

**Bull Run**  
TREATMENT  
PROJECTS

*Our water: Safe and abundant  
for generations to come*

PORTLAND WATER BUREAU

## Bull Run Treatment Projects

# Design Process Strategies for O&M Engagement

April 28, 2022



PNWS-AWWA  
**Water 2022**  
Tacoma, WA • April 27-29

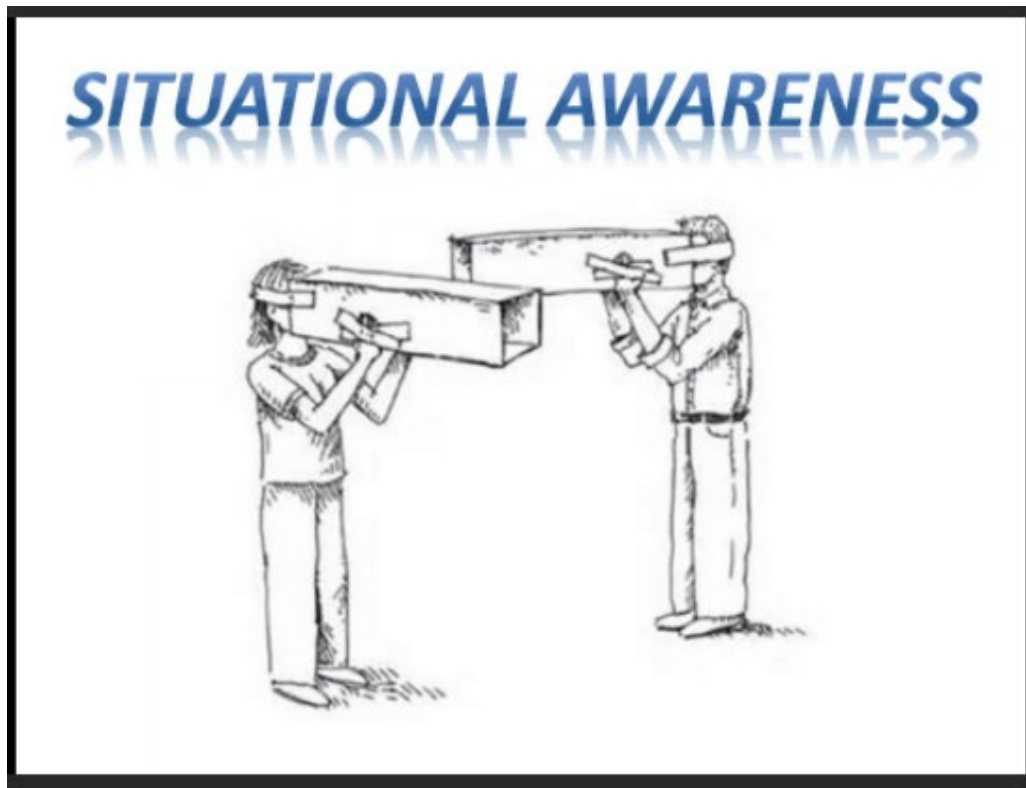
# Agenda

1. Welcome-Introductions
2. Safety Moment
3. O&M Engagement Strategies
4. Discussion-Questions
5. Adjourn



# Safety Moment

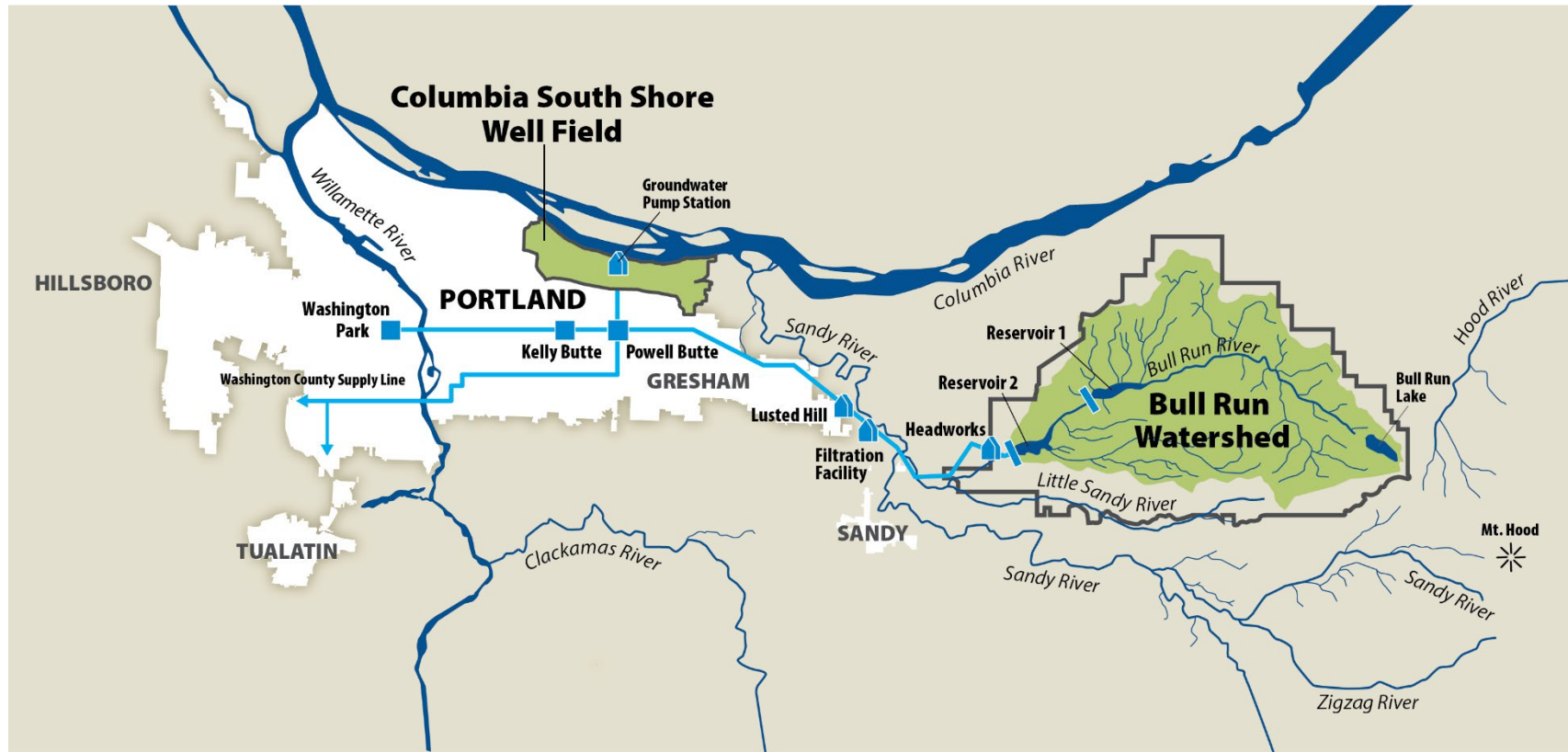
Maintain situational awareness in new surroundings.



Become familiar with exits and routes to safety.



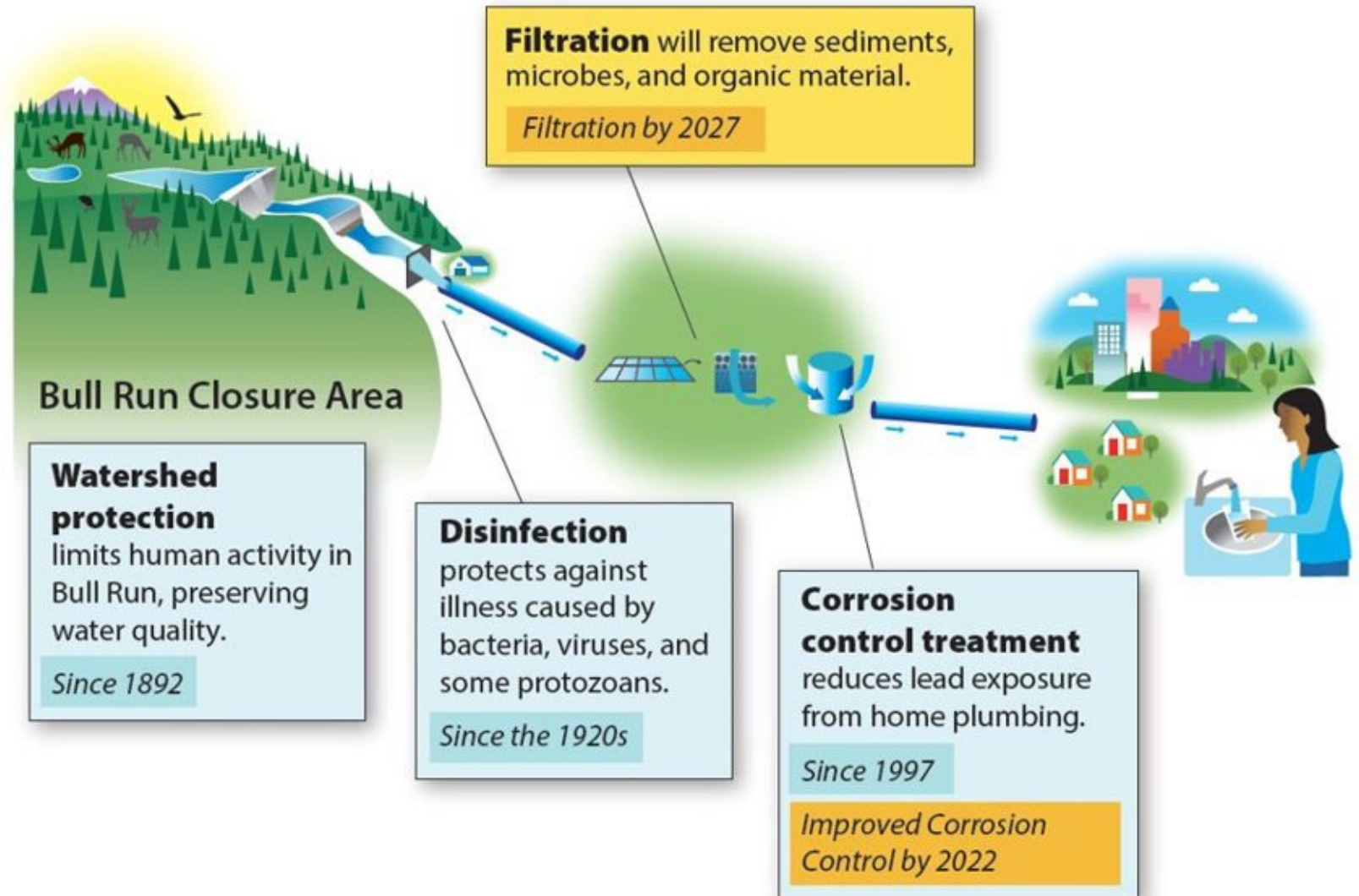
# Thanks to thoughtful planning, Bull Run has been a source of **excellent water since 1895**



- Serves almost 1 million people
- Serves the City of Portland and 19 wholesale customers
- Uses 100 million gallons of water on an average day



Improvements to Portland's system are needed to meet national drinking water standards



# On track to deliver filtered Bull Run water to customers beginning September 2027



**Planning  
Completed  
2018-2020**



**Design  
Underway  
2020-2022**

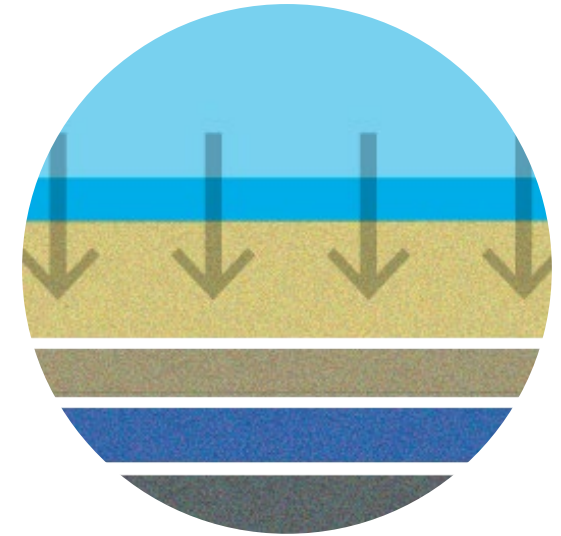


**Construction  
Expected  
2023-2027**

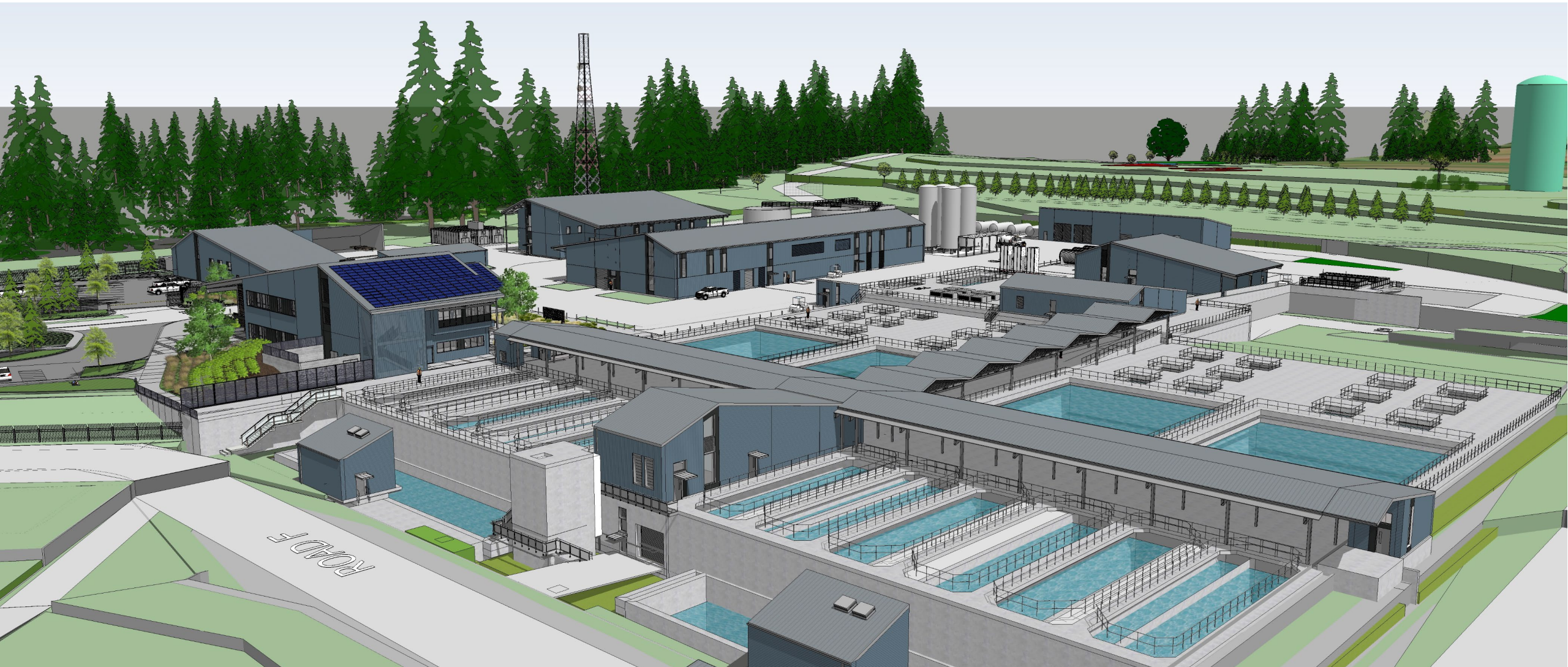


# Why filtration?

- ✓ Excellent treatment option for *Cryptosporidium*
- ✓ Reduces disinfection byproducts
- ✓ Addresses high turbidity (fire or storms)
- ✓ Addresses algae concerns
- ✓ Keeps sediment out of distribution system
- ✓ Helps prepare for future regulations and emerging contaminants

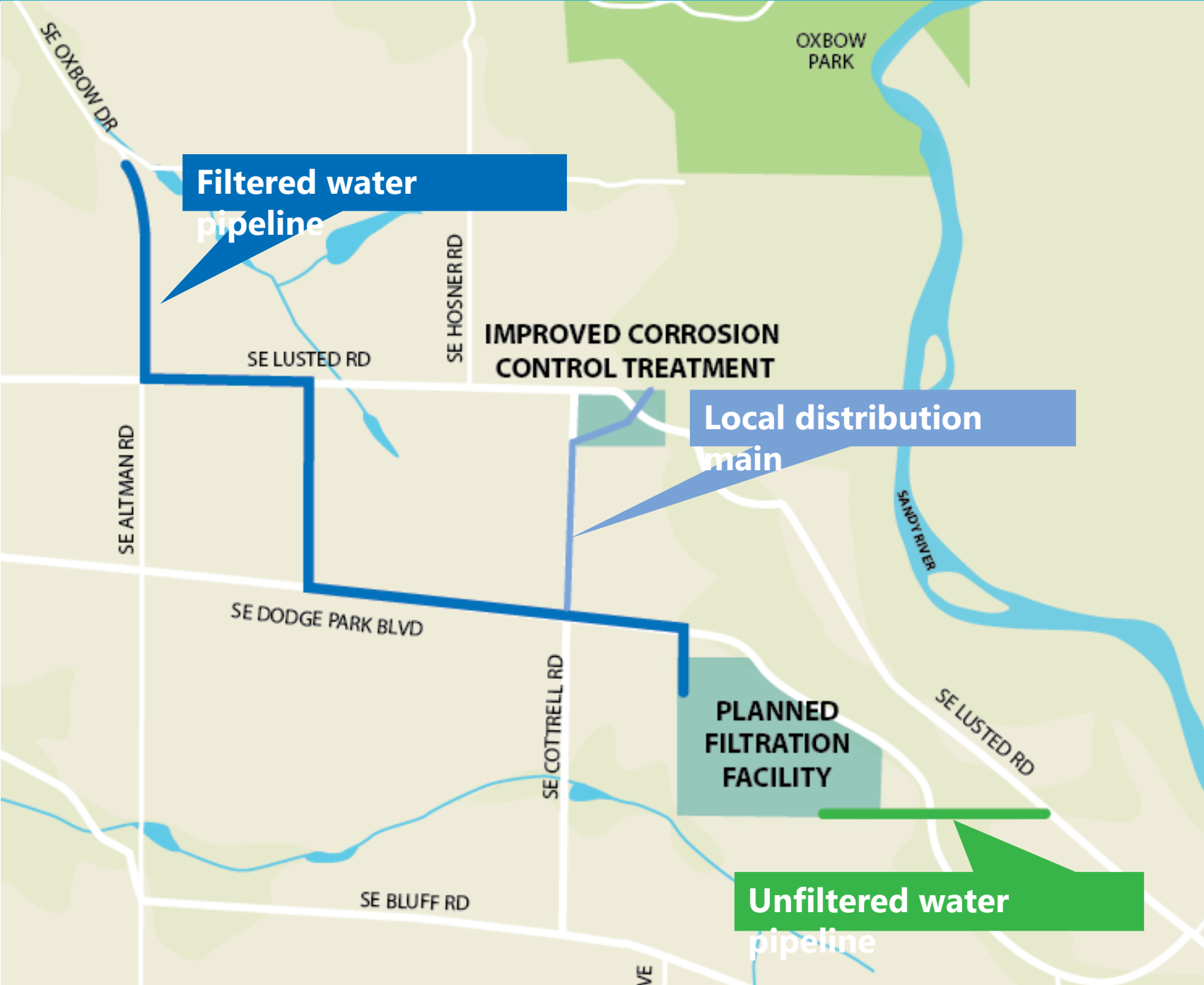


# Design of the filtration facility is taking shape

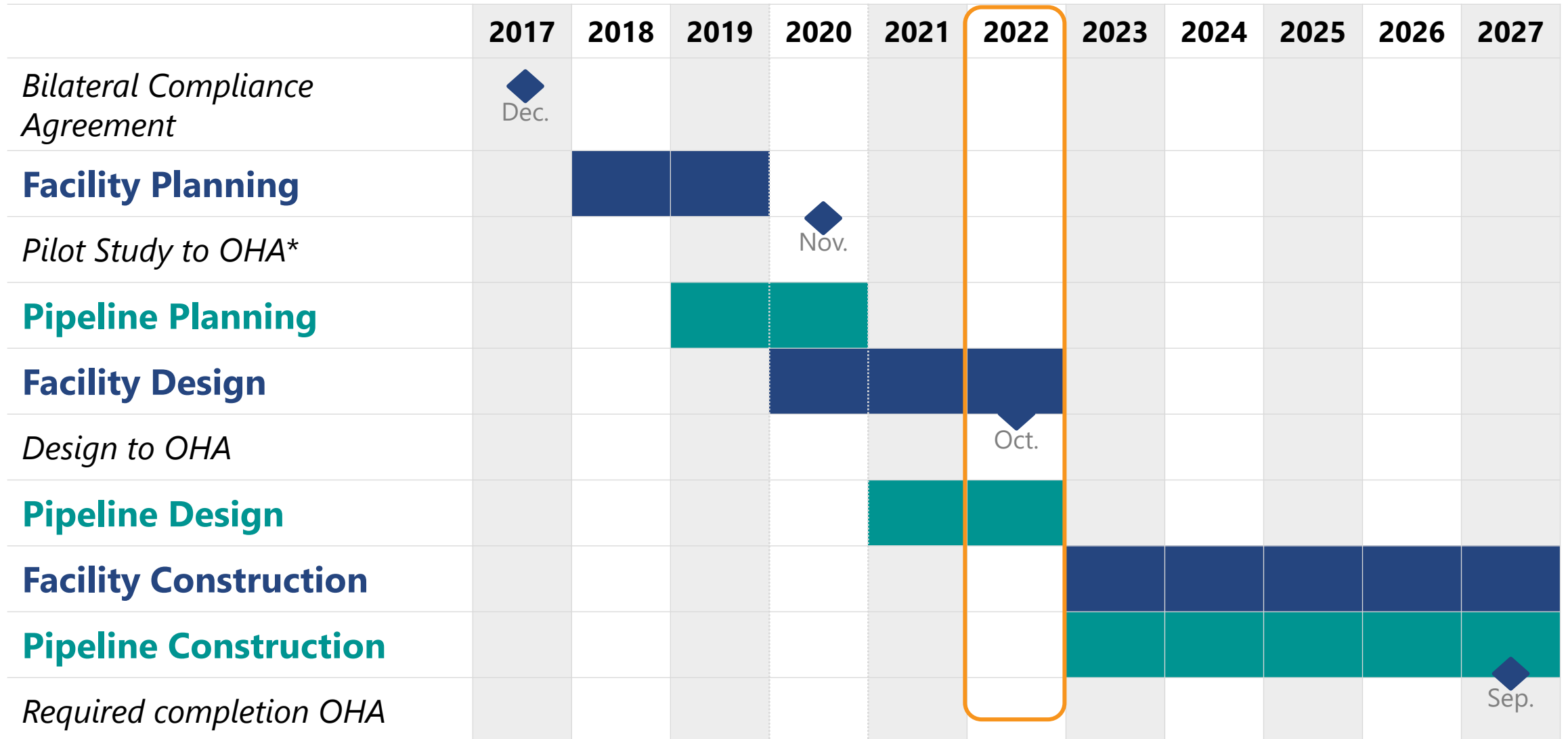




New pipelines will tie the water filtration facility into the existing system



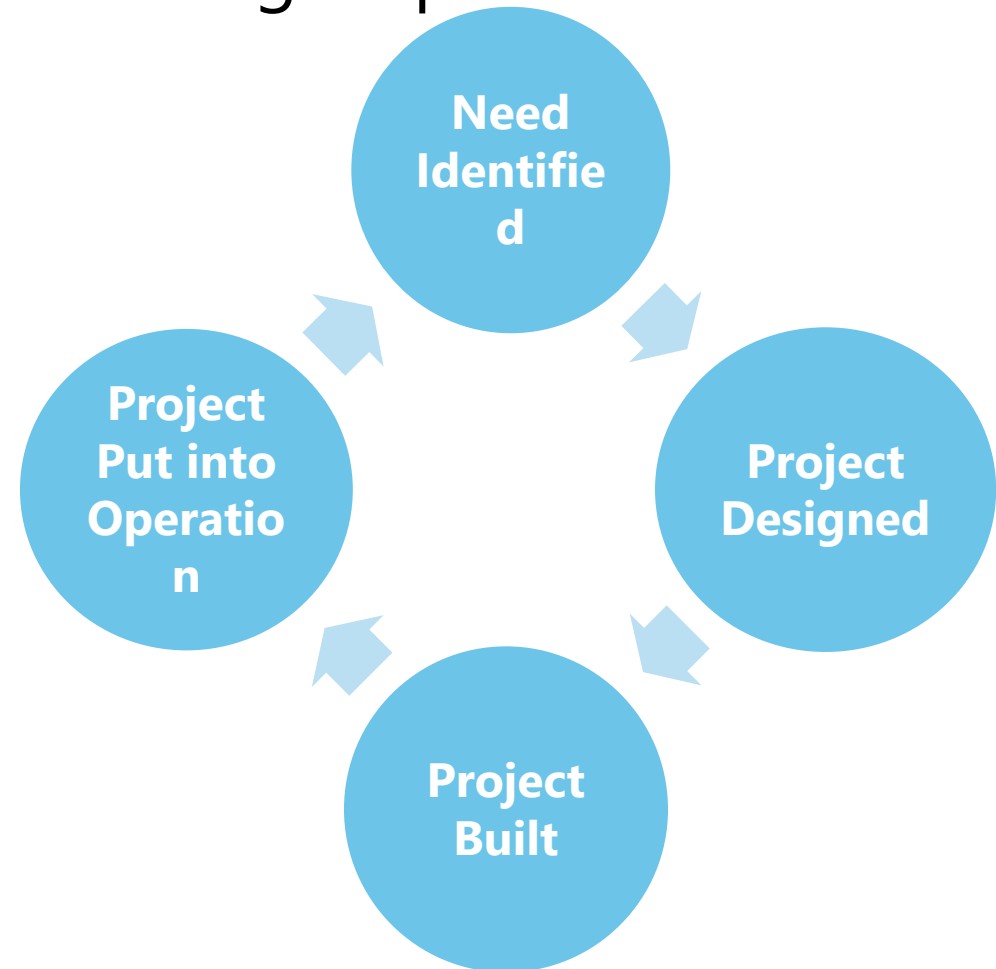
# Construction anticipated to start mid-2023



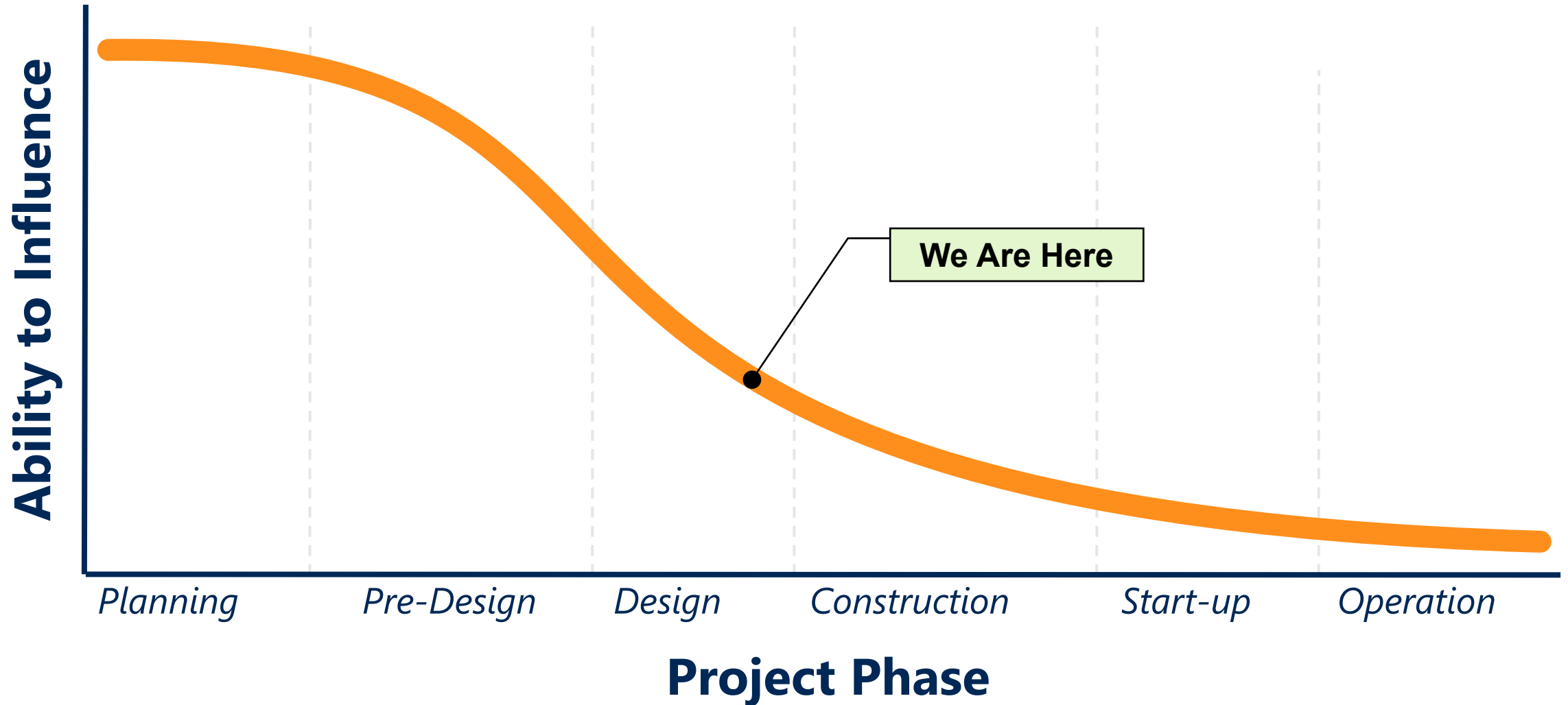
\*Oregon Health Authority (OHA)

# O&M Engagement Objectives

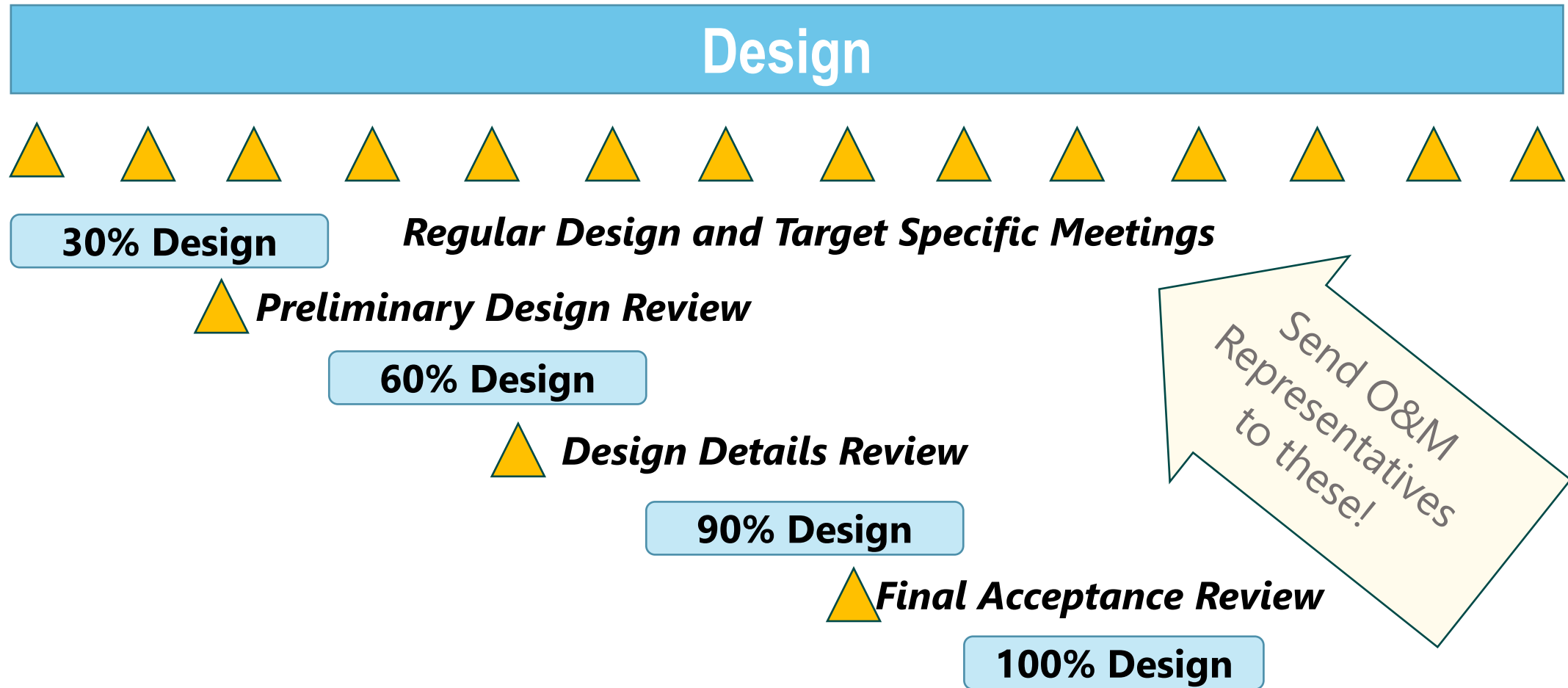
- Encourage O&M staff to contribute during all phases of an infrastructure project.
- Describe the types of input that are the most important at each phase of the project lifecycle.
- Discuss ways to make input from O&M staff as valuable as possible.



# O&M's Ability To Influence a Project is Greatest at the Beginning



# Seize Opportunities for O&M Staff Participation



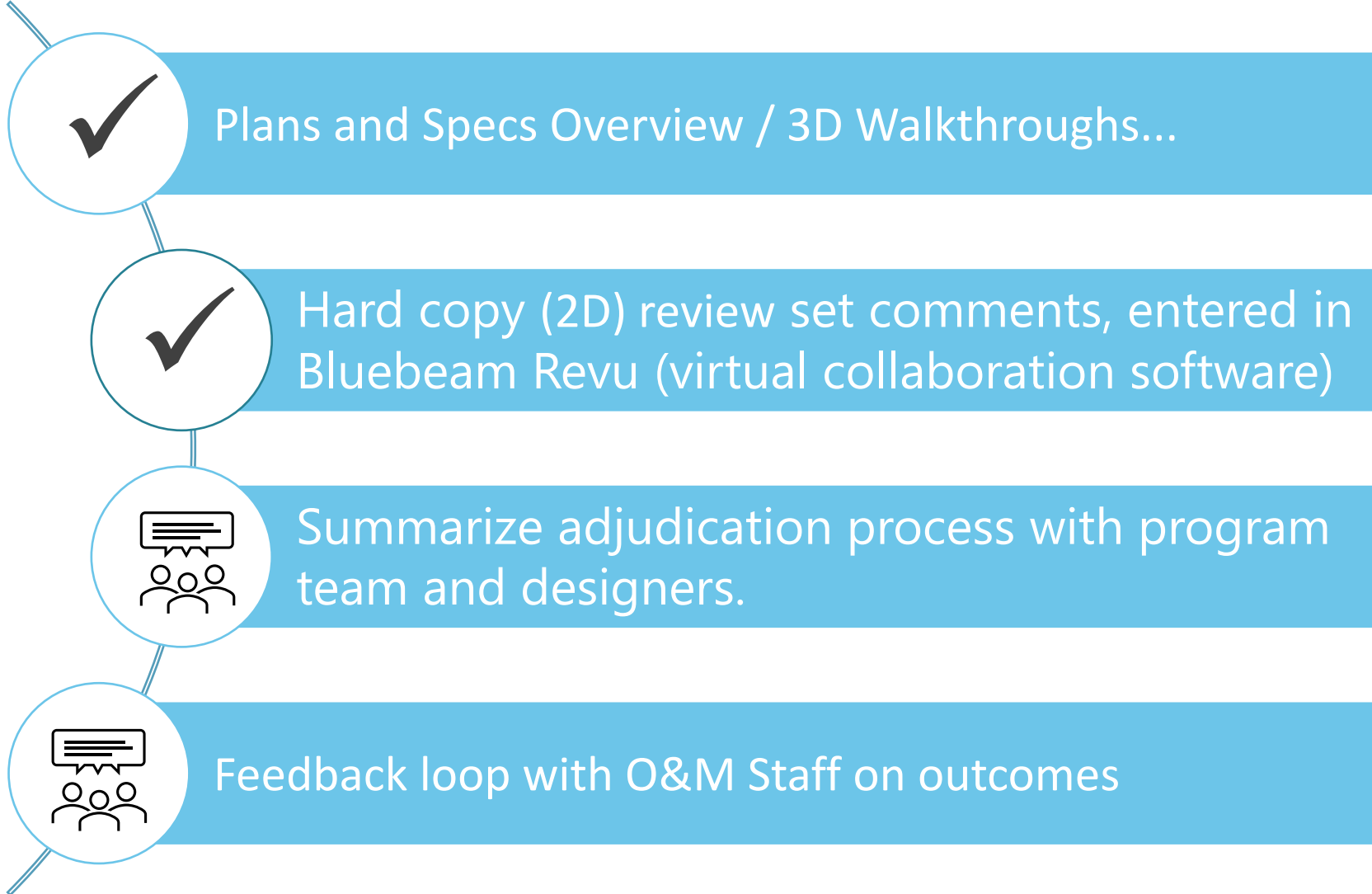
# O&M Staff Input is Necessary

- Equipment layout and configuration
- Understanding preferences e.g. instrumentation and controls
- Details associated with testing, commissioning, and startup plans
- Integration with other projects and existing transmission and distribution system

*“We’ll have to manually operate that valve frequently. Move it to make it more accessible or automate it.”*

*“What will we do when that pump fails?”*

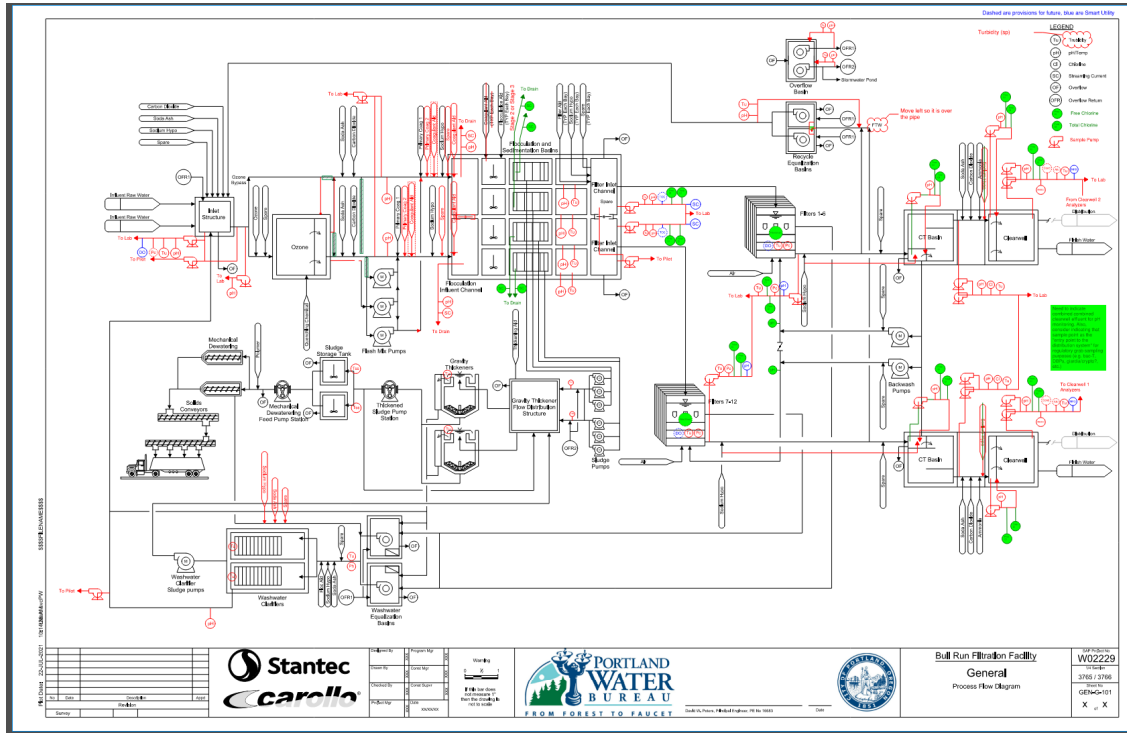
# Provide Review Process Overview



# Areas to Focus On

## Sample Locations and Analyses

- Process Flow Diagram - Analyzers



## Design Review Considerations



Building/Area Specific Lab Space  
(e.g. chemical receiving, solids handling)



Coordination for regulatory compliance  
samples with PWB Interstate Lab



Entry Point to the Distribution System  
Sampling Point Designation



Pumped samples vs. Grab sampling locations



Waste stream processes and procedures,  
including drains



# Areas to Focus On Architectural Safety and Plant Communications

Ladders and Stairs

Valve and Instrument Access

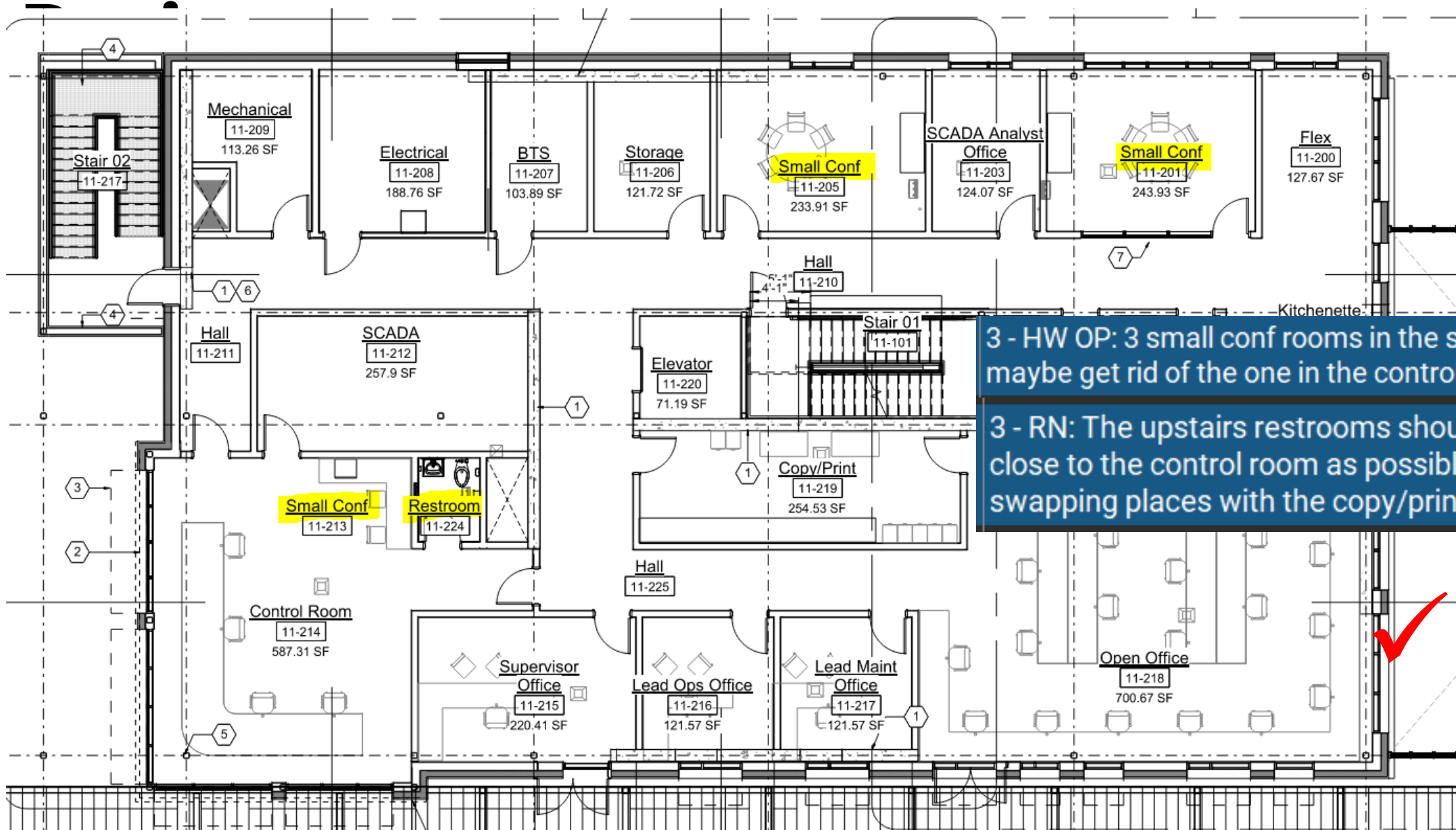
Confined Spaces

Fall Arrest and Retrieval

Emergency communications throughout  
plant

Overall plant layout and rounds

# Comments & Responses from O&M

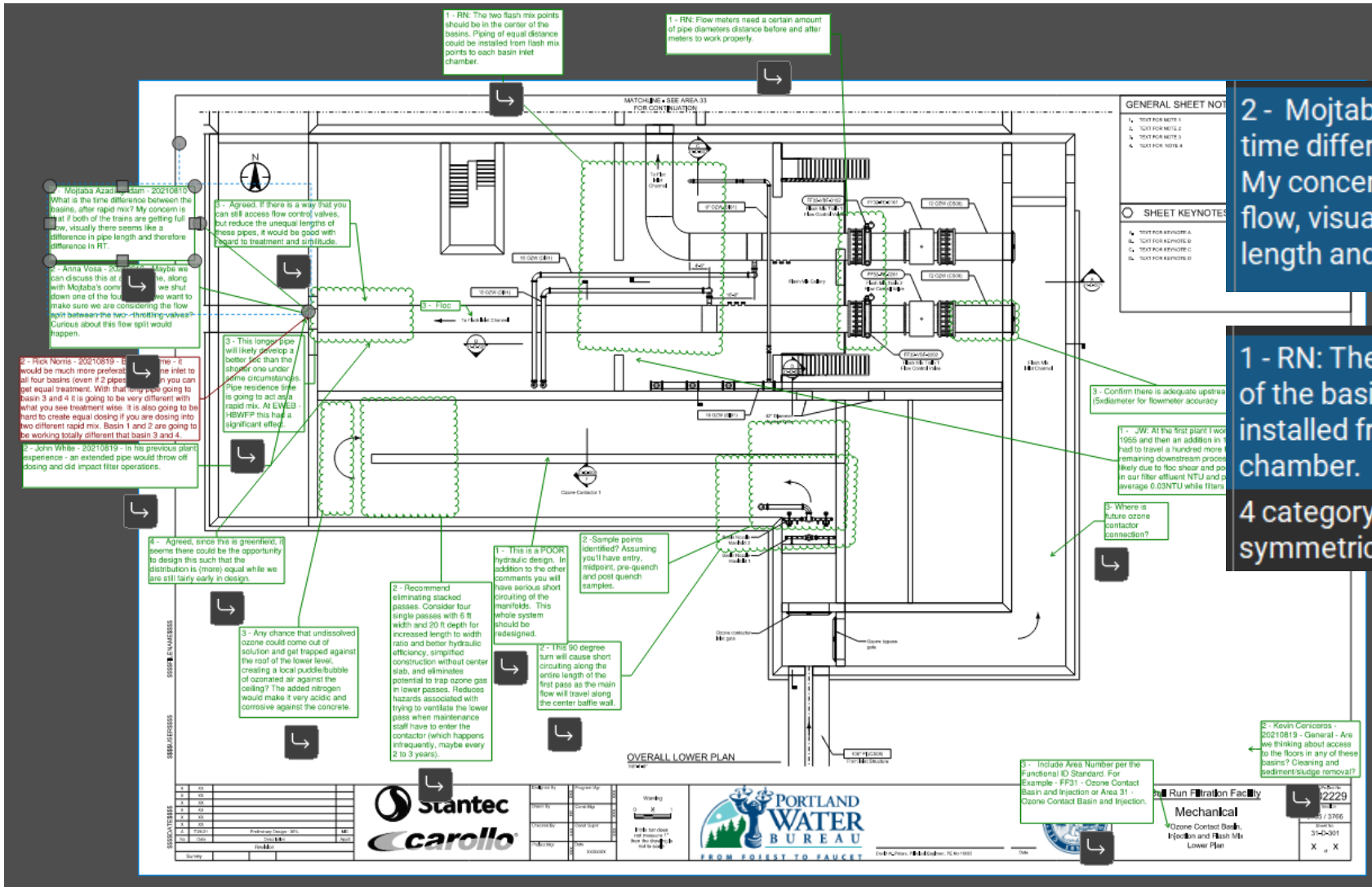


3 - HW OP: 3 small conf rooms in the same floor?  
maybe get rid of the one in the control room.

3 - RN: The upstairs restrooms should be located as  
close to the control room as possible. Possibly  
swapping places with the copy/print room.

✓ Done

# Questions About Design Are Good!



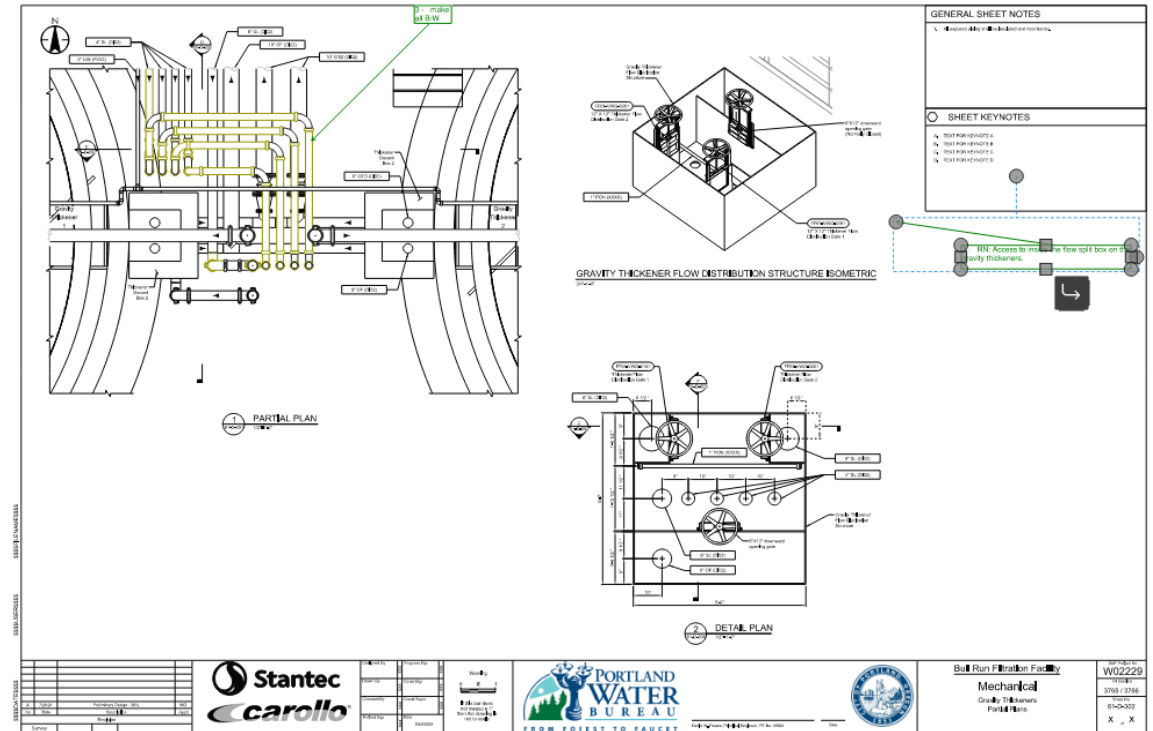
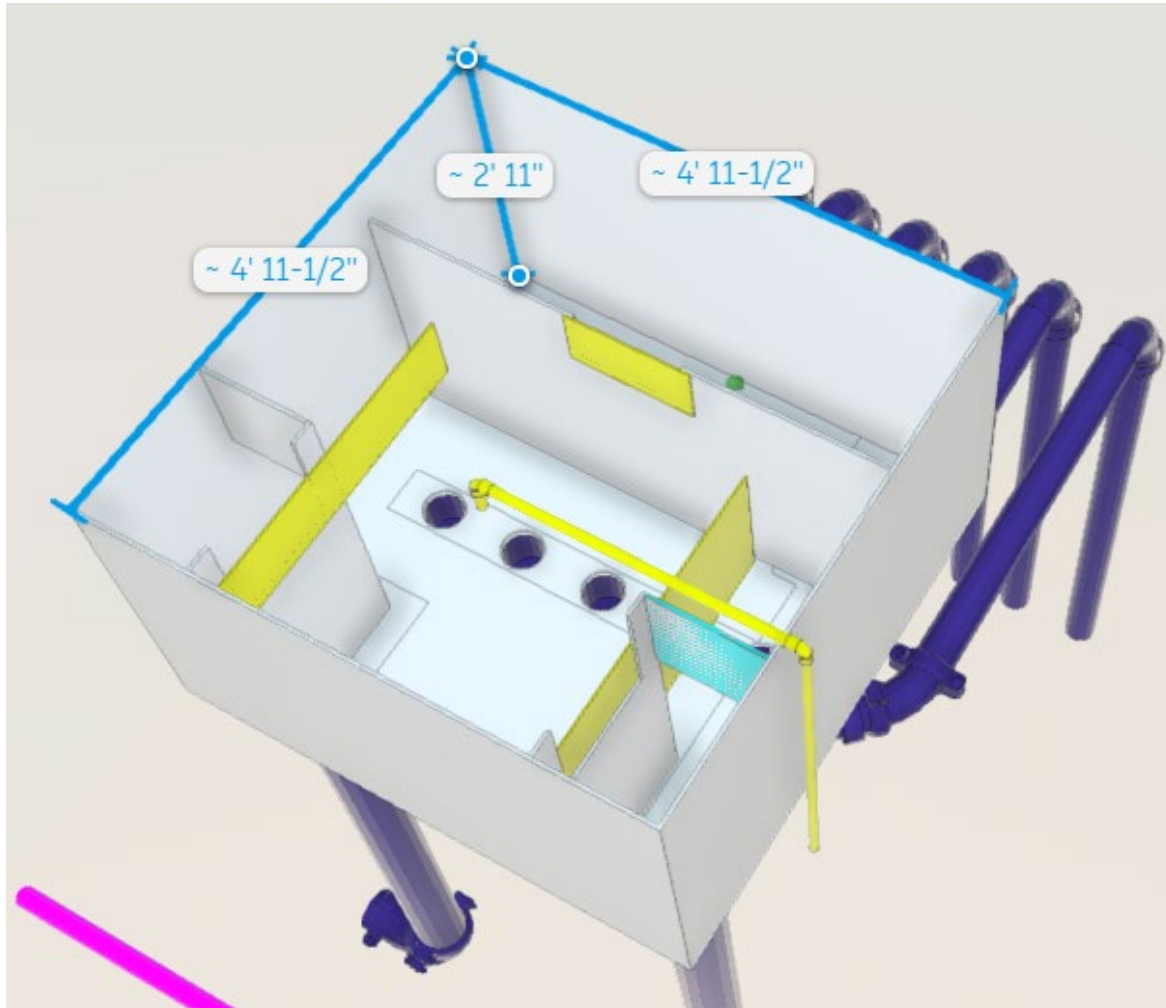
2 - Mojtaba Azadiaghdam - 20210810 - What is the time difference between the basins, after rapid mix? My concern is that if both of the trains are getting full flow, visually there seems like a difference in pipe length and therefore difference in RT.

1 - RN: The two flash mix points should be in the center of the basins. Piping of equal distance could be installed from flash mix points to each basin inlet chamber.

4 category. Designers are looking at how to make symmetrical

✓ Done

# Comments & Responses from O&M Review



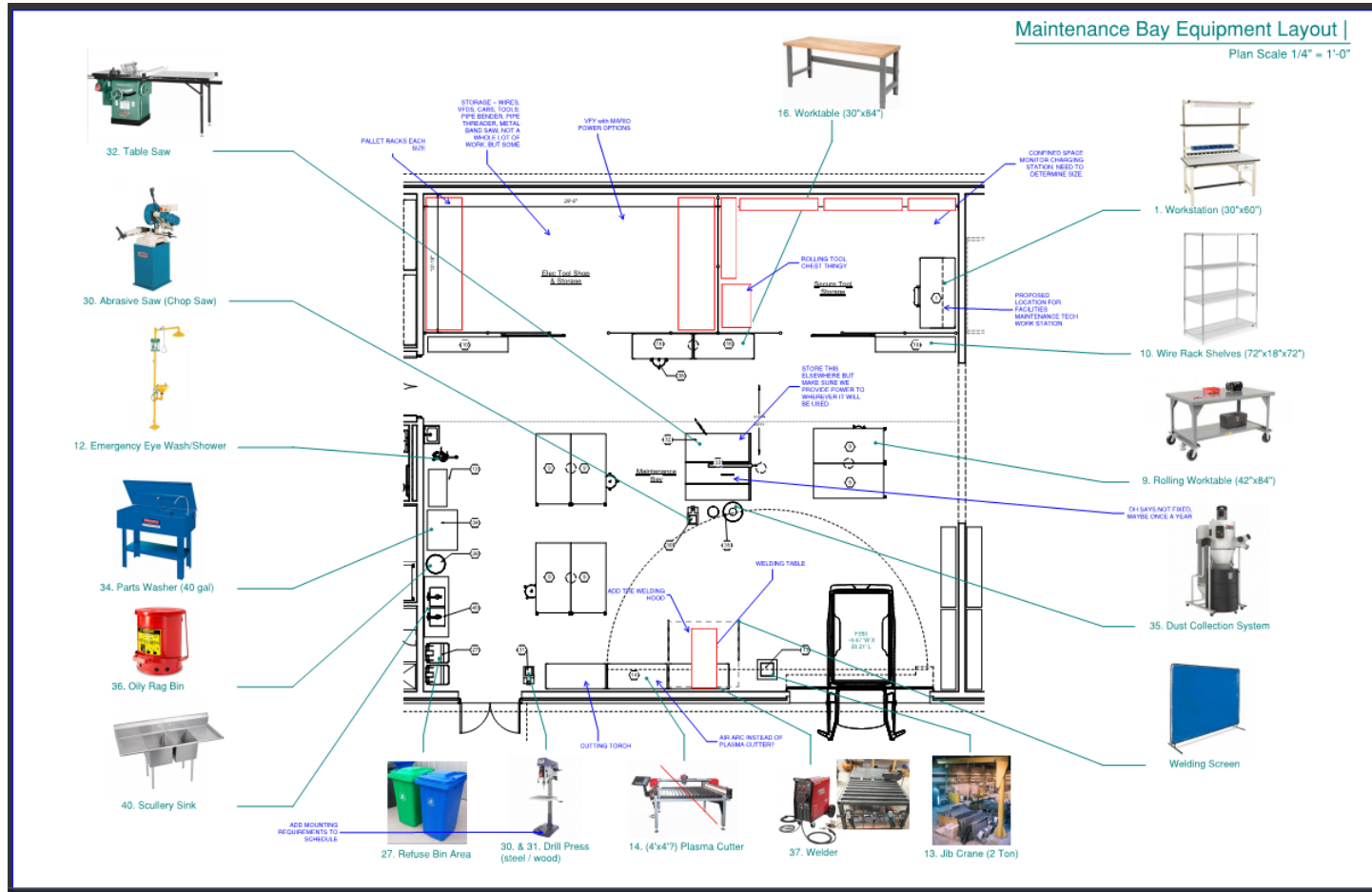
3 - RN: Access to inside the flow split box on the gravity thickeners.


✓ Done


# Area and Discipline Specific "Deep Dive Meetings"





# Maintenance Building – Design Highlights



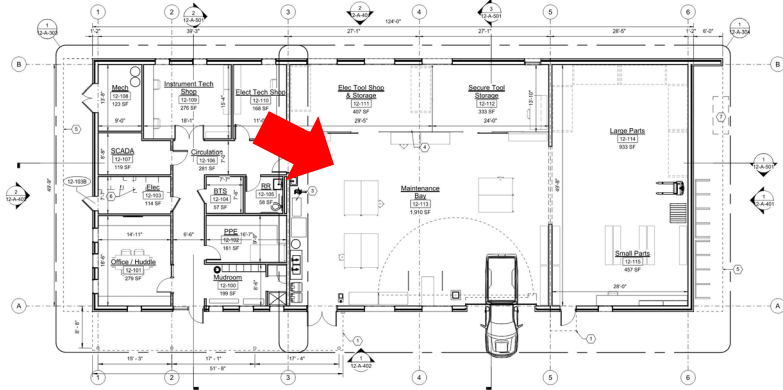
 Spare Parts

 Specialized Tools and Equipment

 Storage Systems

 Maintenance Building

# Maintenance Building – Design Highlights









The Bull Run Treatment Projects will help keep our water **safe and abundant** for generations to come



**For our  
health**



**For our  
economy**



**For our  
future**



**Bull Run**  
TREATMENT  
PROJECTS

*Our water: Safe and abundant  
for generations to come*

**Learn More** [portland.gov/bullrunprojects](http://portland.gov/bullrunprojects)

**Bill Carr**  
([wcarr@carollo.com](mailto:wcarr@carollo.com))

**Steve Schenk**  
([sschenk@carollo.com](mailto:sschenk@carollo.com))

**Kim Gupta**  
([Kimberly.Gupta@portlandoregon.gov](mailto:Kimberly.Gupta@portlandoregon.gov))

**Thank you!**  
**Questions?**