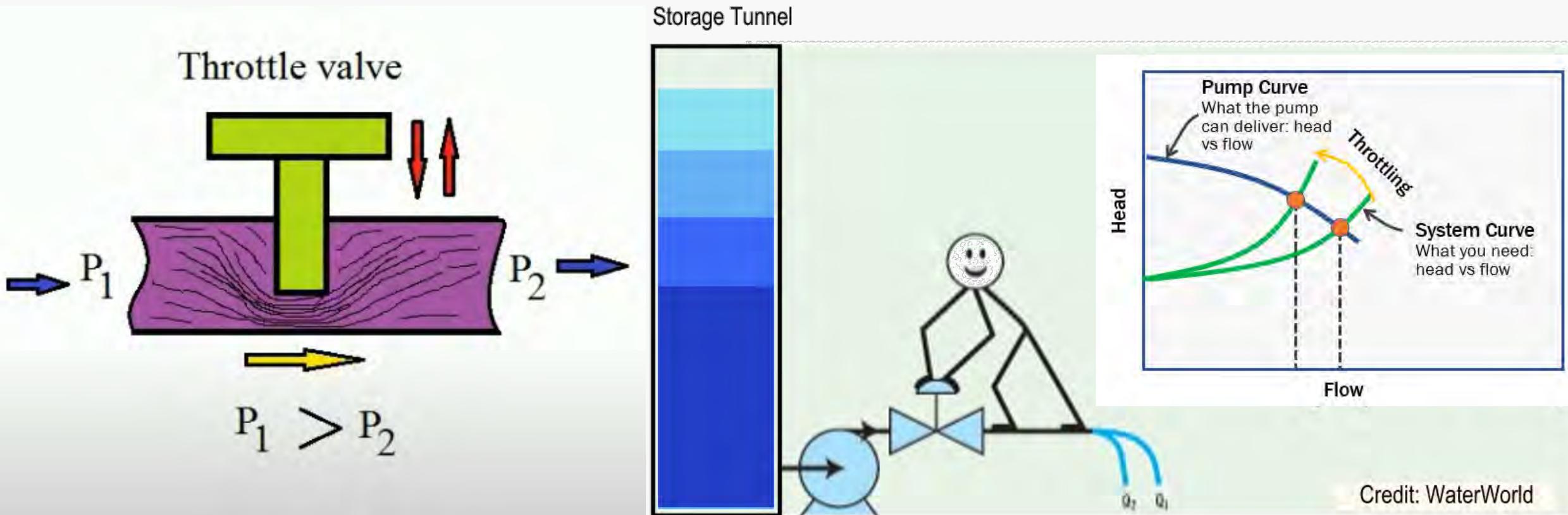
133 Feet Head

645 Horsepower



Pump Throttling

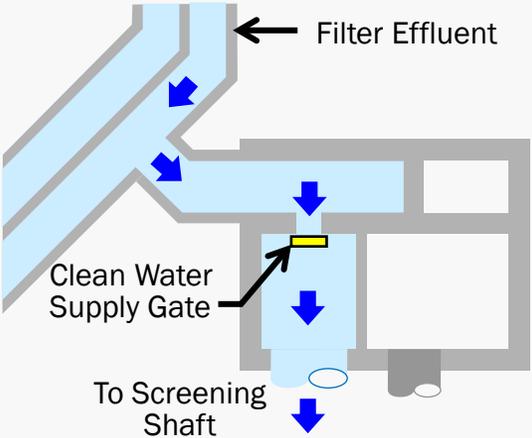
Throttling valves are used to ensure pumps stay within their operating range.



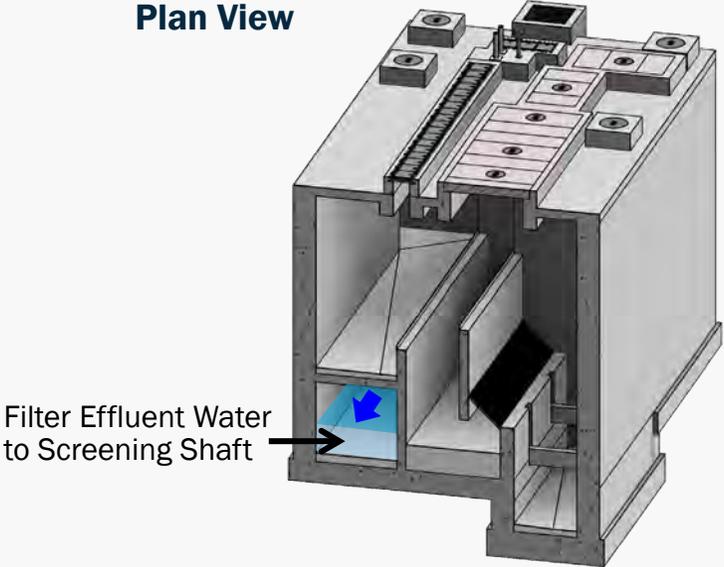
Credit: WaterWorld

Pumping Station Flushing

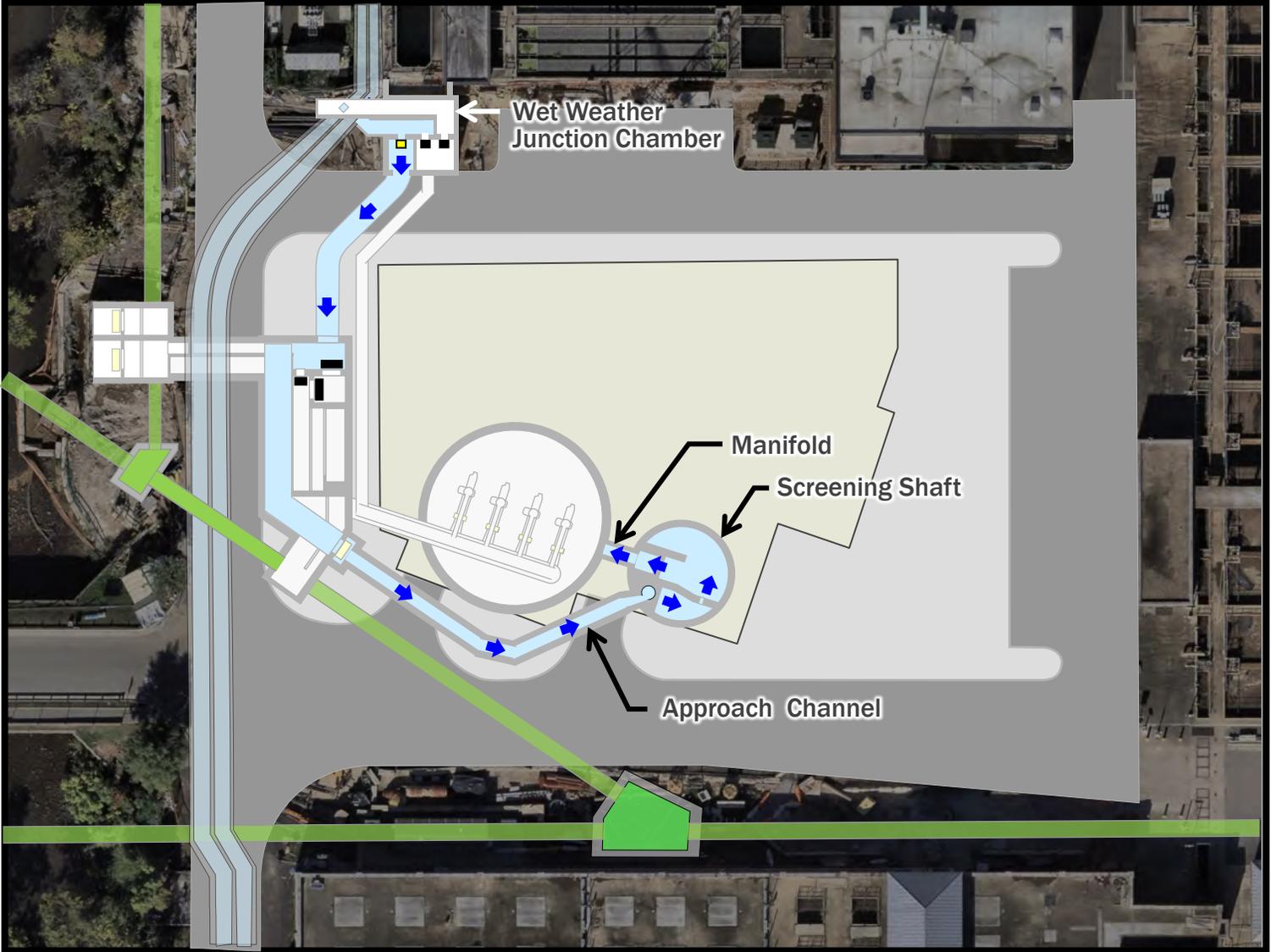
The facilities are flushed with plant effluent to remove additional debris.



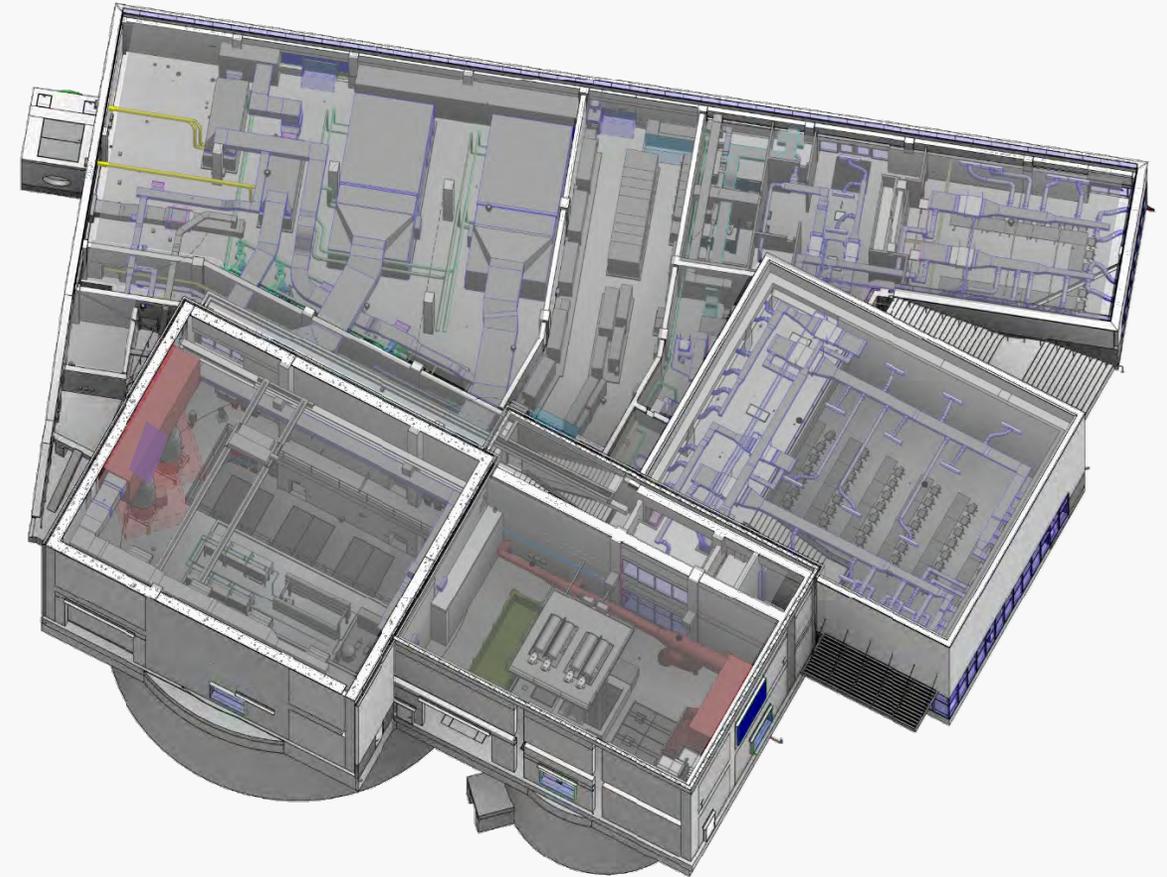
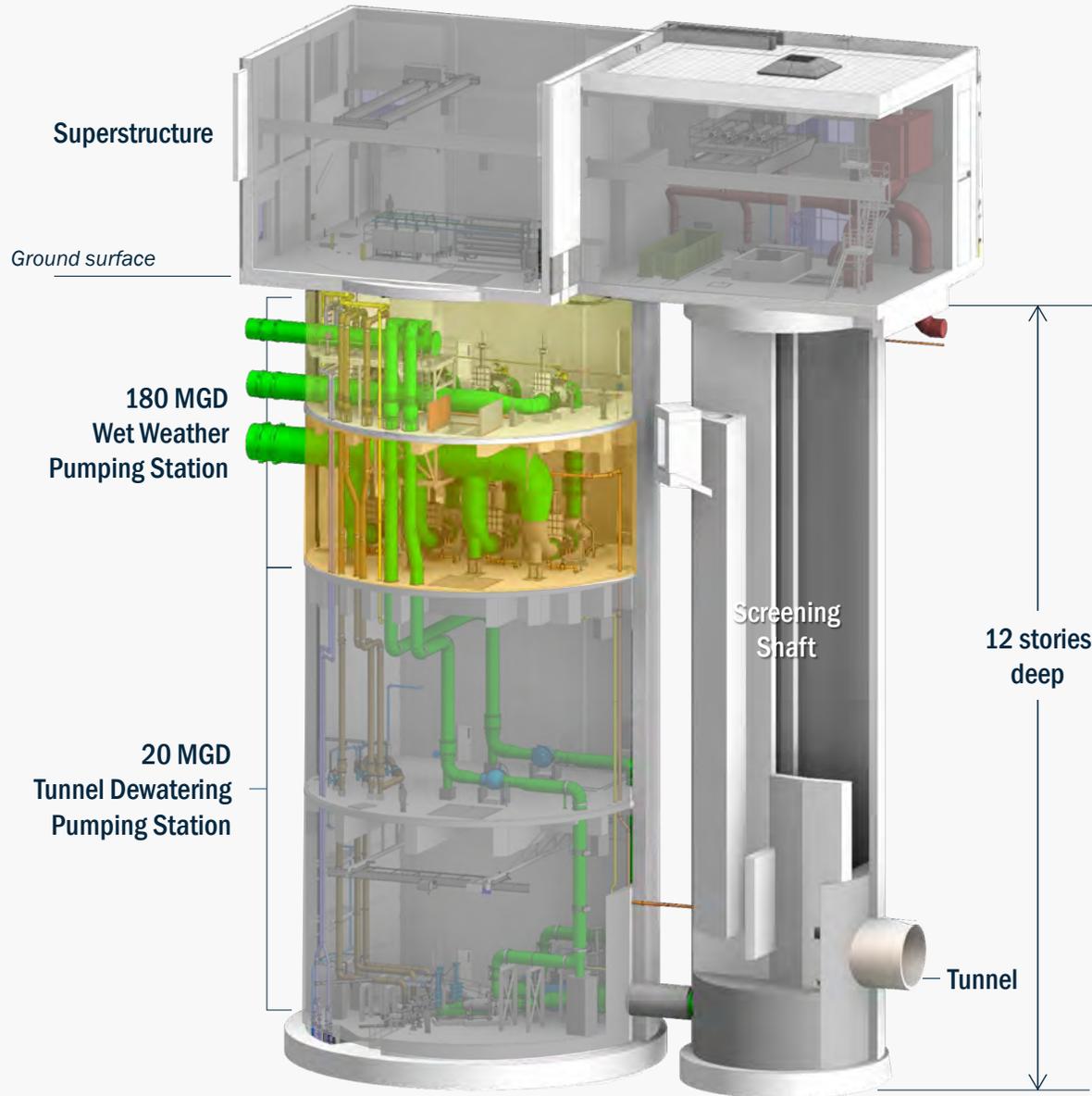
Wet Weather Junction Chamber Plan View



HGL Control Structure Sectional View



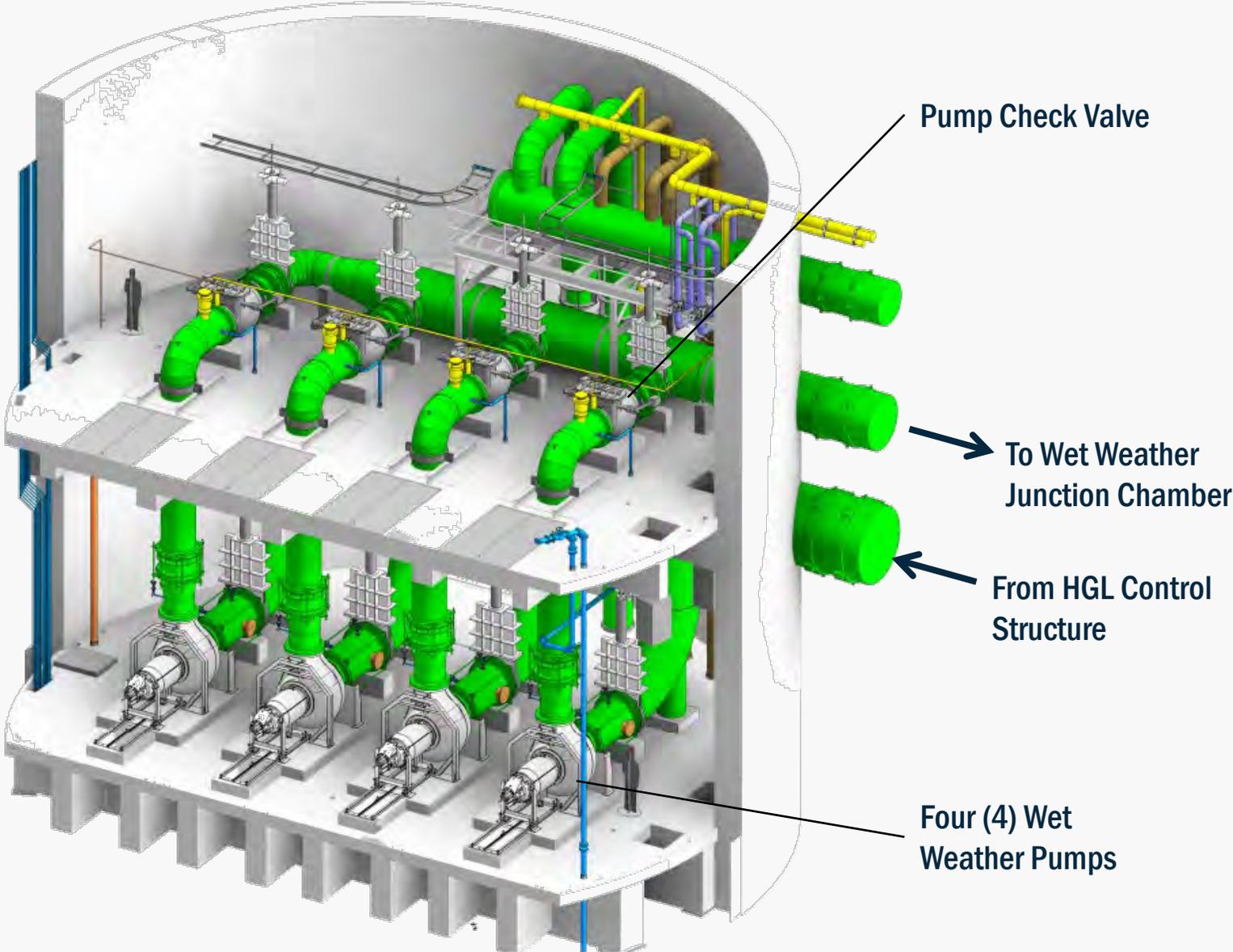
Wet Weather Pumping Station



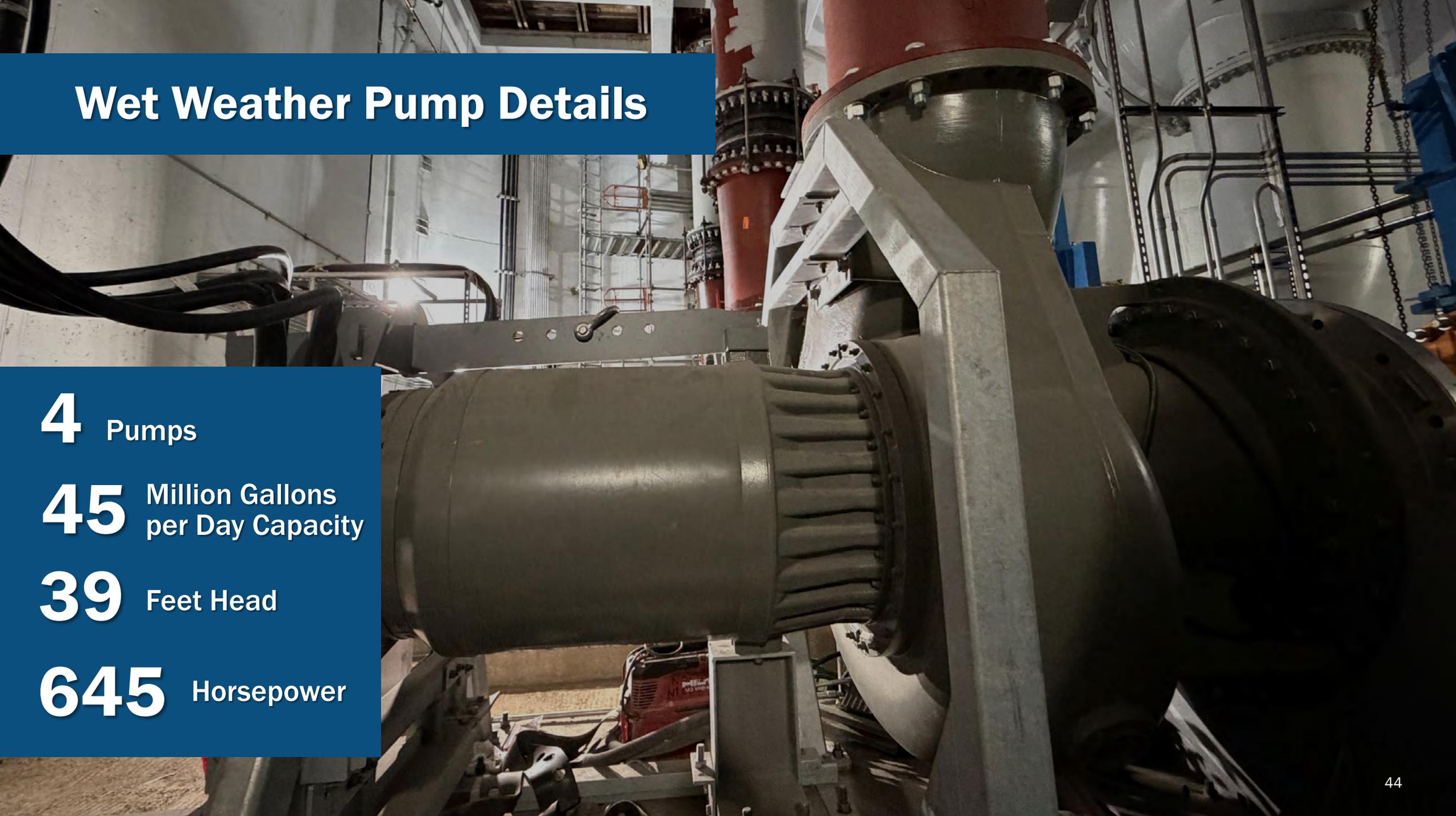
3D cutaway of the new RiverRenew Pumping Station

Wet Weather Pumping Station

Among the largest of their kind in the world, the wet weather pumps activate during only the most intense storms. These pumps direct wet weather flow from the Commonwealth Interceptor to AlexRenew's UV system or to the Waterfront Tunnel.



Wet Weather Pump Details

A large industrial wet weather pump is shown in a facility. The pump is a large, dark, cylindrical unit with a ribbed end, mounted on a heavy metal frame. In the background, there are large red pipes and other industrial equipment. The scene is brightly lit, with some shadows cast on the machinery.

4 Pumps

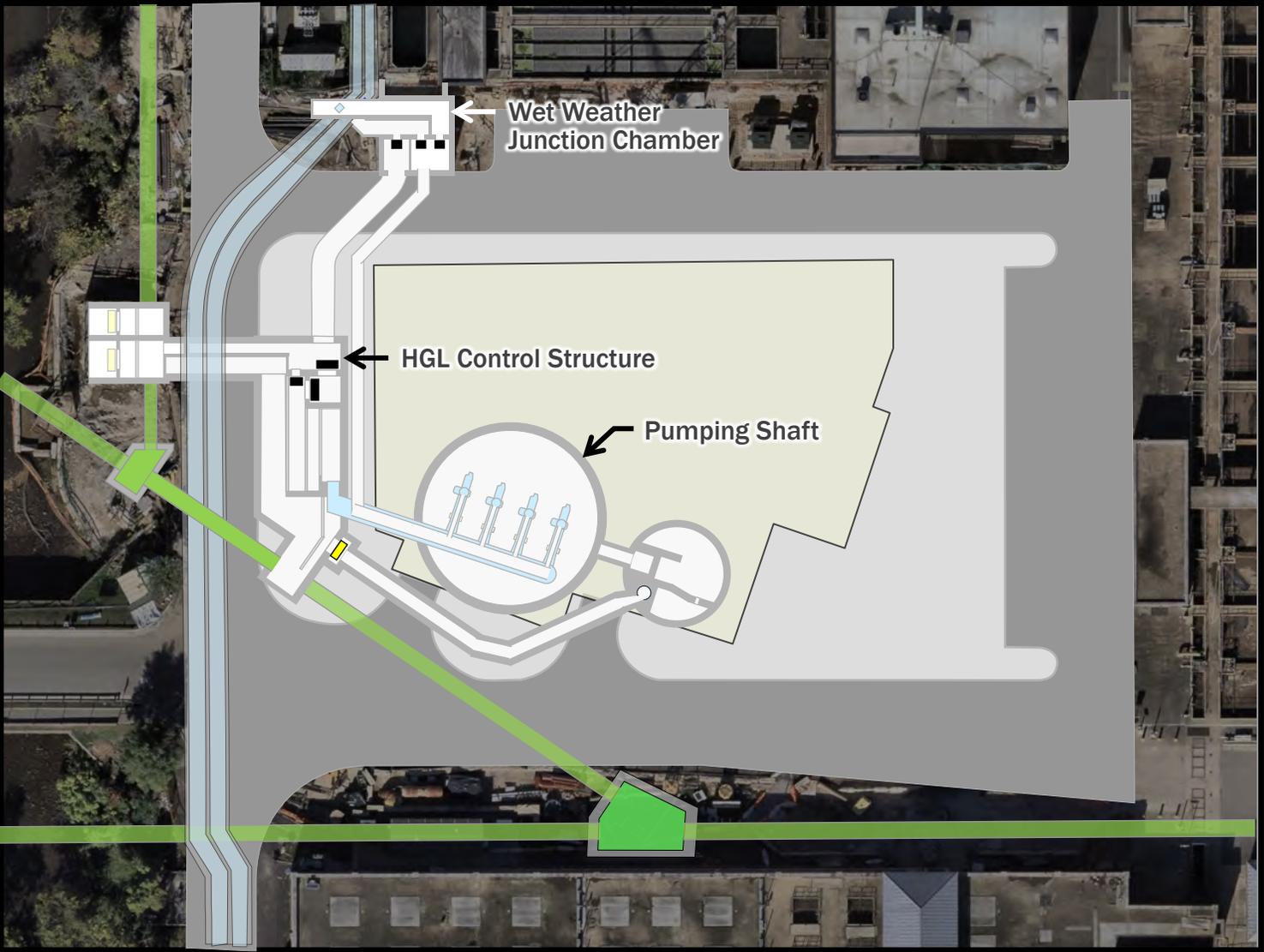
45 Million Gallons
per Day Capacity

39 Feet Head

645 Horsepower

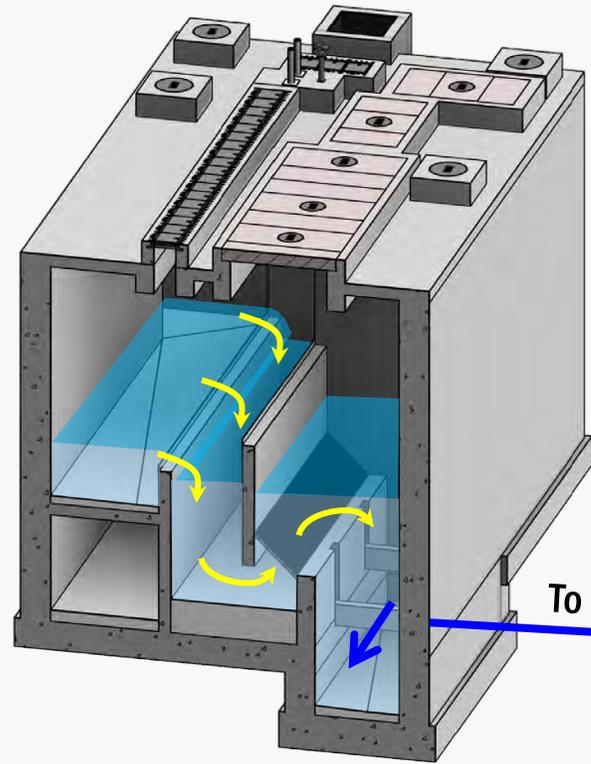
Wet Weather Pumping Station and Associated Facilities

The Wet Weather Pumps receive flows from the Commonwealth Interceptor via HGL Control Structure. Pumped flow is sent to the Wet Weather Junction Chamber, where it is directed to either the UV system for disinfection or to the Waterfront Tunnel.



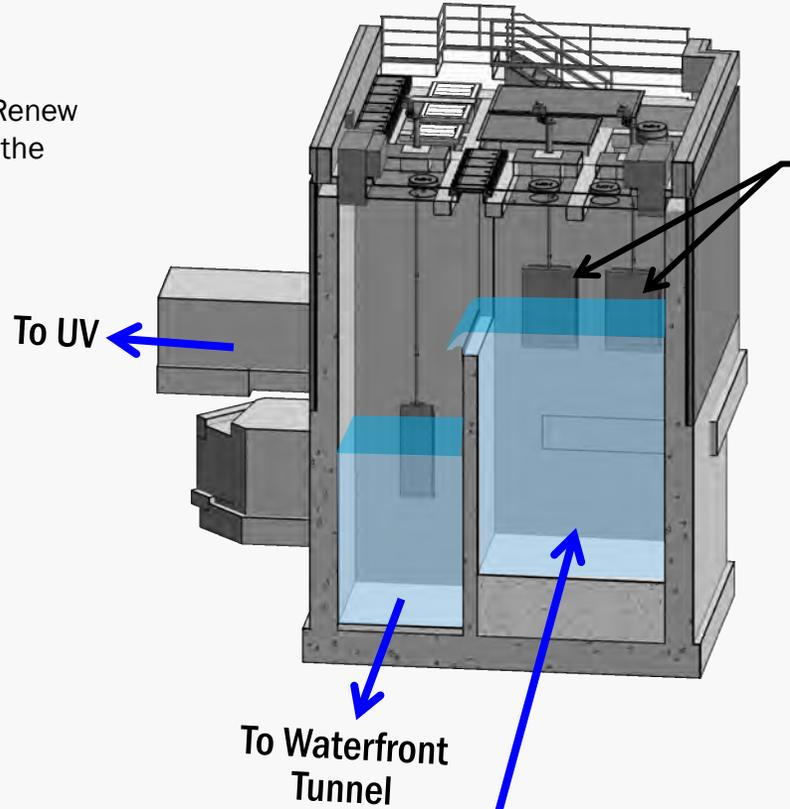
Wet Weather Pumping Station Operation

The Wet Weather Pumps reduce the water level in the AlexRenew interceptor system and sends flows to UV disinfection or to the Waterfront Tunnel



HGL Control Structure Sectional View

Wet Weather Junction Chamber Sectional View

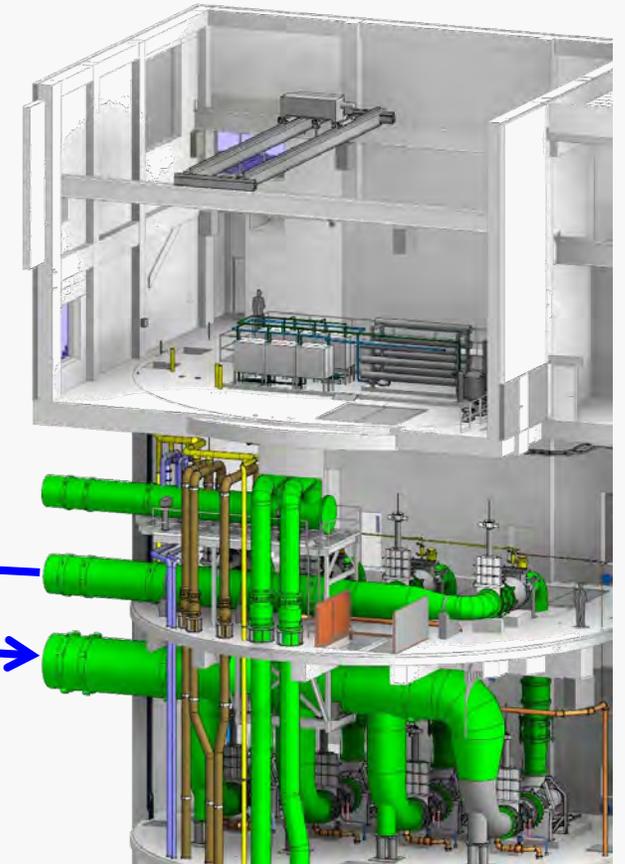


Gates are adjusted to maintain 40 million gallons per day to UV system for disinfection

To Wet Weather Pumps

To Waterfront Tunnel

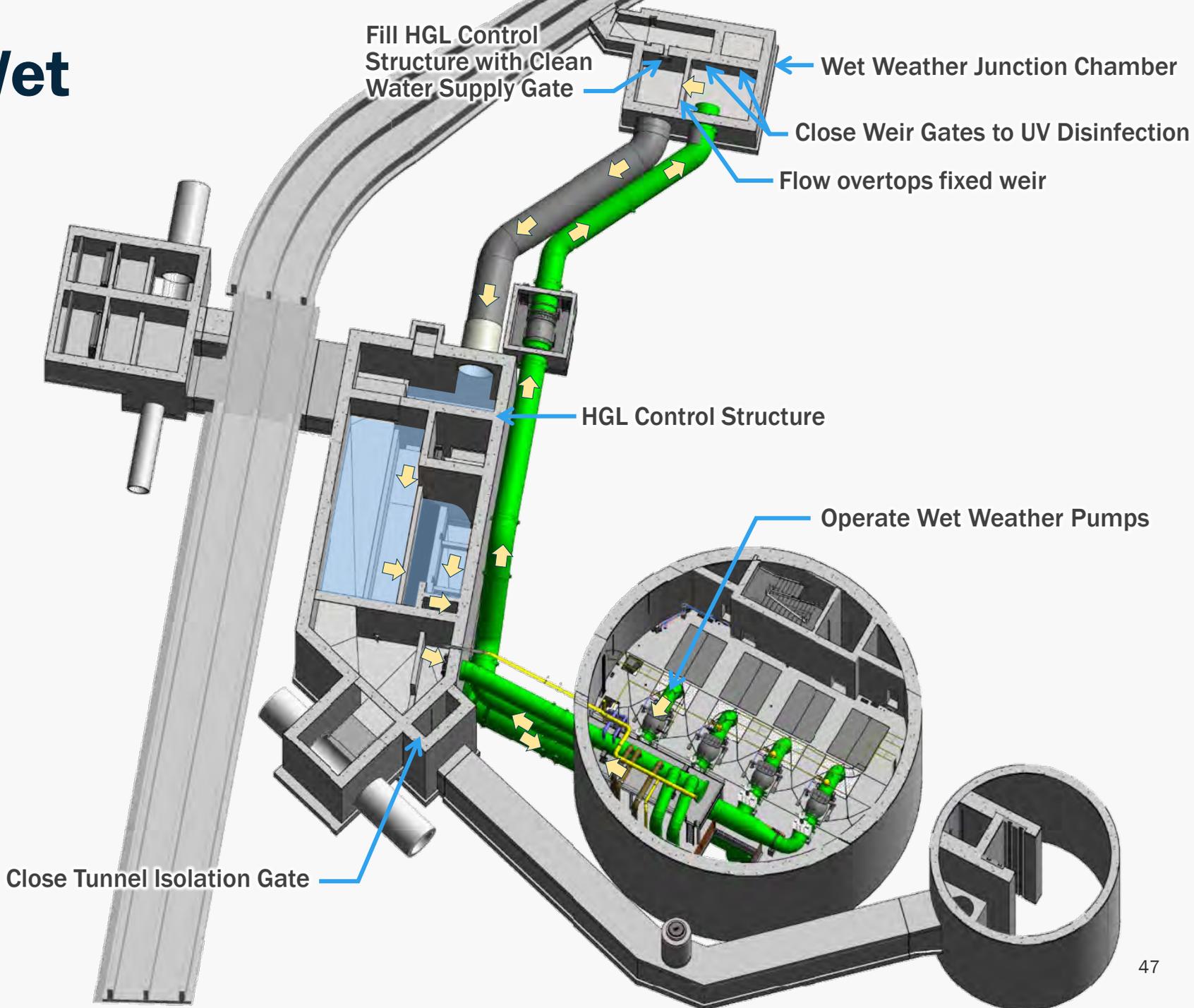
To UV



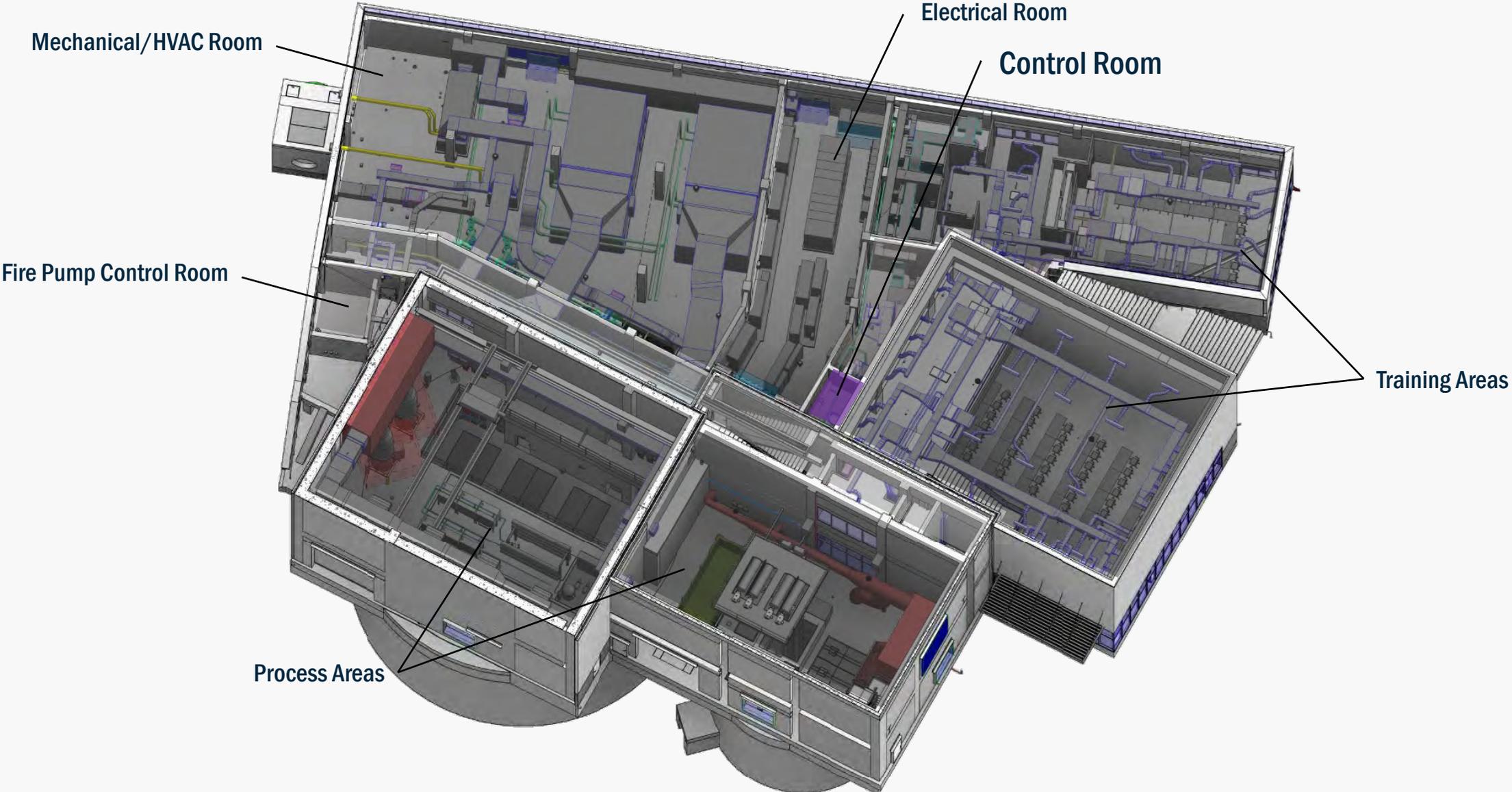
Wet Weather Pumping Station Sectional View

Exercise of the Wet Weather Pumps

Since the wet weather pumps are anticipated to operate infrequently, configuration allows for periodic testing and operation to ensure the system is in good working order.

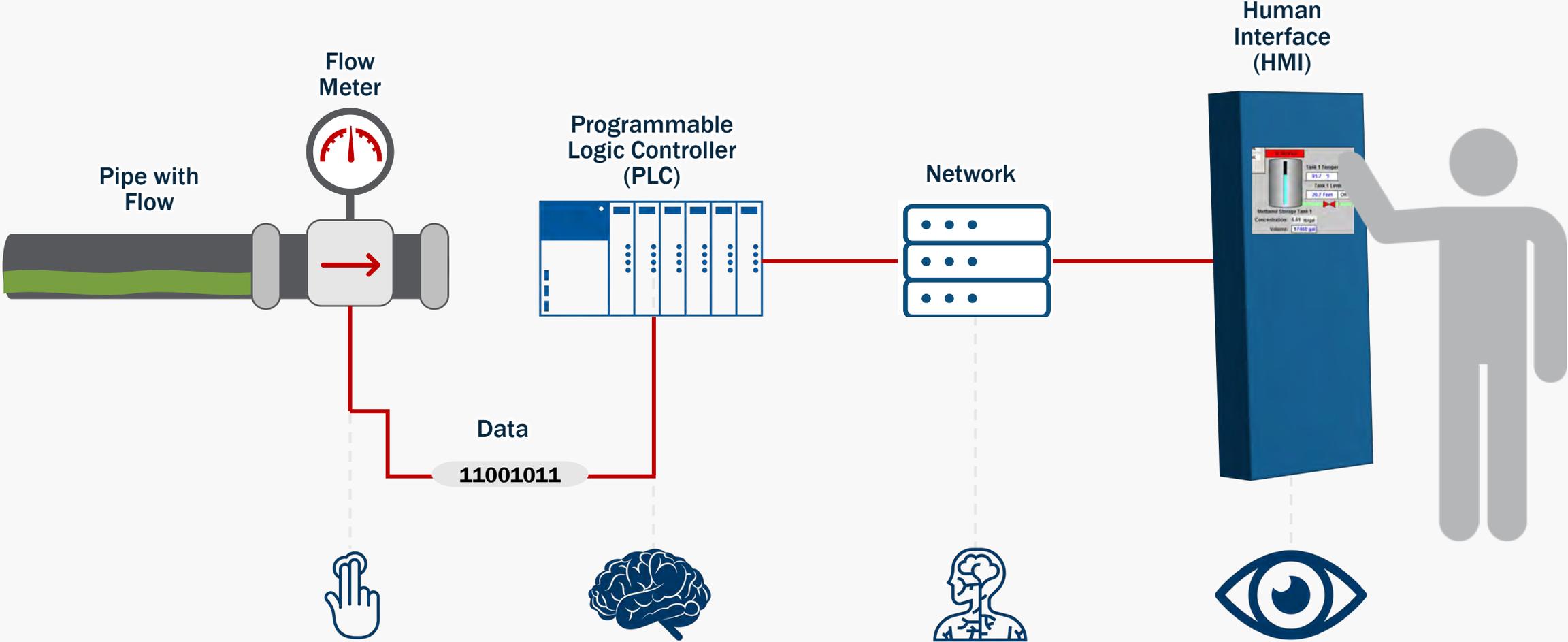


Instrumentation and Controls



Supervisory Control and Data Acquisition

SCADA is a system of software and hardware elements to monitor, control, and analyze processes.



Instrumentation

Instruments measure level, pressure, and flow and are used by the PLC to control pumps, valves and gates.



Ultrasonic Level Sensor



Variable Frequency Drive



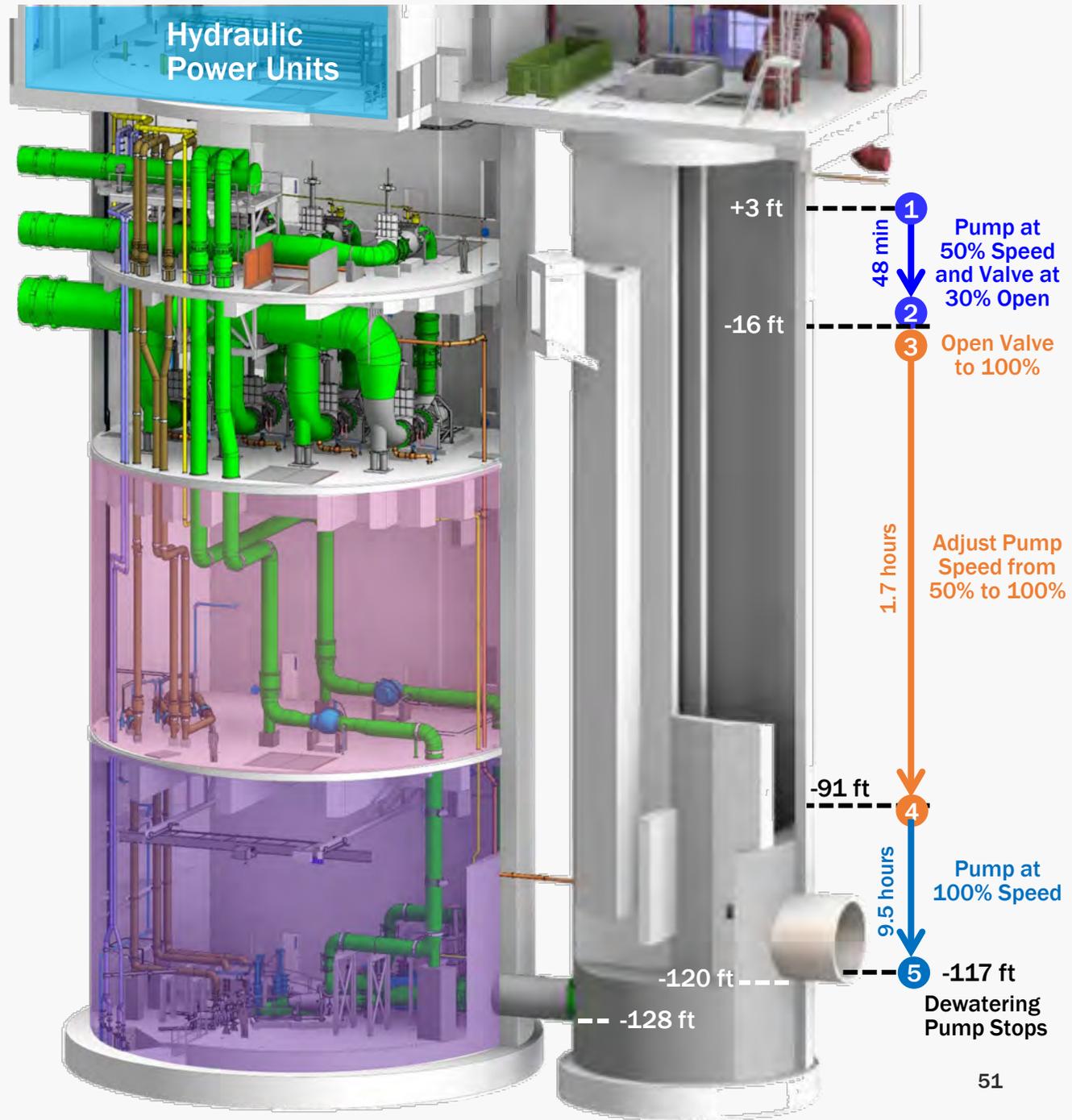
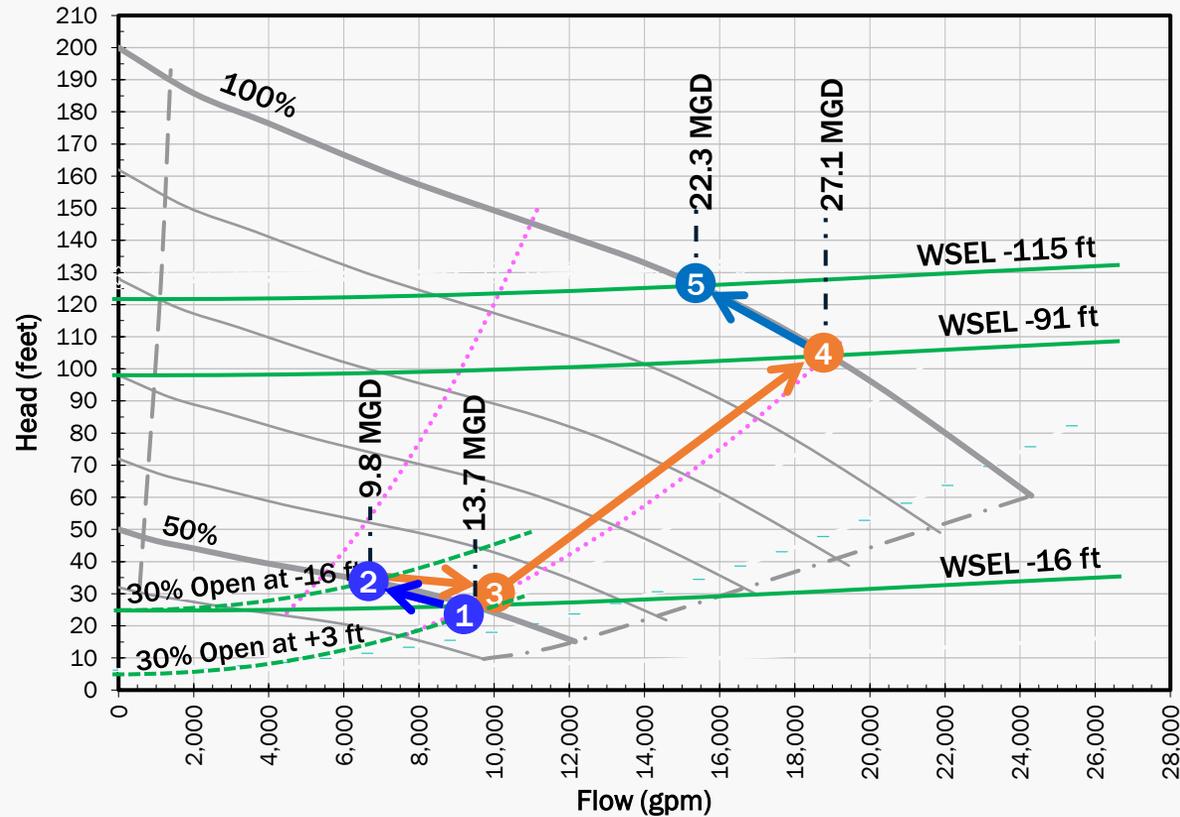
Magnetic Flow Meter



Hydrostatic Level Sensor

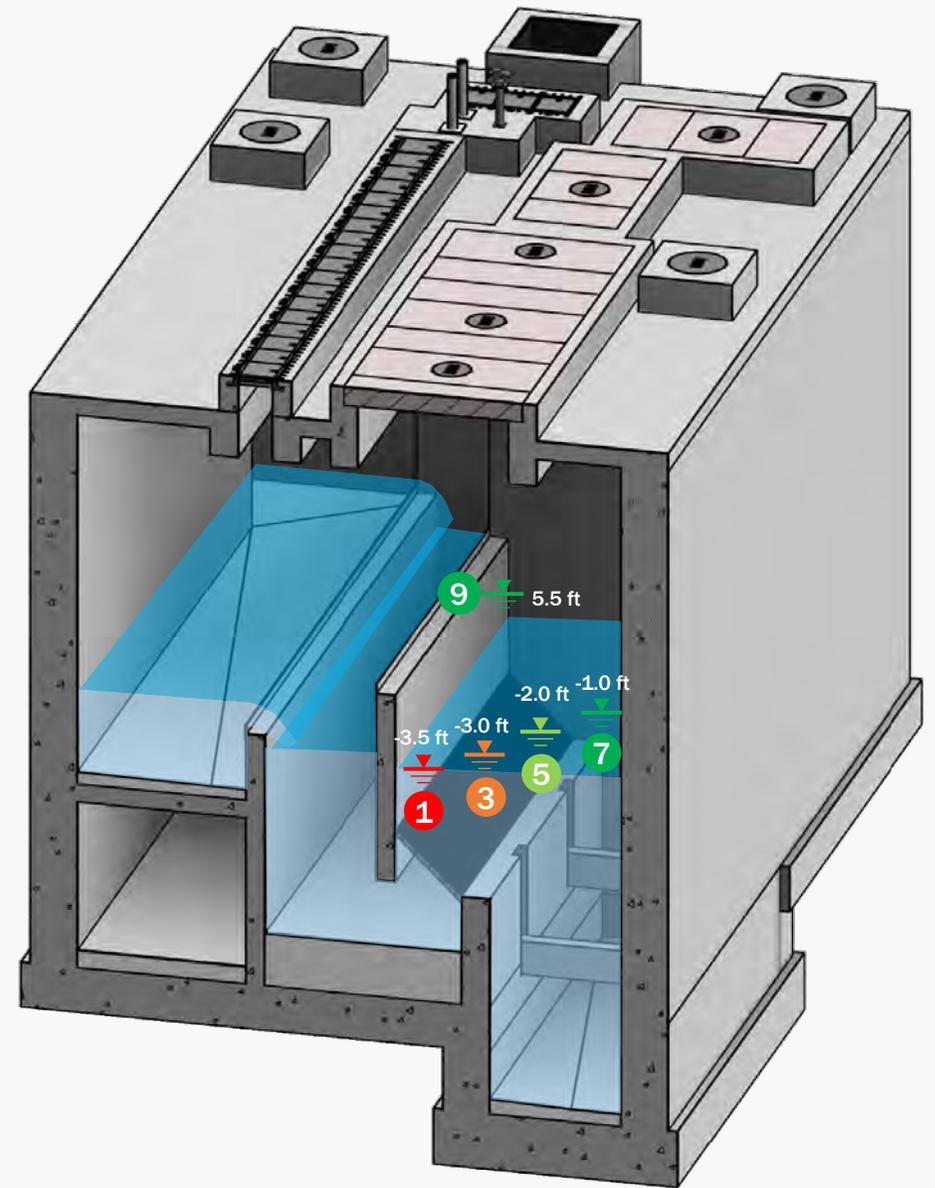
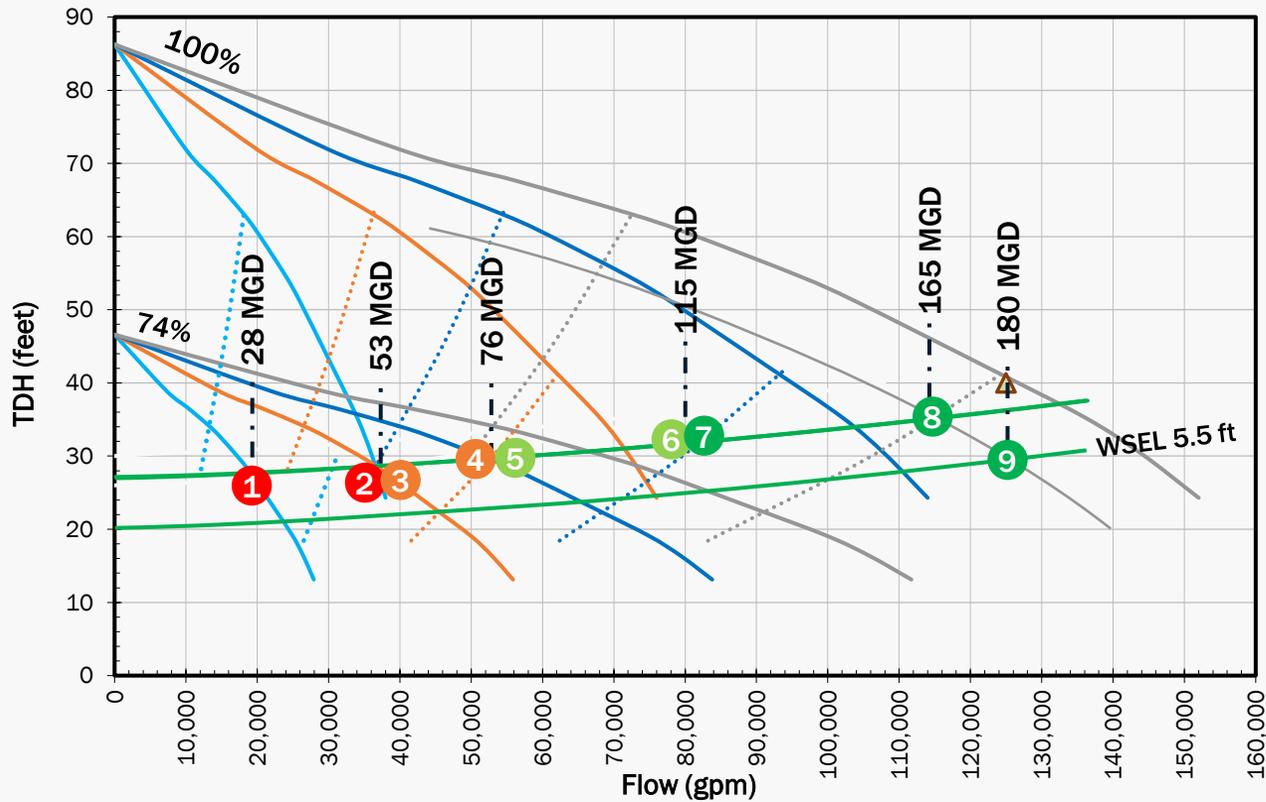
SCADA Setpoints for the Tunnel Dewatering Pumps

The setpoints for Tunnel Dewatering Pumps are based on the levels in the Screening Shaft.



SCADA Setpoints for the Wet Weather Pumps

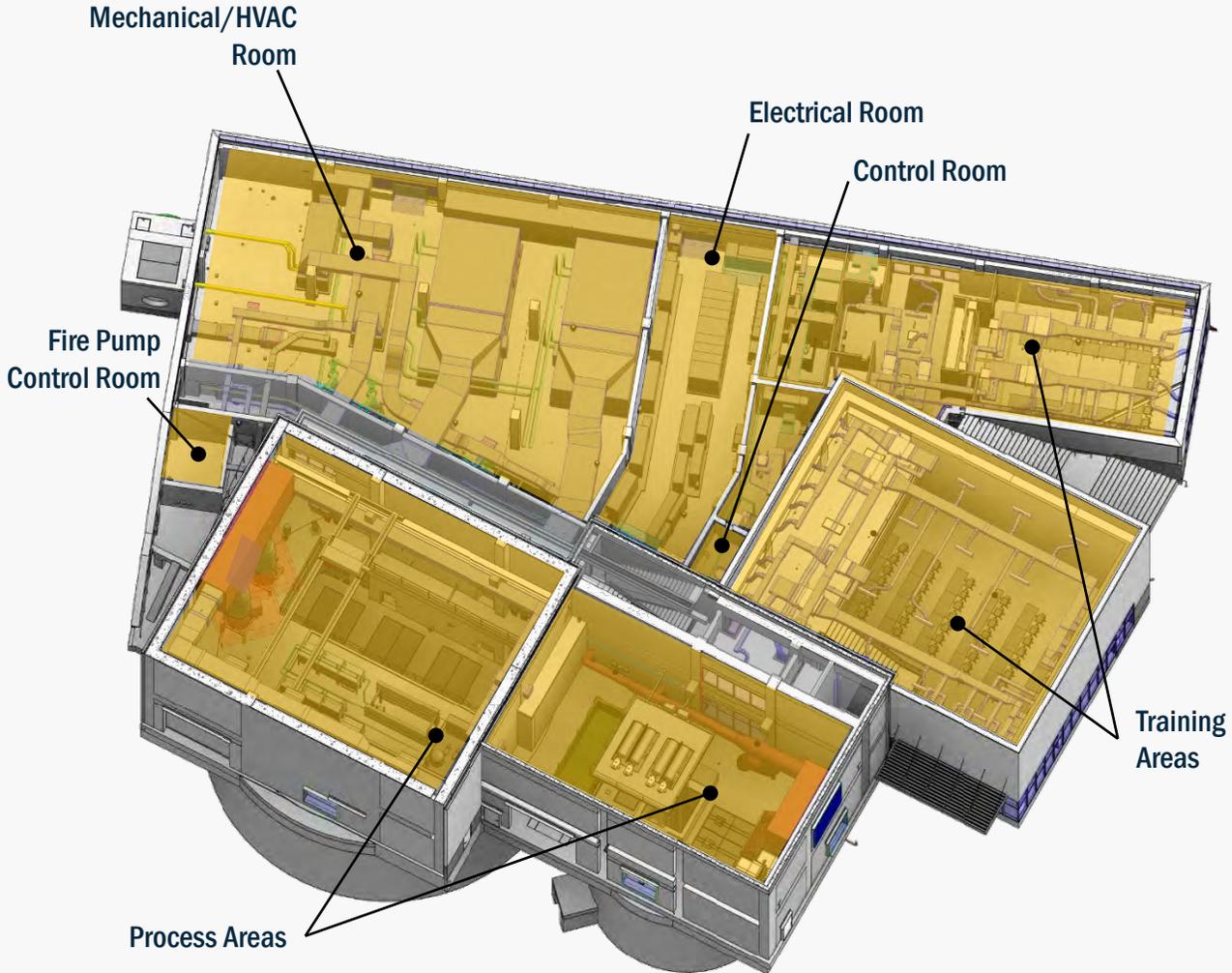
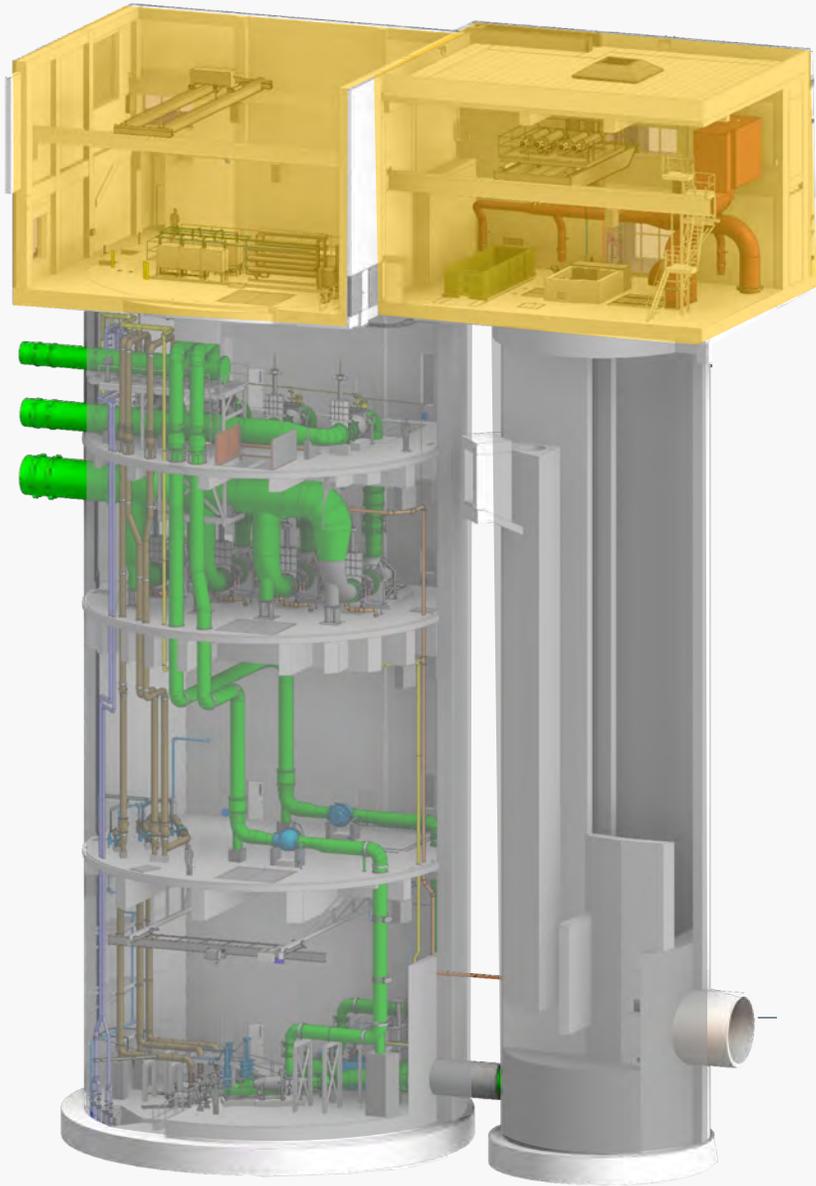
The setpoints for Wet Weather Pumps are based on the levels in the HGL Control Structure.



**HGL Control Structure
Sectional View**

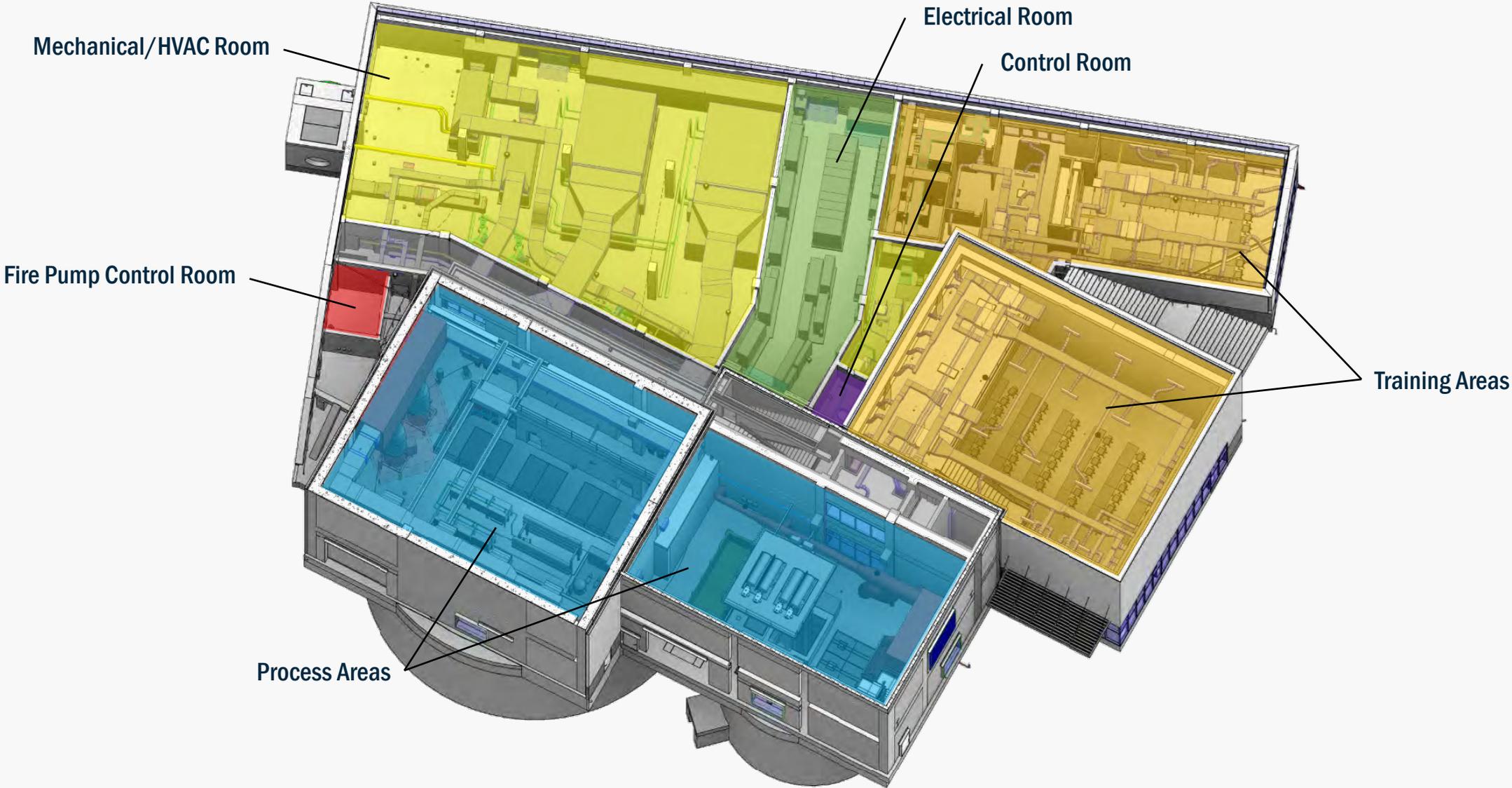
Ancillary Systems

Ground surface



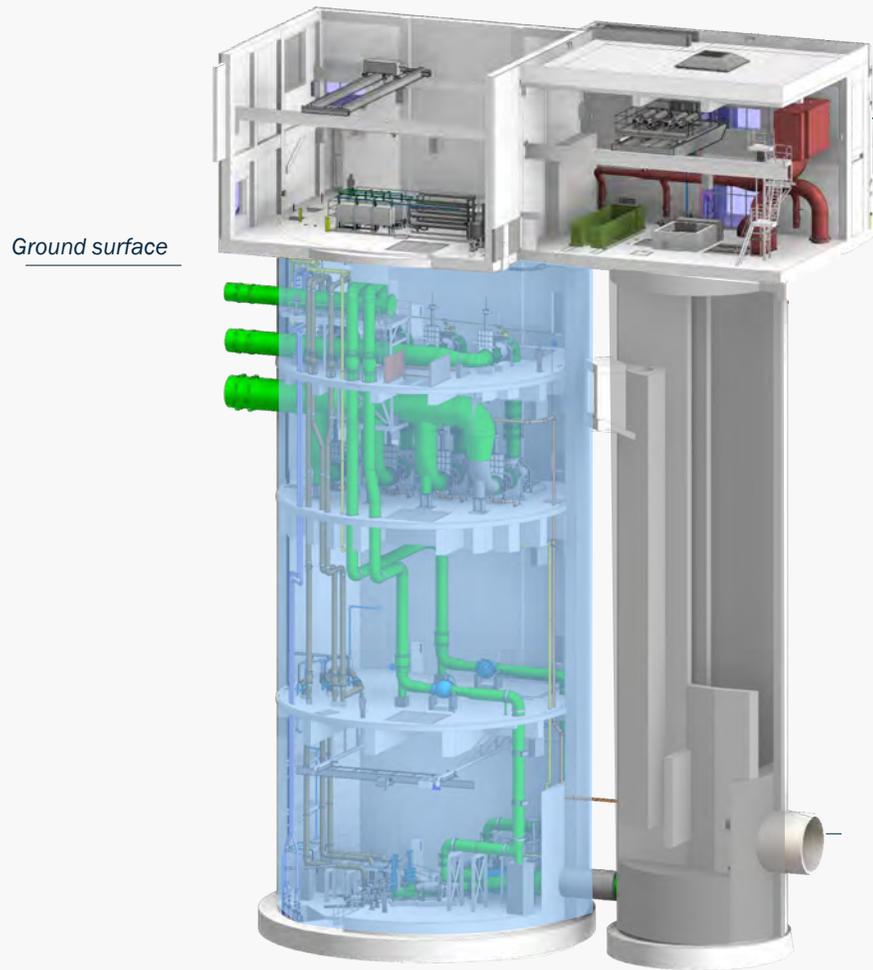
Superstructure Mechanical, Electrical, and Training Rooms

The superstructure houses the electrical distribution to the pumps, the HVAC system to make the Pump Shaft and Screening Room safe for staff, and spaces for training.

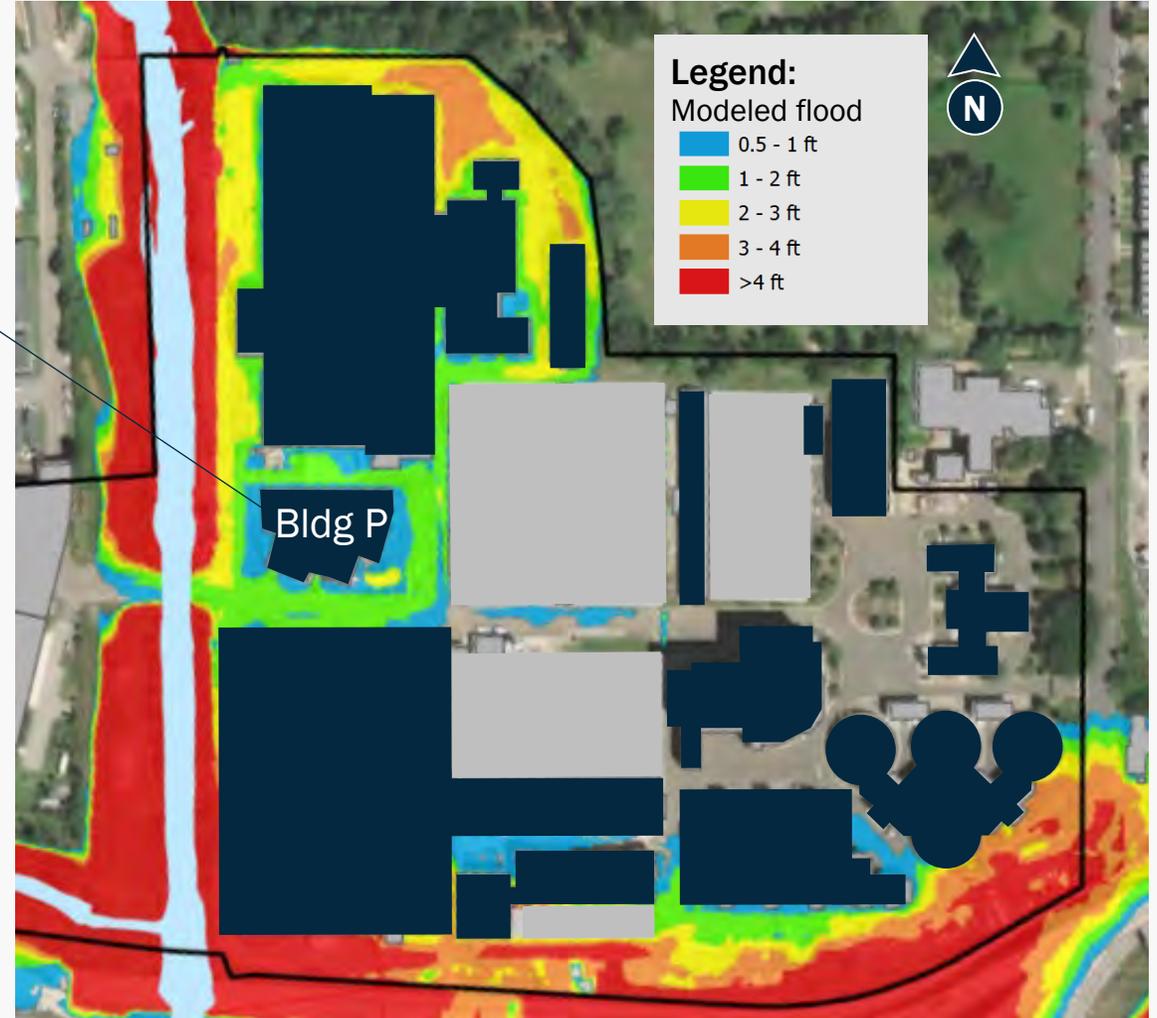


Resiliency Design Efforts

Tunnel system facilities are built to an elevation higher than the future 100-year storm in the year 2075.



All pumps will operate if the shaft is flooded



Building P is above the 2075 floodplain

Pumping Station and Superstructure

First pumping station in the Commonwealth to be LEED and Envision Certified with Gold score anticipated.



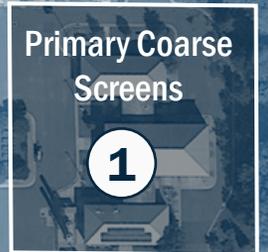
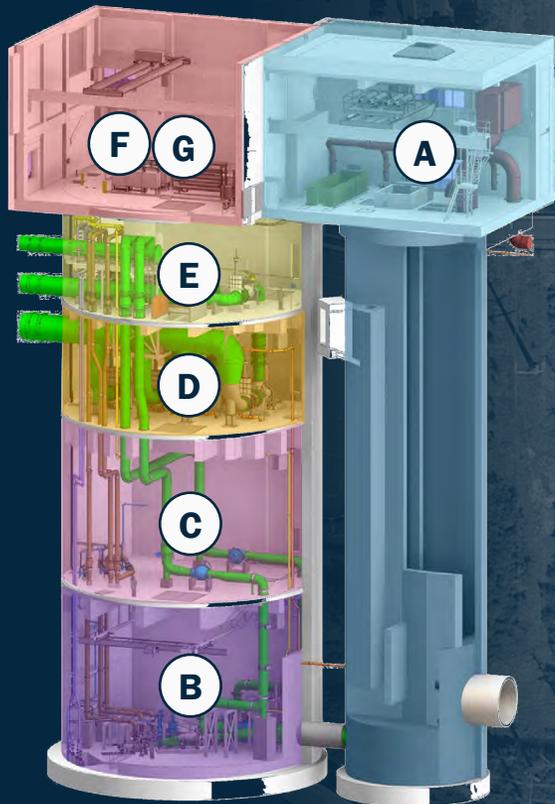
RiverRenew Tour

1 Primary Coarse Screens
Receives CSO flows during:
40-50 storms per year

2 UV and Post-Aeration
Receives CSO flows during:
1-4 Storms per year

3 RiverRenew Pumping
Station

- A. Screening Room
- B. Tunnel Dewatering Pumping Station
- C. Tunnel Dewatering Valve Room
- D. Wet Weather Pumping Station
- E. Wet Weather Valve Room
- F. Crane Room
- G. Superstructure Mechanical, Electrical, and Training Rooms





AlexRenew