BOARD OF DIRECTORS
EAST BAY MUNICIPAL UTILITY DISTRICT

375 - 11th Street, Oakland, CA 94607 Office of the Secretary: (510) 287-0440

Notice of Special Meeting

Long-Term Infrastructure Investment Workshop
Tuesday, October 11, 2022
8:30 a.m.
Virtual

At the call of President Doug A. Linney, the Board of Directors has scheduled a Long-Term Infrastructure Investment Workshop for Tuesday, October 11, 2022 at 8:30 a.m. In accordance with Government Code section 54953(e), **this meeting will be conducted by webinar and teleconference only**. A physical location will not be provided for this meeting.

The Board will meet in workshop session to receive an update on planned infrastructure maintenance and improvements activities.

Dated: October 6, 2022

Rischa S. Cole

Rischa S. Cole
Secretary of the District

W:\Board of Directors - Meeting Related Docs\Notices\Notices 2022\101122 LT Infrastructure Investment Workshop.docx

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BOARD OF DIRECTORS
EAST BAY MUNICIPAL UTILITY DISTRICT

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AGENDA
Special Meeting
Long-Term Infrastructure Investment Workshop
Tuesday, October 11, 2022
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*****Please see appendix for public participation instructions*****

ROLL CALL:

PUBLIC COMMENT: The Board of Directors is limited by State law to providing a brief response, asking questions for clarification, or referring a matter to staff when responding to items that are not listed on the agenda.

DISCUSSION:

1. Staff will provide an update on the District's planned infrastructure maintenance and improvements activities.

ADJOURNMENT:

Disability Notice

If you require a disability-related modification or accommodation to participate in an EBMUD public meeting please call the Office of the Secretary (510) 287-0404. We will make reasonable arrangements to ensure accessibility. Some special equipment arrangements may require 48 hours advance notice.

Document Availability

Materials related to an item on this agenda that have been submitted to the EBMUD Board of Directors within 72 hours prior to this meeting are available for public inspection in EBMUD's Office of the Secretary at 375 11th Street, Oakland, California, during normal business hours, and can be viewed on our website at www.ebmud.com.

EBMUD

APPENDIX

Long-Term Infrastructure Investment Workshop
Tuesday, October 11, 2022
8:30 a.m.

EBMUD public Board meetings will be conducted in person in the Boardroom and via Zoom. These meetings are recorded, live-streamed, and posted on the District's website.

*Online**
https://ebmud.zoom.us/j/94804788254?pwd=Z2duWU9RZzVqb3RMd1RlNXVISjNsUT09
Webinar ID: 948 0478 8254
Passcode: 467920

*By Phone**
Telephone: 1 669 900 6833
Webinar ID: 948 0478 8254
Passcode: 467920
International numbers available: https://ebmud.zoom.us/u/acMN6fbEoB

*To familiarize yourself with Zoom, please visit https://support.zoom.us/hc/en-us/articles/201362193-Joining-a-Meeting

Providing public comment - *The EBMUD Board of Directors is limited by State law to providing a brief response, asking questions for clarification, or referring a matter to staff when responding to items that are not listed on the agenda.*

If you wish to provide public comment please:

- Use the raise hand feature in Zoom to indicate you wish to make a public comment https://support.zoom.us/hc/en-us/articles/205566129-Raising-your-hand-in-a-webinar
  - If you participate by phone, press *9 to raise your hand
- When prompted by the Secretary, please state your name, affiliation if applicable, and topic
- The Secretary will call each speaker in the order received
- Comments on **non-agenda items** will be heard at the beginning of the meeting
- Comments on **agenda items** will be heard when the item is up for consideration
- Each speaker is allotted 3 minutes to speak; the Board President has the discretion to amend this time based on the number of speakers
- The Secretary will keep track of time and inform each speaker when the allotted time has concluded

Submitting written comments or materials

- Email written comments or other materials for the Board of Directors to SecOffice@ebmud.com
- Please indicate the meeting date and agenda item number or non-agenda item in the subject of the email. Contact information is optional.
- **Please email by 4 p.m. the day prior to the scheduled regular meeting**; written comments and other materials submitted to the Board of Directors will be filed in the record.

To *observe* the workshop, please visit:
https://www.ebmud.com/about-us/board-directors/board-meetings/

EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: October 6, 2022

MEMO TO: Board of Directors

THROUGH: Clifford C. Chan, General Manager CCC

FROM: Olujimi O. Yoloye, Director of Engineering and Construction OOY
Donald M. Gray, Interim Director of Wastewater DMG

SUBJECT: Long-Term Infrastructure Investment Workshop – October 11, 2022

Staff has scheduled a Board workshop on October 11, 2022 to discuss the District's long-term infrastructure investments. The attached staff presentation provides an update on the District's current and planned activities to maintain and improve the infrastructure in support of providing safe, high-quality water and wastewater services now and into the future.

Staff will provide a presentation on the Capital Improvement Program project elements to address aging infrastructure, maintenance and reliability, climate change adaptation and regulatory requirements, and identify schedule and resource needs to upgrade and maintain the water and wastewater systems.

CCC:OOY/DMG

Attachment: Long-Term Infrastructure Investment Workshop Presentation

I:SEC\2022 Board Related Items\101122 LT Infrastructure Investment Workshop\ECD – Long-Term Infrastructure Investment Workshop.docx

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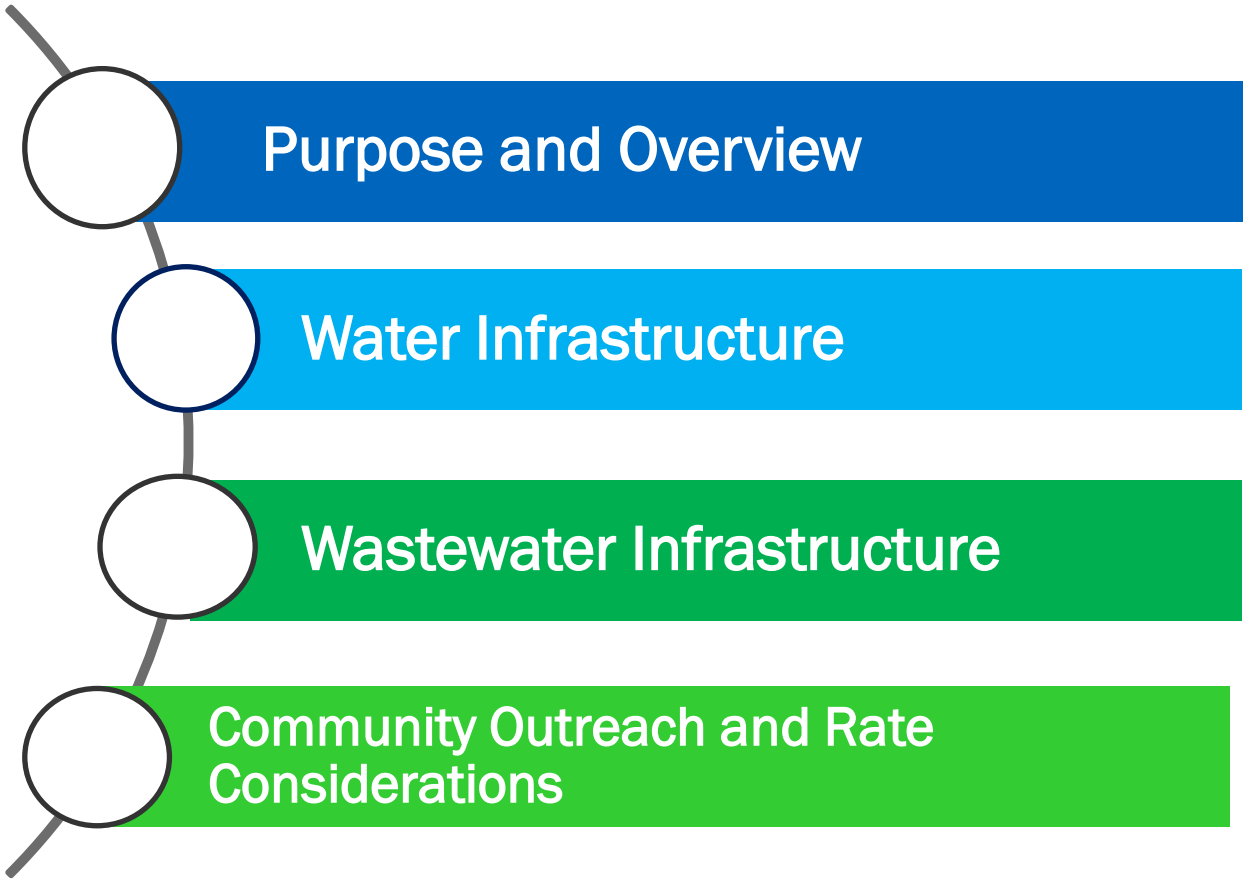
EAST BAY MUNICIPAL UTILITY DISTRICT

Long-Term Infrastructure Investment Workshop

Board of Directors

October 11, 2022

Workshop Agenda



Infrastructure Workshop

Purpose and Overview

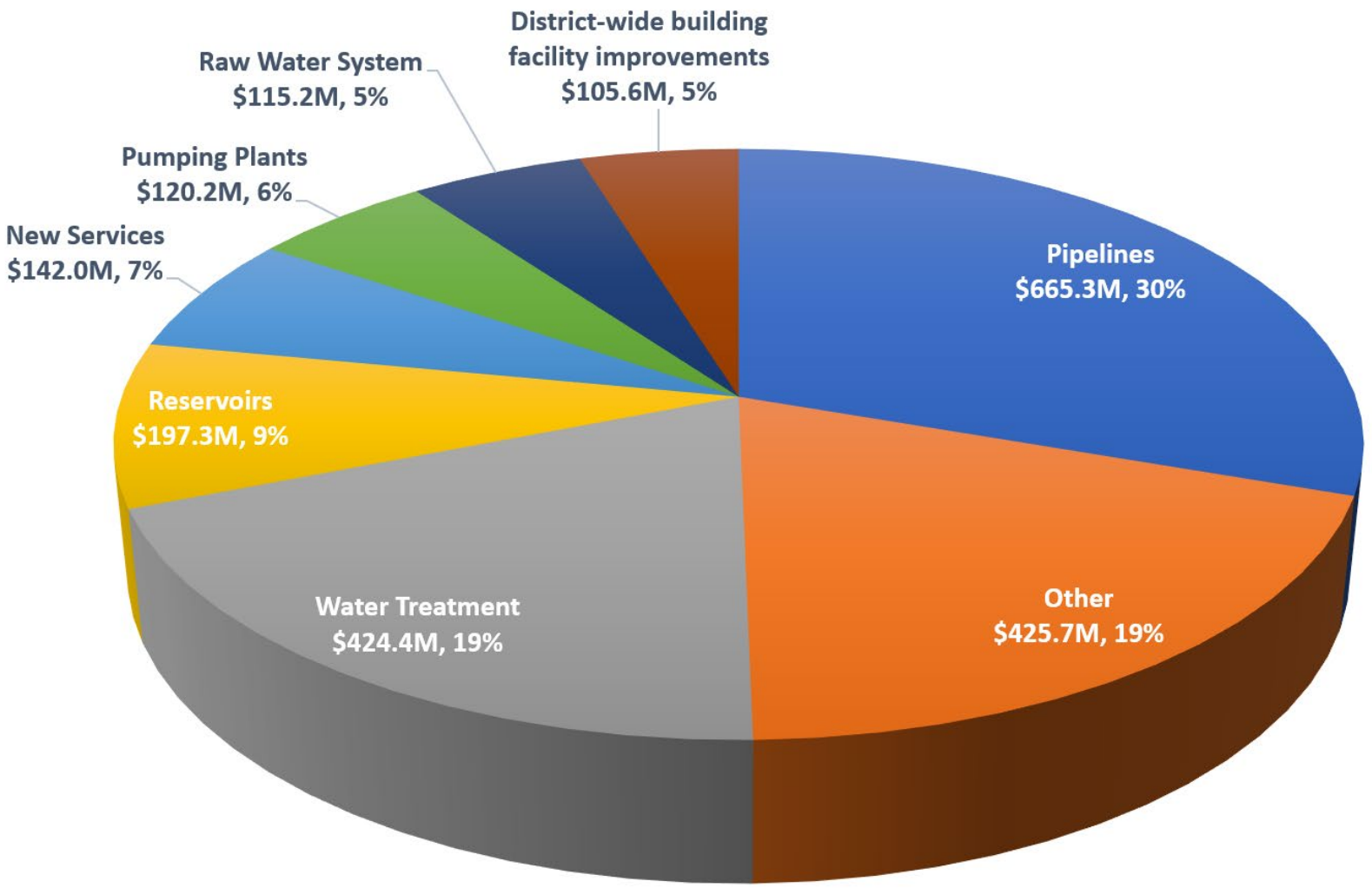
Workshop Purpose

- Overview of infrastructure investments in the Capital Improvement Program (CIP)
- Review projects
  - Water Supply, Transmission, Treatment, and Distribution
  - Pipeline Rebuild
  - Building facilities
  - Wastewater
- Resource needs

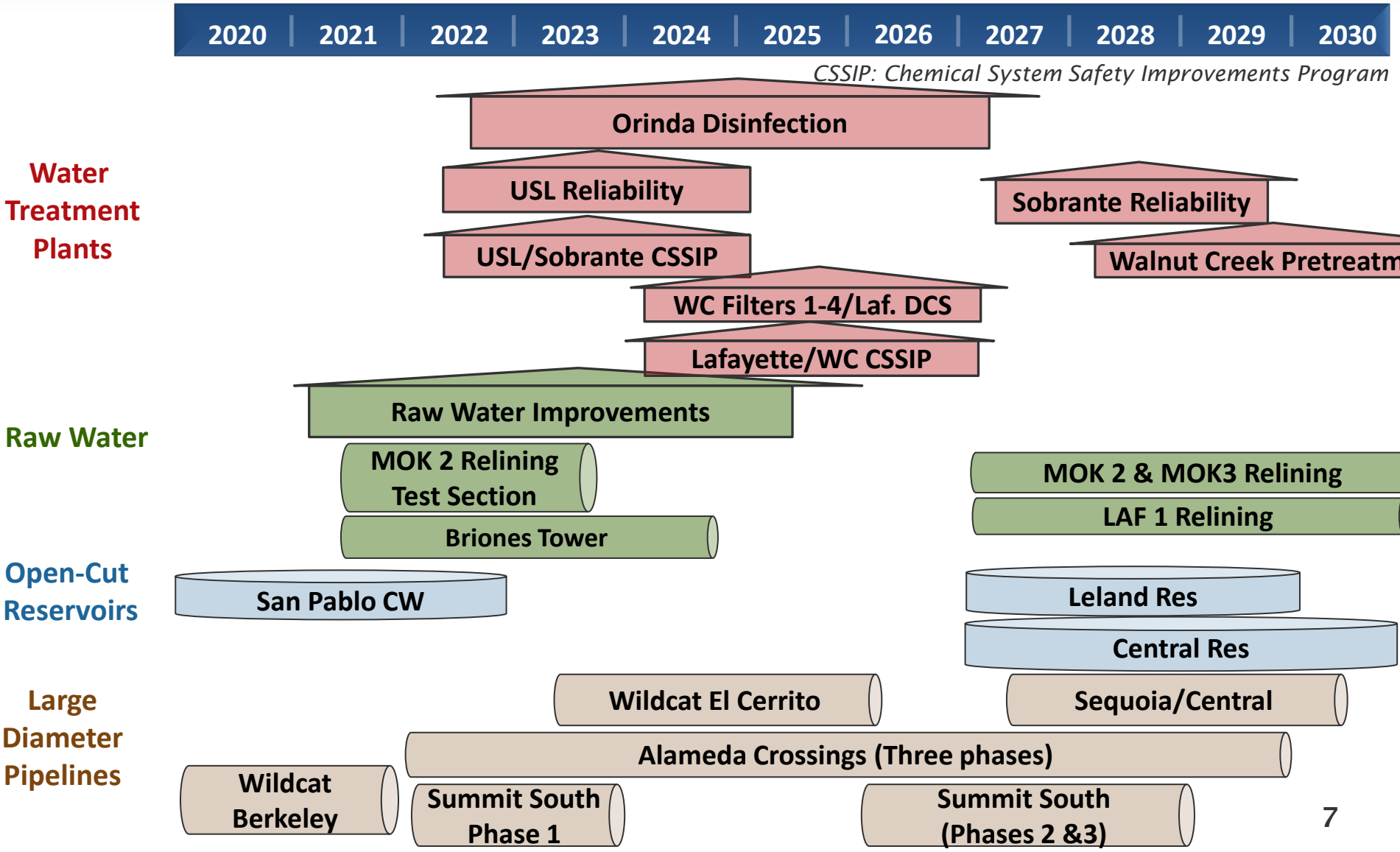
Infrastructure Investment Overview

Drivers

FY22-26 Water Infrastructure CIP Breakdown - $2.2B



FY22-26 Water Infrastructure Project Sequencing



Today's Speakers

Michael Hartlaub
Senior Civil Engineer

Marshall McLeod
Senior Civil Engineer

Denise Cicala
Senior Civil Engineer

David Katzev
Senior Civil Engineer

Elizabeth Bialek
Manager of Engineering Services Division

Jimi Yoloye
Director of Engineering and Construction

Infrastructure Workshop

Water Supply Treatment Transmission and Distribution

Raw Water Supply Improvements

Raw Water Transmission

Water Supply

Raw Water Pumping Plants

Raw Water Supply Improvements

Pardee Chemical Plant Improvements

Scope

- Upgrade and add lime and CO_2 System
- Upgrade standby generator
- Construct new operations and storage building

Drivers

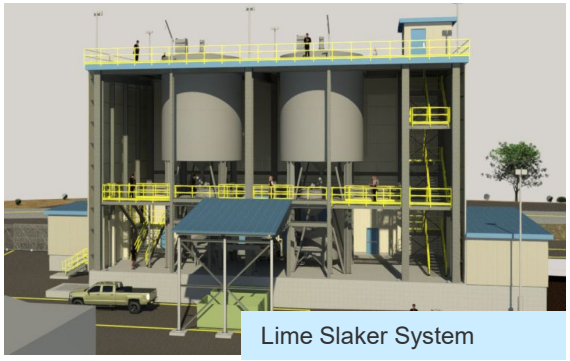
- Maintenance and Reliability
- Water Quality

Schedule

- Design FY23-24
- Construction FY24-25

Pardee Chemical Facility Site Layout

New Maintenance Building



Lime Slaker System

Raw Water Improvements

Moraga PP and Walnut Creek PP

Scope

- Upgrade electrical system

Drivers

- Maintenance and Reliability
  - Reduce operational limitations
- Safety
  - Improve electrical safety
- Resiliency
  - Improve water transfer capabilities

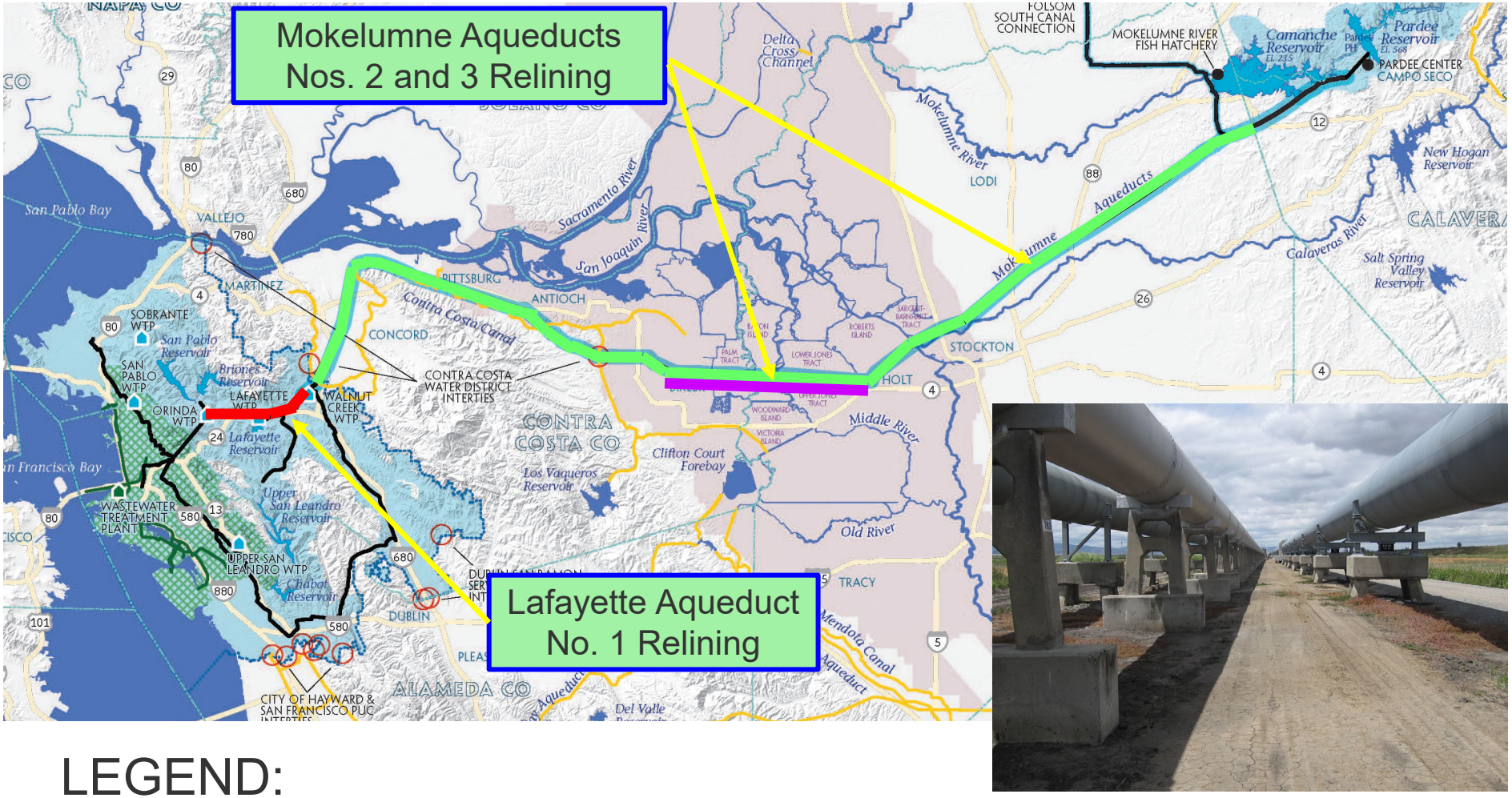
Schedule

- Planning FY24-25
- Design FY26-27
- Construction FY27-28

Moraga Pumping Plant

Walnut Creek Pumping Plant No. 3

Raw Water Transmission



LEGEND:

MOK2 Relining MOK3 Relining LAF1 Relining

Raw Water Transmission

Lafayette Aqueduct No. 1 Relining

Scope

- Reline 3 miles of Lafayette Aqueduct No. 1 with new steel pipeline within the existing cast-in-place concrete pipe
- Repair defects in tunnels (4 miles)

Drivers

- Maintenance and Reliability
  - Renew aging infrastructure
  - Eliminate annual repair activities and reduce water loss
  - Necessary to operate the future Walnut Creek pre-treatment system

Schedule

- Design: FY23 to FY26
- Construction: FY27 to FY28

Raw Water Transmission

Mokelumne Aqueducts Nos. 2 and 3

Scope

- Remove and replace failed cement mortar lining in above ground pipelines in the Delta
- Reline 20 miles of MOK2/MOK3 above ground in the Delta
- Reline 55 miles of MOK2 below ground

Drivers

- Maintenance and Reliability
  - Reduce internal corrosion in the aqueducts
  - Increase flow capacity

Schedule

- Construction: MOK2 Ph 1 (2 miles) complete FY23
- Design/construction for above ground Delta pipelines beginning FY24

Delaminated lining accumulated on pipe invert

Pardee and Briones Water Quality

Scope

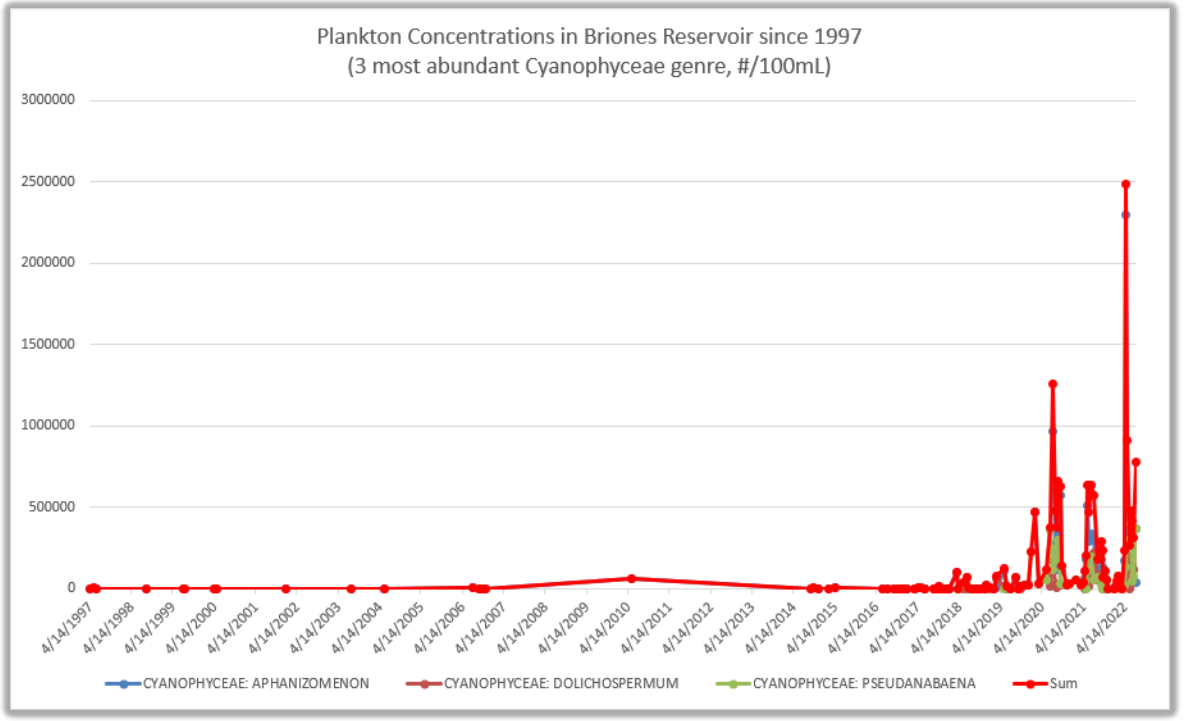
- Study to mitigate taste-and-odor production in reservoirs
  - Mitigate seen changes at Briones
  - Mitigate if changes observed at Pardee
- Study to mitigate potential watershed upsets (wildfire, atmospheric rivers, etc..)

Drivers

- Resiliency
  - Address changes to algae populations in reservoir
  - Prepare for potential wildfire disruptions
- Water Quality

Schedule

- Planning FY23-24



Pardee Reservoir

Briones Reservoir

Speece Cone HOS system

Treatment Plant Upgrade

Treatment Plant Upgrade

Orinda Water Treatment Plant

Scope

- New post filter disinfection process
- Upgrade chemical system
- Overhaul major electrical and back-up power systems

Drivers

- Safety
  - Improve electrical and chemical safety
- Maintenance and Reliability
  - Reduce operational limitations
  - Improve maintenance facilities
- Resiliency
  - Adapt to changing water quality
- Water Quality
  - Minimize disinfection by-products
  - Improve disinfection reliability

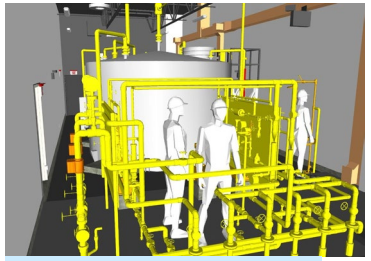
Schedule

- Construction: FY23-27

New Maintenance and UV Building

Photo by Ray Vanover Senior Construction Inspector

UV Room



Chemical System Upgrade

Air Scour Equipment

Treatment Plant Upgrade

Walnut Creek Water Treatment Plant

Project Scope

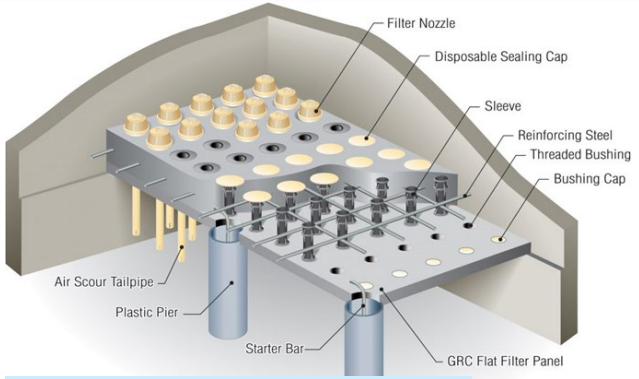
- Rehabilitate filters
- Add air-scour to 1960s Filters
- Rehabilitate chemical system

Drivers

- Maintenance and Reliability
  - Improve chemical safety and reliability
- Water Quality
  - Improve filtered water quality
  - Improve resilience against water quality upsets

Schedule

- Design: FY23-25
- Construction: FY25-27



New Robust Filter Underdrain Design

Modern Filters

1966s Filters

Treatment Plant Upgrade

Walnut Creek Water Treatment Plant

Scope

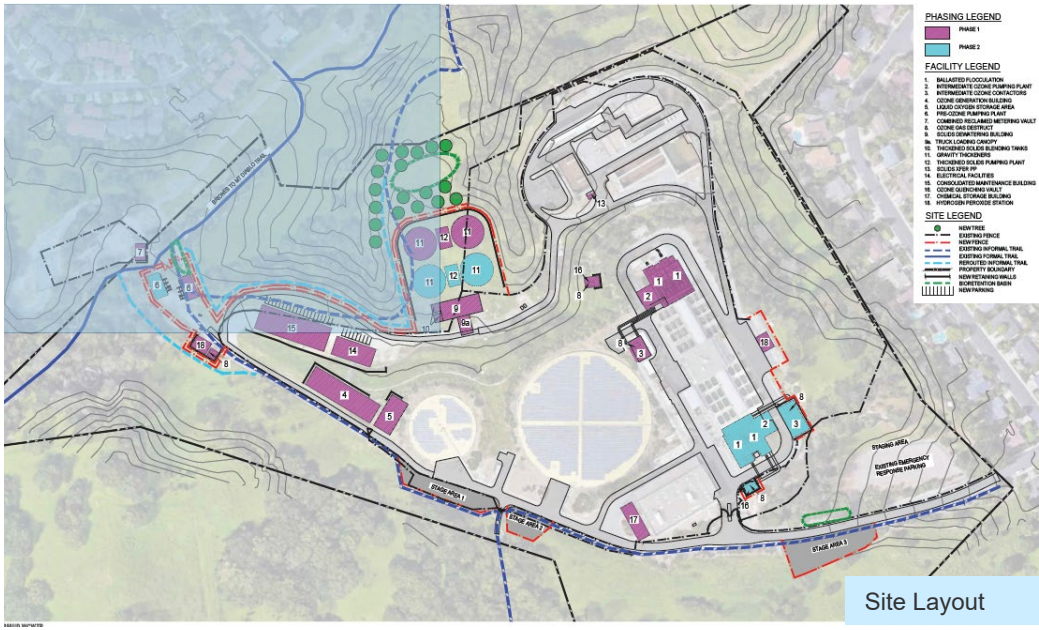
- Upgrade pre-treatment, solids handling improvements, reclaim
- Add Ozone Treatment
- Consolidate Maintenance Building
- Upgrade Lafayette Weir No1 and No2

Drivers

- Maintenance and Reliability
  - Remove precursor material and turbidity
- Resiliency
  - Improve drought operations
- Water Quality
  - Improves resilience against water quality upsets

Schedule

- Planning: FY23-24
- Design: FY24-27
- Construction: FY27-29



Site Layout

New Consolidated Maintenance Building

Treatment Plant Upgrade

USL Water Treatment Plant

Scope

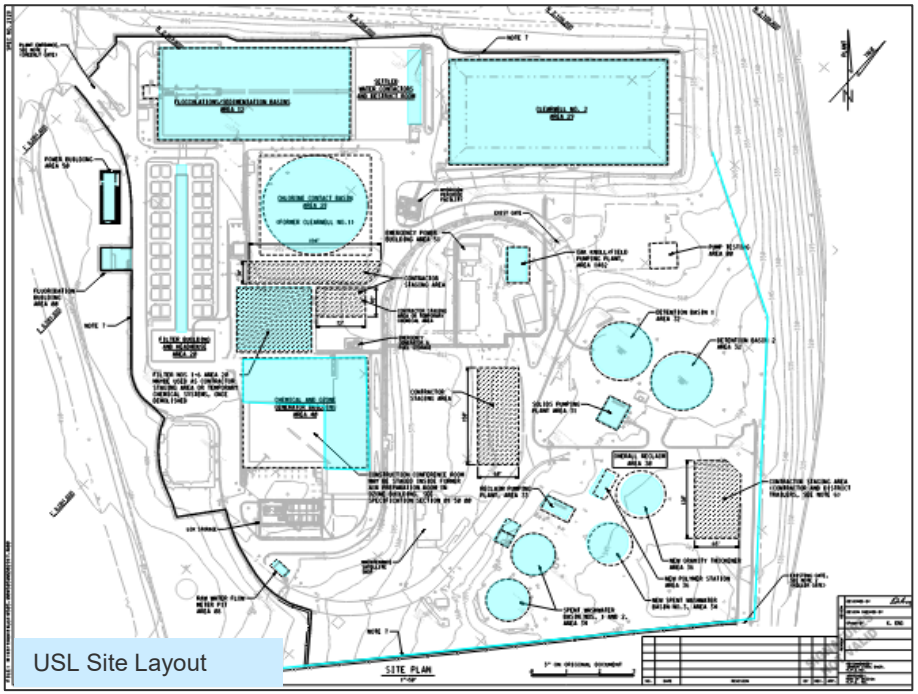
- Remove plant capacity limitations
- Rehabilitate chlorine contact basin, clearwell, raw water valve, reclaim, and electrical equipment

Drivers

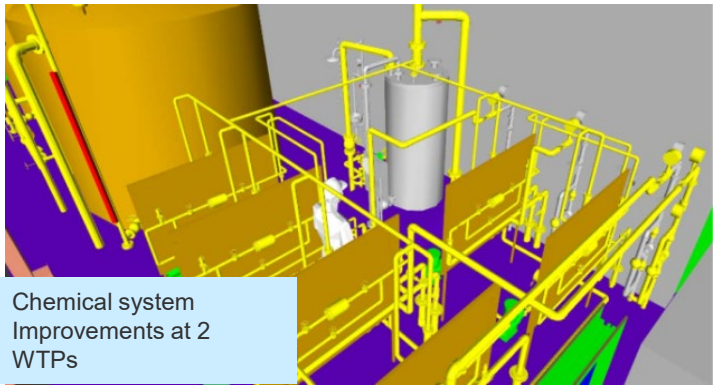
- Maintenance and Reliability
  - Improve ability to maintain Orinda WTP
- Safety
  - Improve chemical safety
- Resiliency
  - Improve plant capacity and reduce water lost to sewer
  - Improve drought and emergency response operations

Schedule

- Construction: FY23-27



USL Site Layout



Chemical system Improvements at 2 WTPs

Treatment Plant Upgrade

Sobrante Water Treatment Plant

Scope

- Remove plant capacity limitations
- Add dedicated Chlorine Contact Basin (CCB)
- Expand onsite solids handling/reclaim/backwash capabilities
- Consolidated Maintenance Building

Drivers

- Maintenance and Reliability
  - Improve ability to maintain Orinda
- Resiliency
  - Improve drought and emergency response operations
- Water Quality

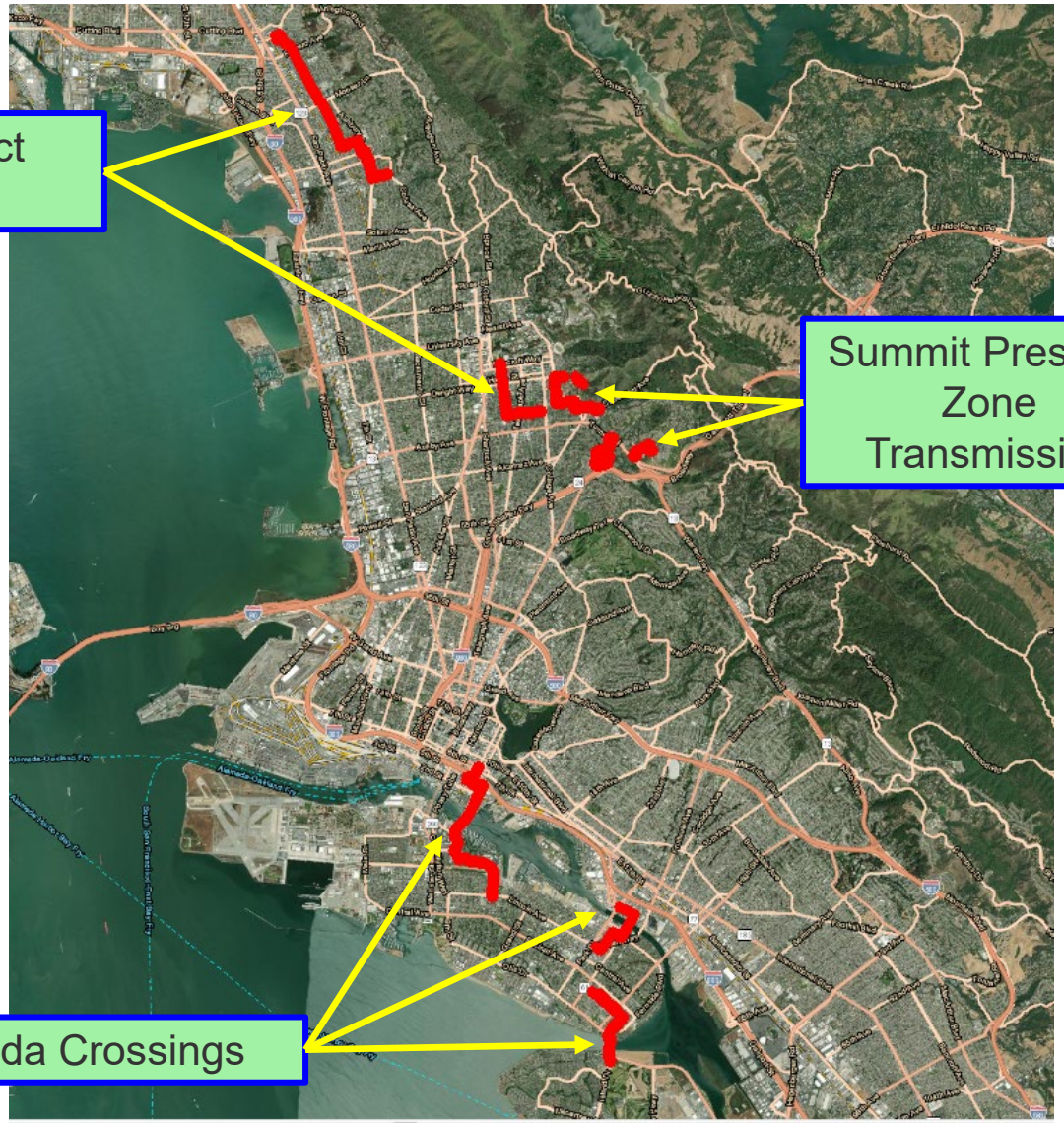
Schedule

- Planning/CEQA: FY24-25
- Design: FY26-29
- Construction: FY29-32

Site Layout of Pretreatment Project

New Consolidated Maintenance Building

Treated Water Transmission



Treated Water Transmission

Wildcat Aqueduct Improvement

Scope

- Install 13,860 feet of 36-inch transmission pipeline in El Cerrito

Drivers

- Maintenance and Reliability
  - Improves reliability and provides redundancy
- Capacity
  - Increased transmission capacity from Claremont Center to northern portion of North service area

Schedule

- Construction: FY23 to FY25

Treated Water Transmission

Alameda Crossing Projects

Treated Water Transmission

Oakland Inner Harbor (Crossing #1)

Scope

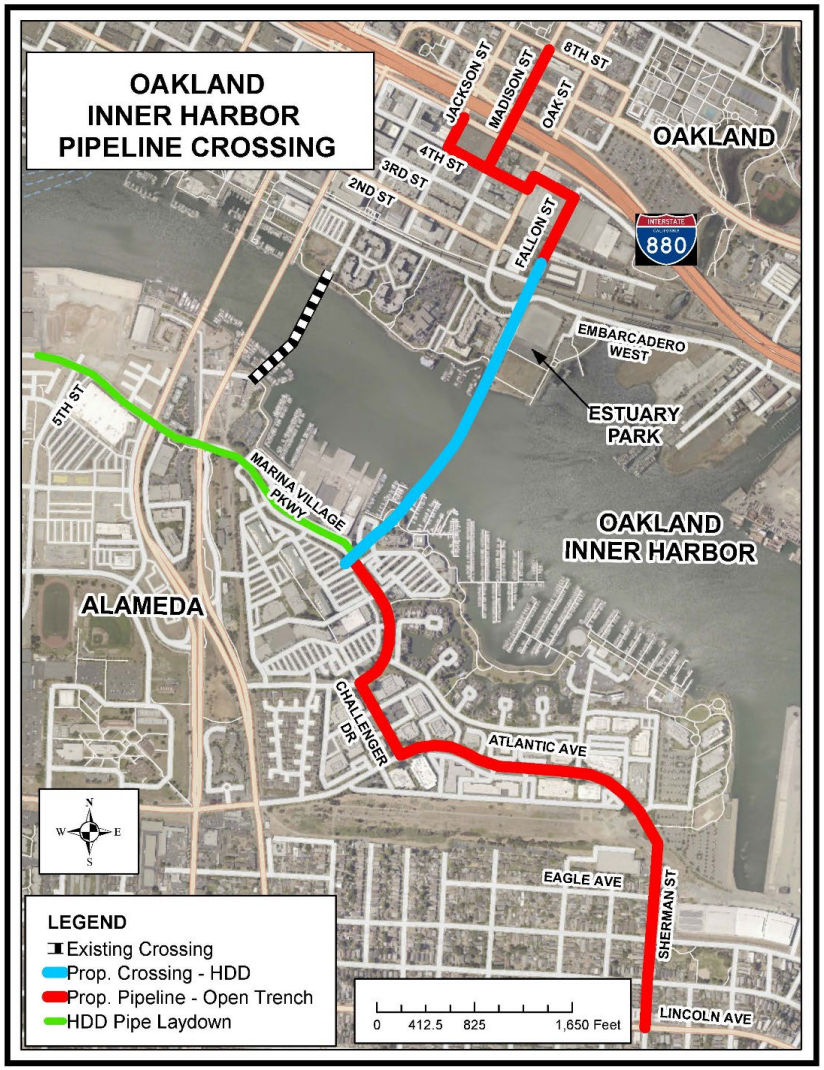
- Open Trench
  - 3,500 ft. of 24-inch welded steel in Oakland
  - 6,400 ft. of 24-inch welded steel in Alameda
- Horizontal Direction Drilling (HDD)
  - 3,000 ft. of 32-inch HDPE
  - Pipe string laydown along Marina Village Pkwy

Drivers

- Maintenance and Reliability
  - Seismic resilience in areas susceptible to earthquake induced liquefaction
  - Improve transmission reliability to Alameda Island

Schedule

- Construction: FY23 to FY25



Treated Water Transmission

San Leandro Channel (Crossing #2)

Scope

- Open Trench
  - 200 ft of 24-inch welded steel in Bay Farm
  - 4,000 ft of 24-inch welded steel in Alameda
- Horizontal Direction Drilling (HDD)
  - 2,000 ft. of 32-inch HDPE
  - Pipe string laydown along Island Drive

Drivers

- Maintenance and Reliability
  - Seismic resilience in areas susceptible to earthquake induced liquefaction
  - Improve transmission reliability to Alameda Island

Schedule

- Design: FY23 to FY24
- Construction: FY25 to FY27

Treated Water Transmission

Tidal Canal (Crossing #3)

Scope

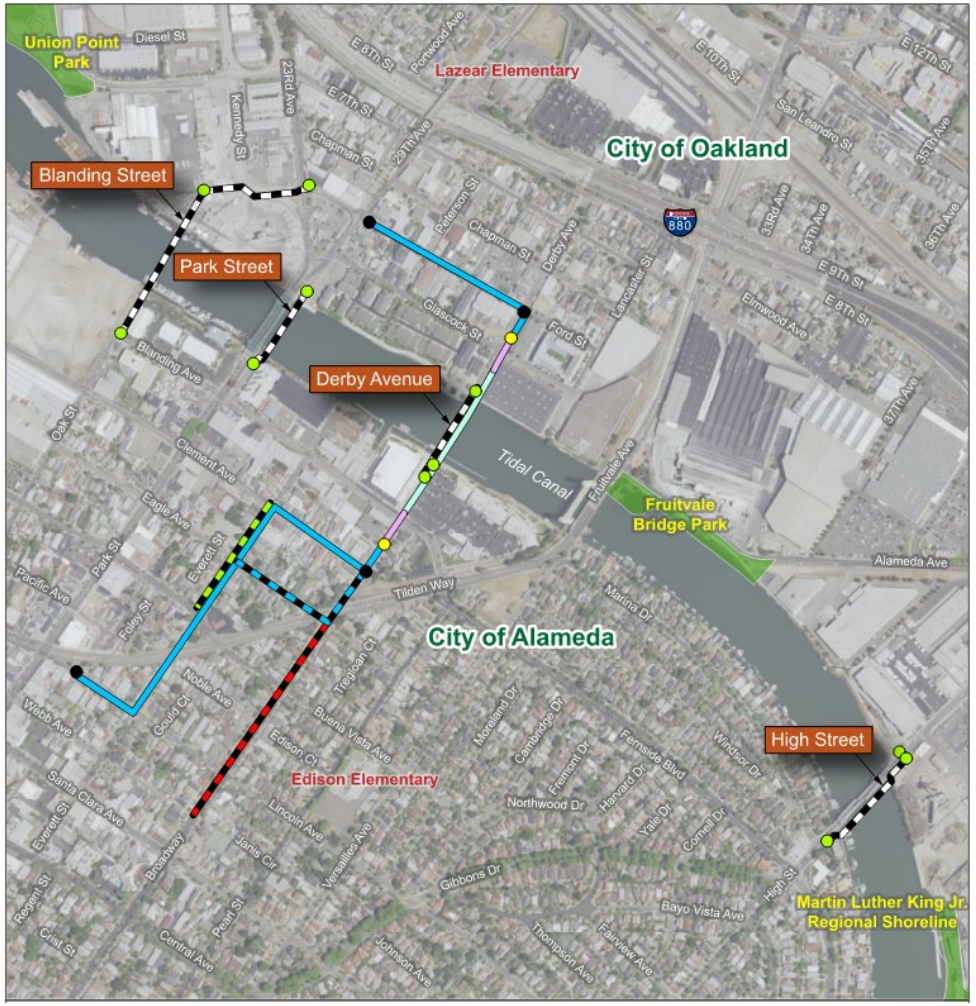
- Open Trench
  - 3,800 ft of 24-inch welded steel in Oakland and Alameda
- Horizontal Direction Drilling (HDD)
  - 1,400 ft of 32-in HDPE
  - Pipe string laydown along Broadway

Drivers

- Maintenance and Reliability
  - Seismic resilience in areas susceptible to earthquake induce liquefaction
  - Improve transmission reliability to Alameda

Schedule

- Design: FY25 to FY27
- Construction: FY28 to FY30



Treated Water Transmission

Summit Pressure Zone Transmission

Scope

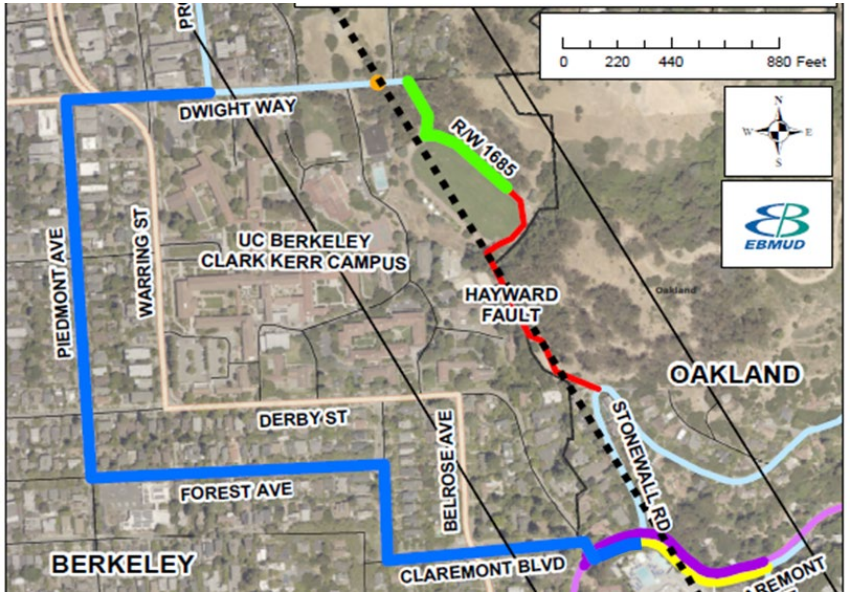
- Phase 1
  - 4,900 LF of 24-inch welded steel
  - 2 HDPE Hayward Fault crossing pipes with Fiber Optic ground monitoring
- Phase 2
  - 8,400 LF of 24-inch welded steel
- Phase 3
  - 3,700 LF of 24-inch welded steel

Drivers

- Maintenance and Reliability
  - Seismic resilience

Schedule

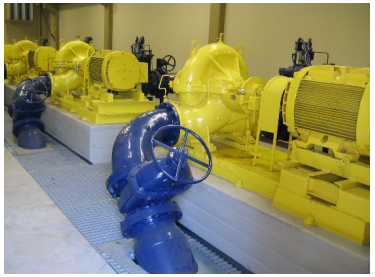
- Phase 1 Construction: Complete FY23
- Phase 2 Design: FY23 to FY24
- Phase 3 Construction: FY31



Water Distribution Facilities

Water Distribution Facilities Overview

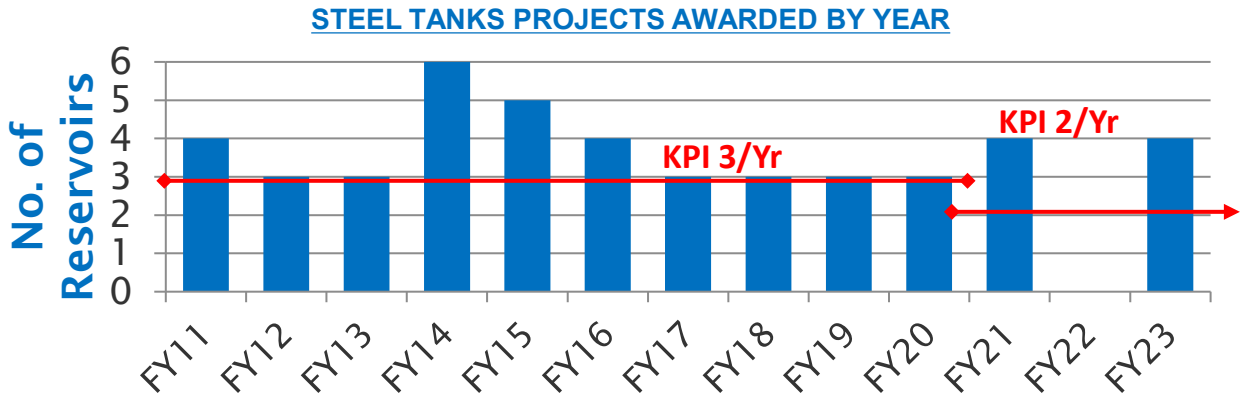


Facility Class	Quantity	Class Scale/Characteristics	Key Performance Indicators
Pumping Plants	150 Pumping Plants	60-MGD, 2000-hp pumps 20-GPM, 5-hp pumps	KPI: 2 per year Since FY15: Avg 2.9/yr
Reservoirs	165 Reservoirs	150-MG open-cut reservoir 2,000-gallon pressure tanks	KPI: 2 per year Since FY11: Avg 3.5/yr
Regulators	75 Regulators	12-in to 0.5-in regulator valves	NA
Rate Control Stations	30 RCSs	48-in to 6-in rate control valves	NA

Water Distribution Facilities

Reservoir Rehabilitation Program



KEY TAKEAWAYS

- Steel: Since 2011, 45 steel tank projects (KPI required 36)
- Redwood & Pressure Tanks: Only a few of each type remain
- Concrete: Major work needed in 10-30 year window
- Open-Cut: Focus of next budget cycle

Reservoir Rehabilitation

Ongoing & Upcoming Reservoir Projects

Steel

Ongoing Construction

- Acorn No. 1, Derby, Scenic, Scenic East
- Castenada No. 1 & 2, Mulholland No. 1 & 2

Upcoming Construction in FY24-25

- Grizzly & Castle Hill
- Knife No. 1 & Wiedemann No. 1
- Arroyo & Carter

Upcoming work in FY24-25

Redwood Tanks

- Crest, Encinal

Pressure Tanks

- Hill Mutual, Ridgewood

Concrete Tanks

- Madrone, Swainland

Open-Cut Reservoirs

- Central, Almond

Reservoir Rehabilitation

Open-Cut Reservoir Replacements

Upcoming Projects

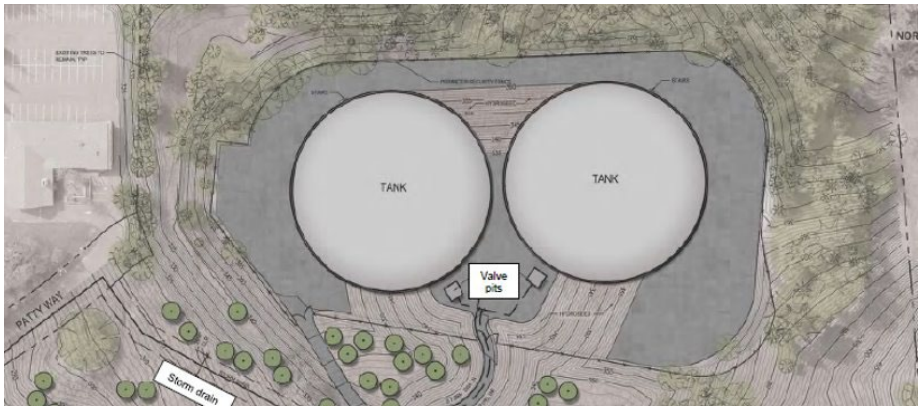
- Almond (FY24)
- Central Reservoir (FY24)
- Leland (FY26)

Drivers

Water quality

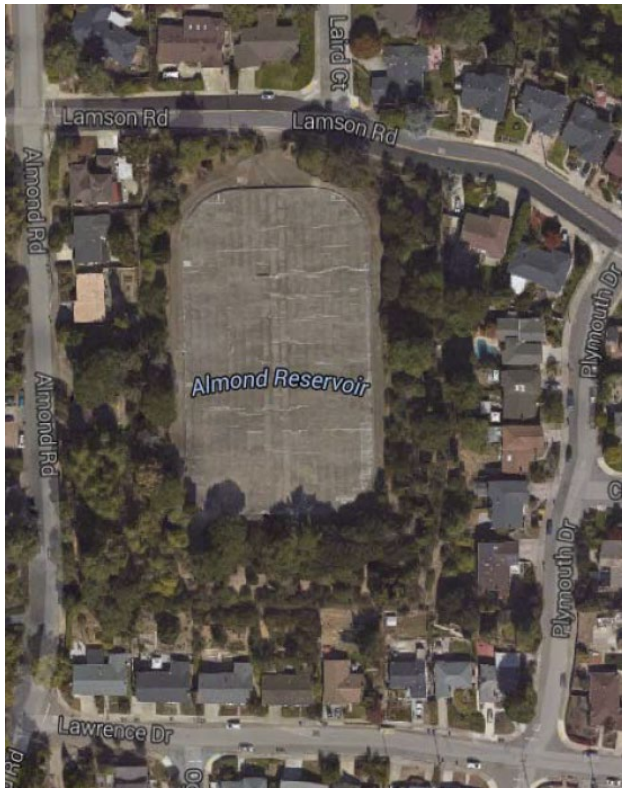
Maintenance and reliability

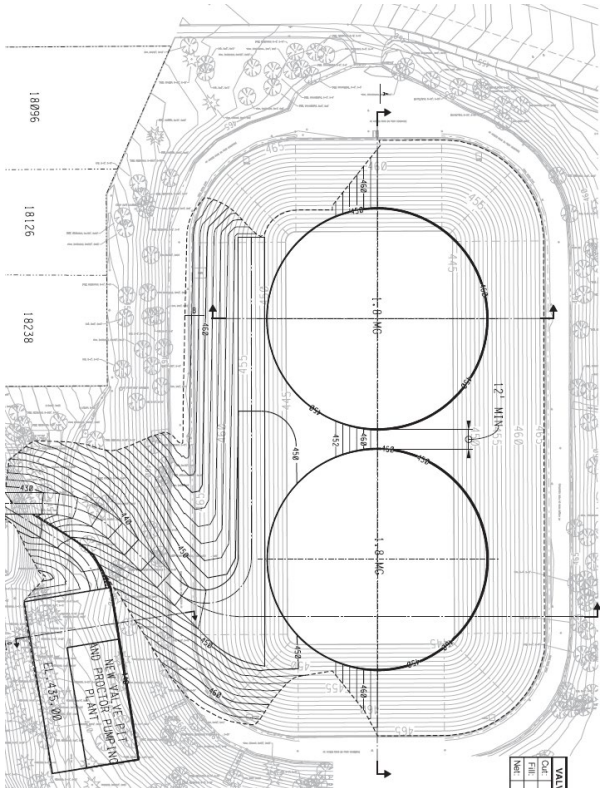
- Remove dams from DSOD jurisdiction



Reservoir Rehabilitation

Almond Reservoir Replacement





Scope

- Replace existing 6.0-MG reservoir with two 1.8-MG concrete tanks
- Replace existing 4.6-MGD Proctor PP with new 6.7-MGD
- Install new I/O pipeline
- Construct new Cull Creek Regulator
- Demolish Cull Creek Reservoir

Drivers

- Maintenance and Reliability
- Water quality

Schedule

- Planning: Complete
- Design: FY24 to FY25
- Construction: FY26 to FY28

Reservoir Rehabilitation

Central Reservoir Replacement

Scope

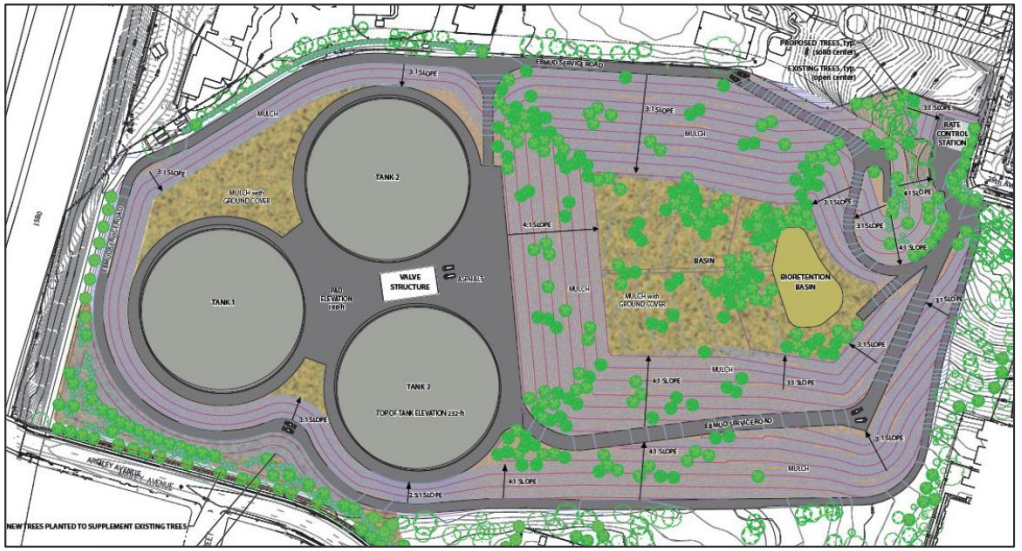
- Replace existing 150 MG reservoir with three 14-MG prestressed concrete tanks & valve structure
- Replace undersized Central RCS
- Construct bioretention area, paving, fencing

Drivers

- Maintenance and Reliability
- Water quality

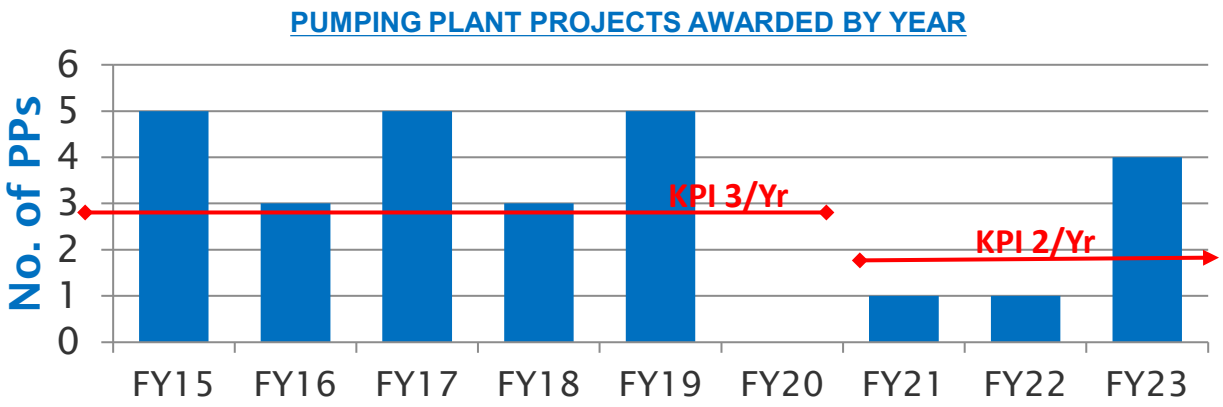
Schedule

- Planning: EIR certified April 2021
- Design: FY24 to FY26
- Construction: FY27 to FY32



Water Distribution Facilities

Pumping Plant Rehabilitation Program



Maloney PP Rehab Project
Pump #3 Installation

KEY TAKEAWAY

- Since 2015, 27 pumping plant projects (KPI required 24)

Pumping Plant Rehabilitation

Ongoing & Upcoming Projects

Ongoing Construction

- Maloney
- Greenridge
- Happy Valley
- Sunnyside

Upcoming work in FY24-25

- Palo Seco
- Madrone
- Westside
- Encinal
- Fay Hill
- Rheem
- Ridgewood
- Bryant No. 2
- Montclair
- Wildcat

Pumping Plant Rehabilitation

New Wildcat Pumping Plant

Scope

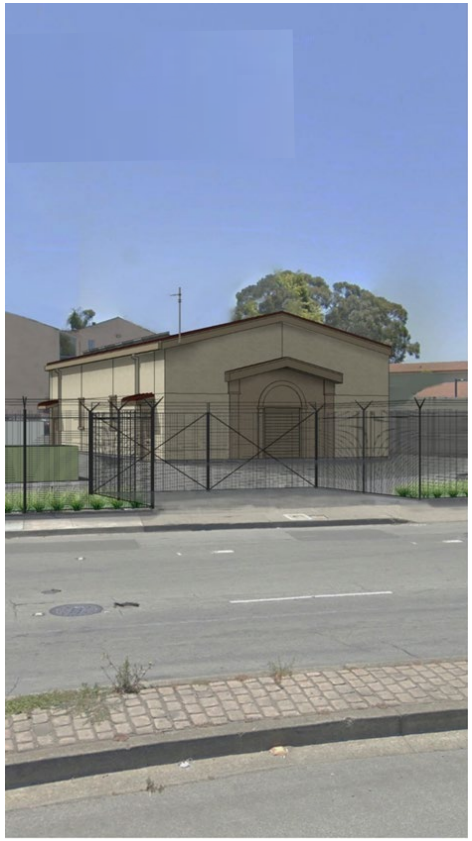
- Construct new 25 MGD Wildcat PP to distribute water from Sobrante WTP
- Space plan for in-conduit hydro
- Space plan for portable generator

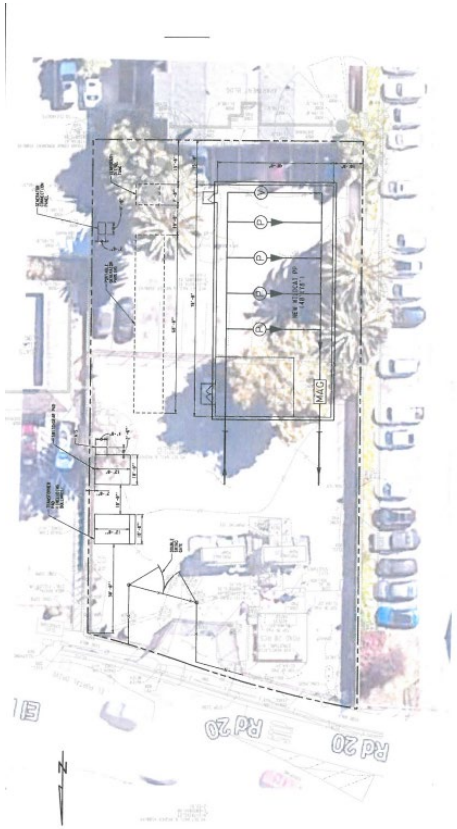
Drivers

- Maintenance and Reliability
  - Improve reliability for customers from Oakland to Crockett
- Capacity
  - Provide transmission capacity during facility outages and emergencies
  - Improve transmission of water from Sobrante WTP

Schedule

- Planning: Complete in FY23
- Design: FY24 to FY25
- Construction: FY26 to FY27





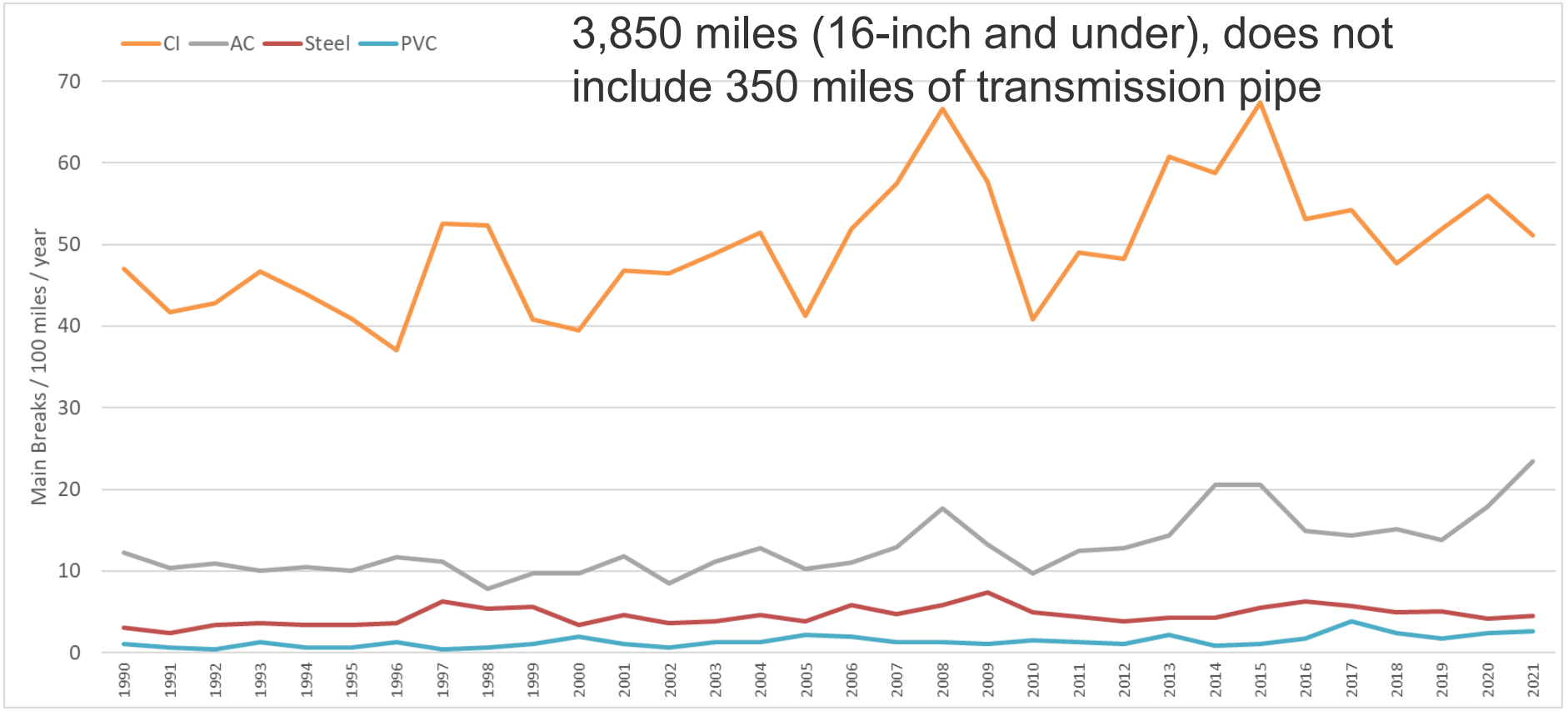
Infrastructure Workshop

Pipeline Rebuild

Pipeline Rebuild Mission

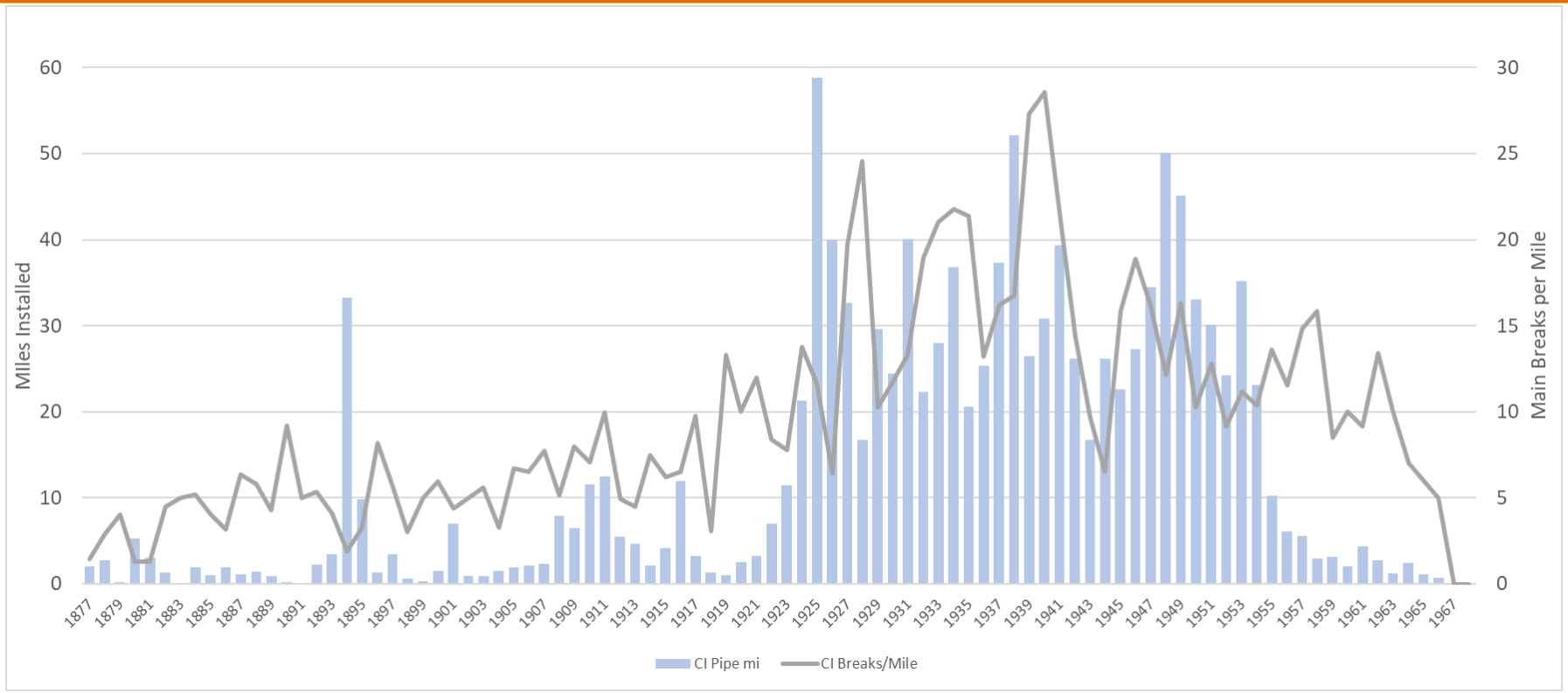
- Reduce main breaks and water loss
- Collaboration, research, and innovation
- Leverage improvements
- Ramp-up to sustainable long-term replacement rate

EBMUD Distribution System



Material	Miles	%	2021 Main Breaks /100 miles/year
Asbestos Cement	1130	29%	23
Cast Iron	1218	31%	52
PVC and HDPE	488	13%	3
Steel	1024	27%	5

Cast Iron Pipe Break Rate



KEY TAKEAWAY

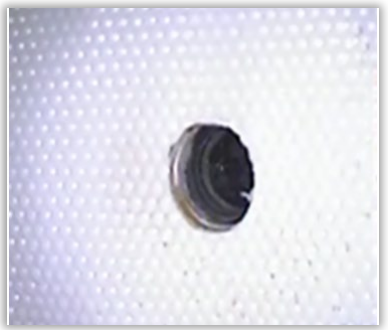
- 1,000 miles of CI pipe installed between 1924 to 1954
- 132 miles replaced since FY15 (all material types)
  - Majority of pipe selected for replacement is CI

Pipeline Rebuild FY22 Highlights

- Exceeded replacement goal of 20 miles despite challenges with COVID-19 and material supply chain issues
- Completed pilot studies documenting gains in efficiency, cost, and productivity
- Improved coordination with cities and counties

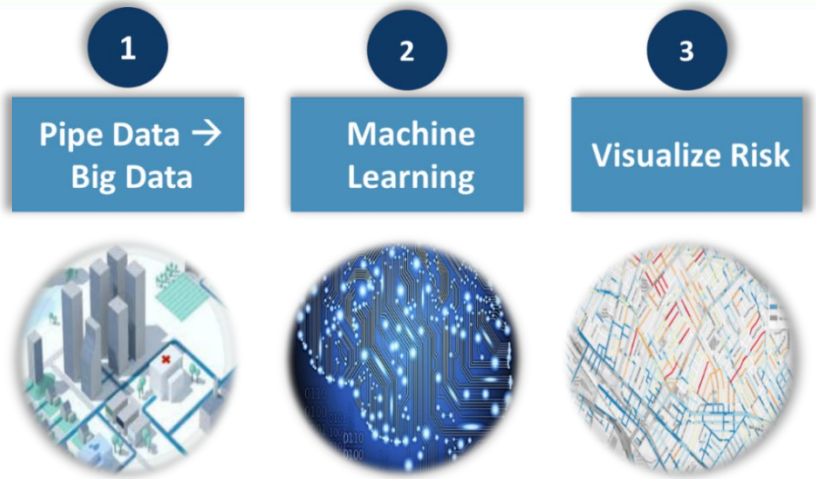
Trenchless Renewal

- Alternative where open-trench is not feasible
- 85% reduction in truck trips and 20-50% reduction in construction duration
- Hazard resilient material
- 3 miles planned in FY24



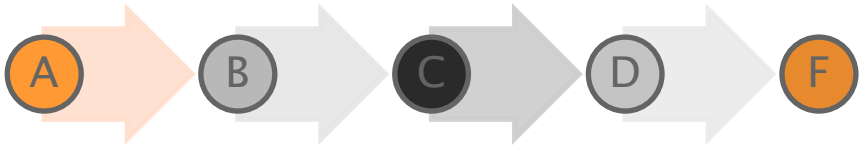
Pipeline Replacement Selection

- Data driven
- Cluster poorest performing pipes
- Future refinements
  - Modeling
  - Consequence of Failure
  - Condition Assessment



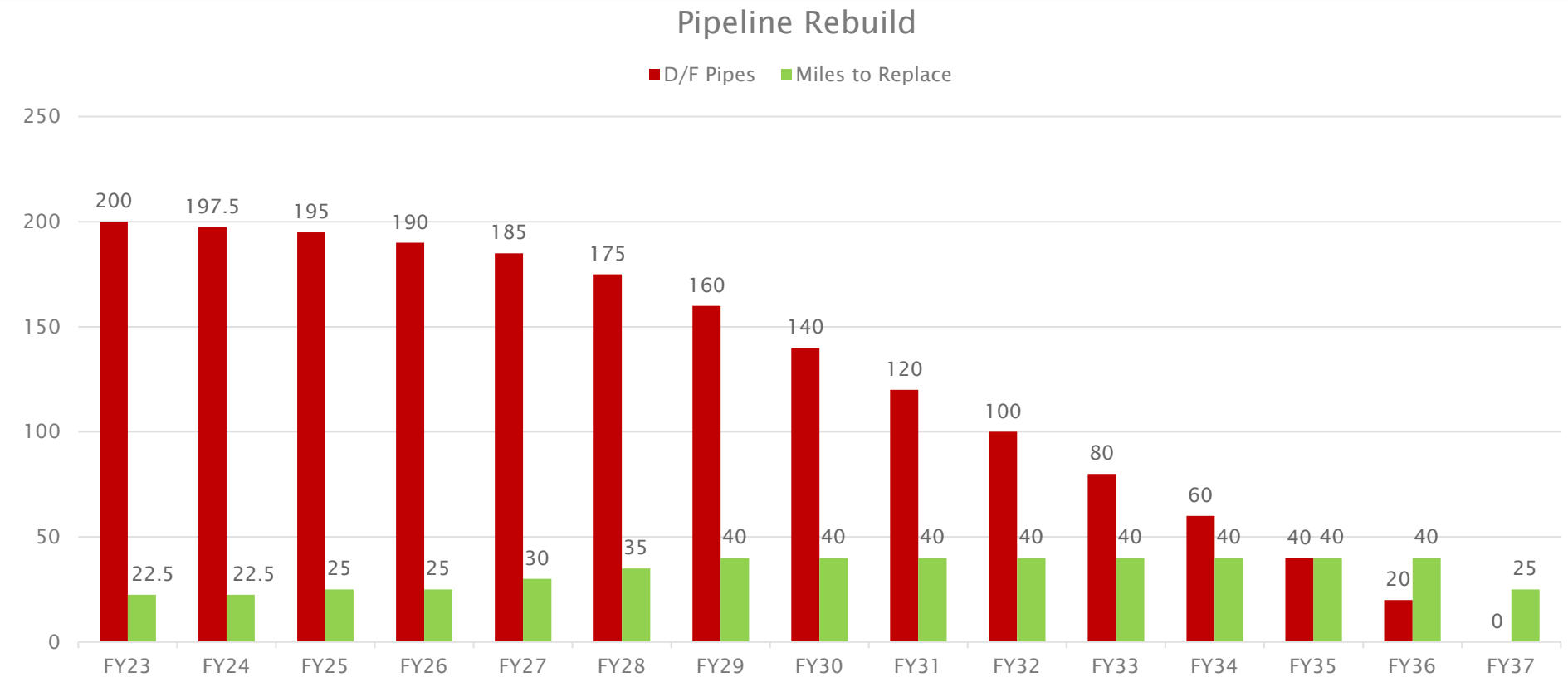
Pipe Life Cycle

- Migration - movement from one risk category to the next
- Average annual migration miles to D & F is 21 miles
- Continue to evaluate as more data collected
- Future analysis
  - Migration rates of change
  - Additional modeling



Risk Category	2022 Miles	Average Migration Miles
A	2,445	
B	787	
C	409	
D	166	16
F	42	5

Proposed Future Mileage Goals

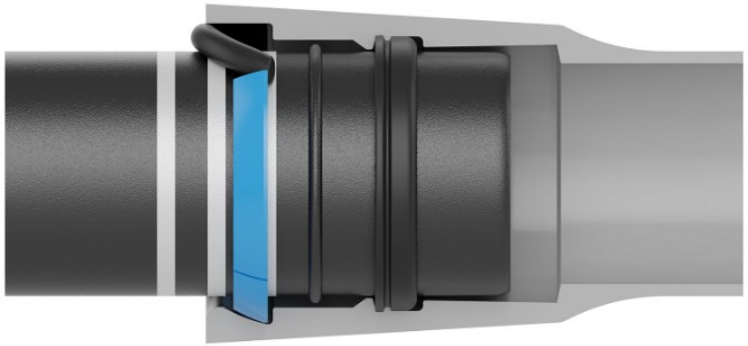


KEY TAKEAWAY

- Plan and implement 10-year increase to 40 miles of replacements to remove current inventory of D/F pipe

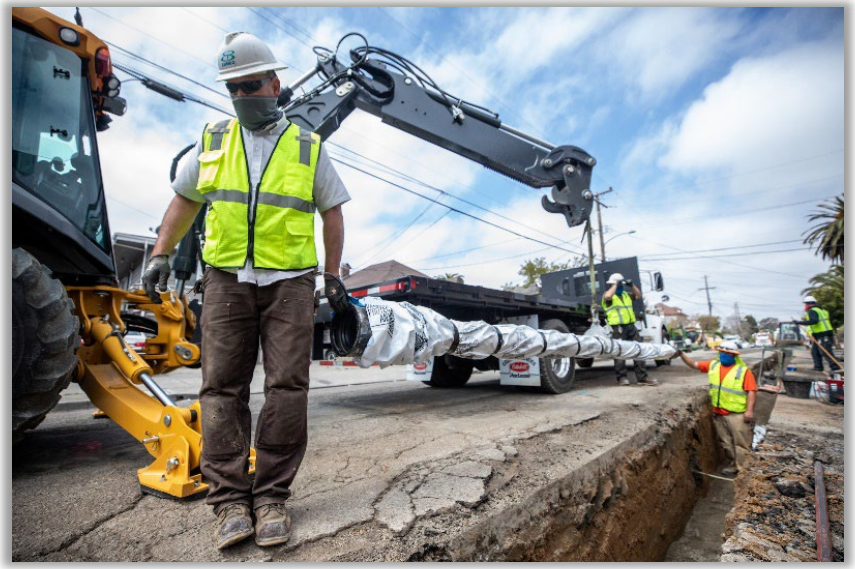
Center for Smart Infrastructure

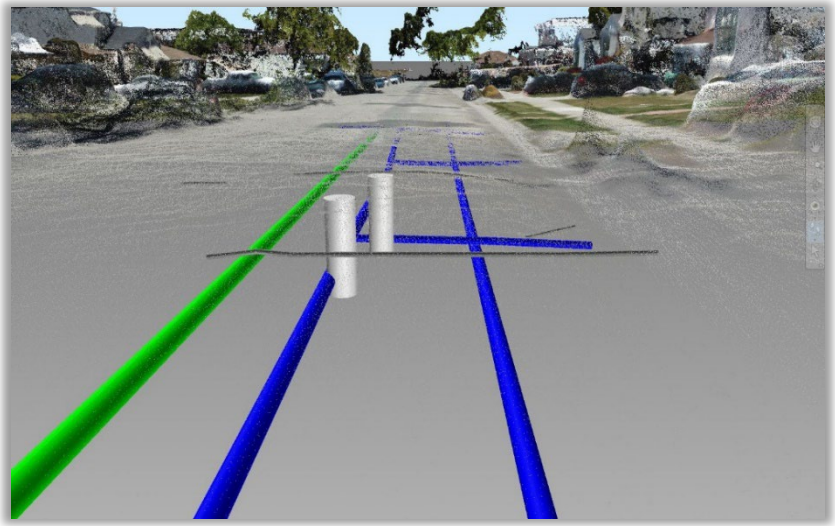
- Current focus on pipeline hazard resiliency
- Completed initial pipe tests with ERDIP
- Future tests
  - ERDIP (US Pipe and Kubota)
  - iPVC



Pipeline Rebuild Summary

- FY23/24: 22.5 miles
- FY25/26: 25 miles
- Leverage efficiencies
- Replace current inventory of D/F pipe
- Refine long-term replacement strategies
- Maintain culture of research and innovation





Infrastructure Workshop

Building Facilities

Building Facilities Project

- Maintenance and Reliability
- Operational Efficiencies
  - Efficient Systems
  - Efficient locations
- Regulatory
  - ADA or Building Code Compliance

Willow Service Center

New Service Yard in West Oakland

6,000 SF Administration Building

750 SF Warehouse

Parking & Storage areas

Includes Photovoltaic Infrastructure and Electrical Vehicle Charging Stations with ability to expand

Schedule

Design: FY23/24

Construction: FY25/26

Aerial View of Proposed Willow Service Center

Street Level View of Proposed Willow Service Center

Oakport/Supply Bank

New Warehouse and Training Facility in East Oakland

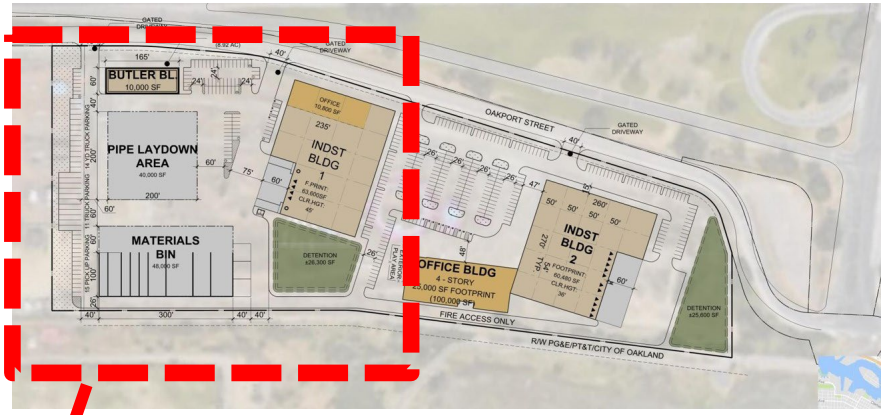
- Partnership with Supply Bank, a non-profit, for up to a 60-year lease for part of property
- Provides new Corporation Yard and Job Training Center for District built by Supply Bank
- Provides needed storage space and crew space to support Pipeline Rebuild

Schedule

Planning: FY23/24

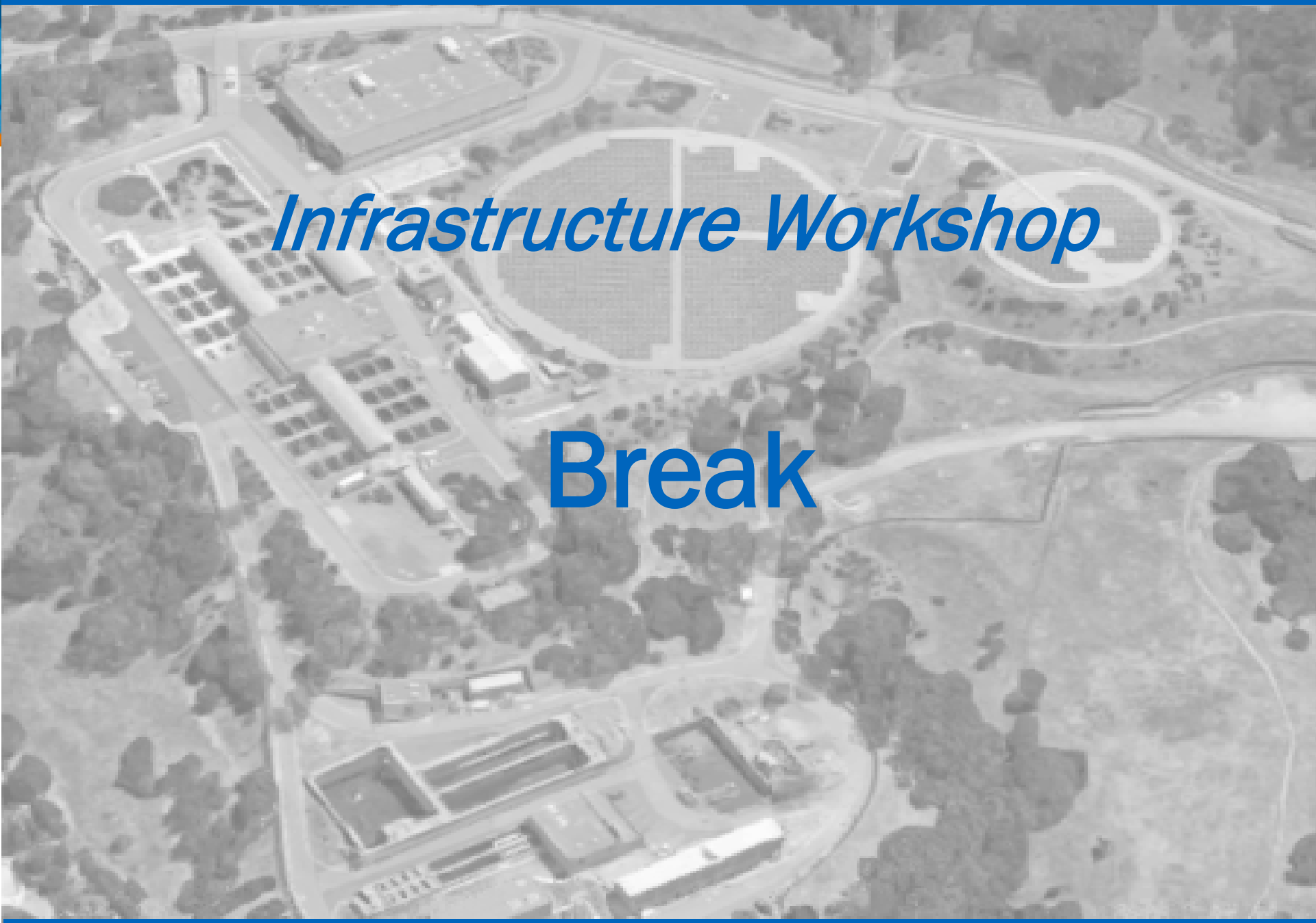
Design: FY25/26

Construction: FY26-28



Proposed Property Development by Supply Bank

Area of Property for District Corporation Yard and Training Center



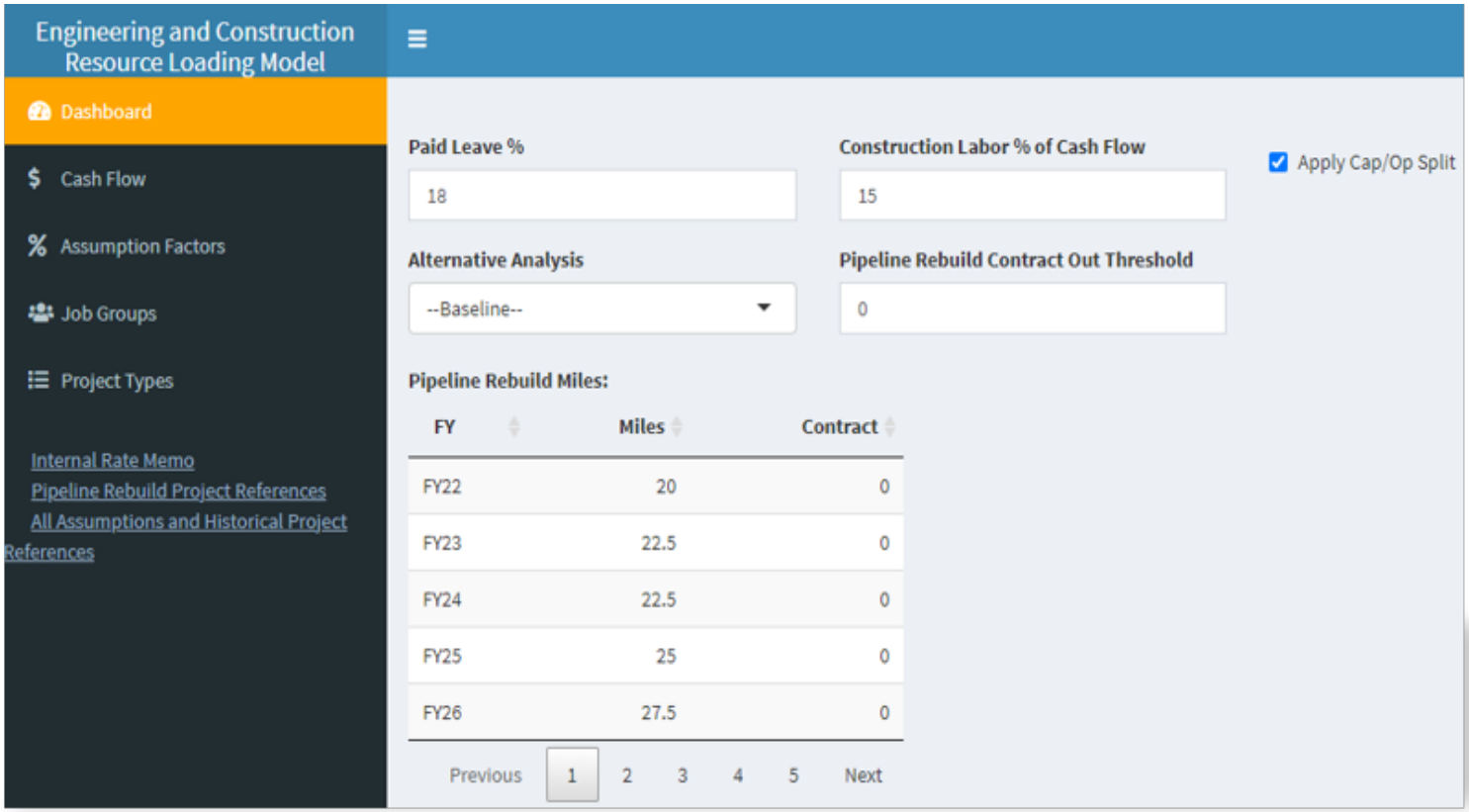
Infrastructure Workshop

Break

Infrastructure Workshop

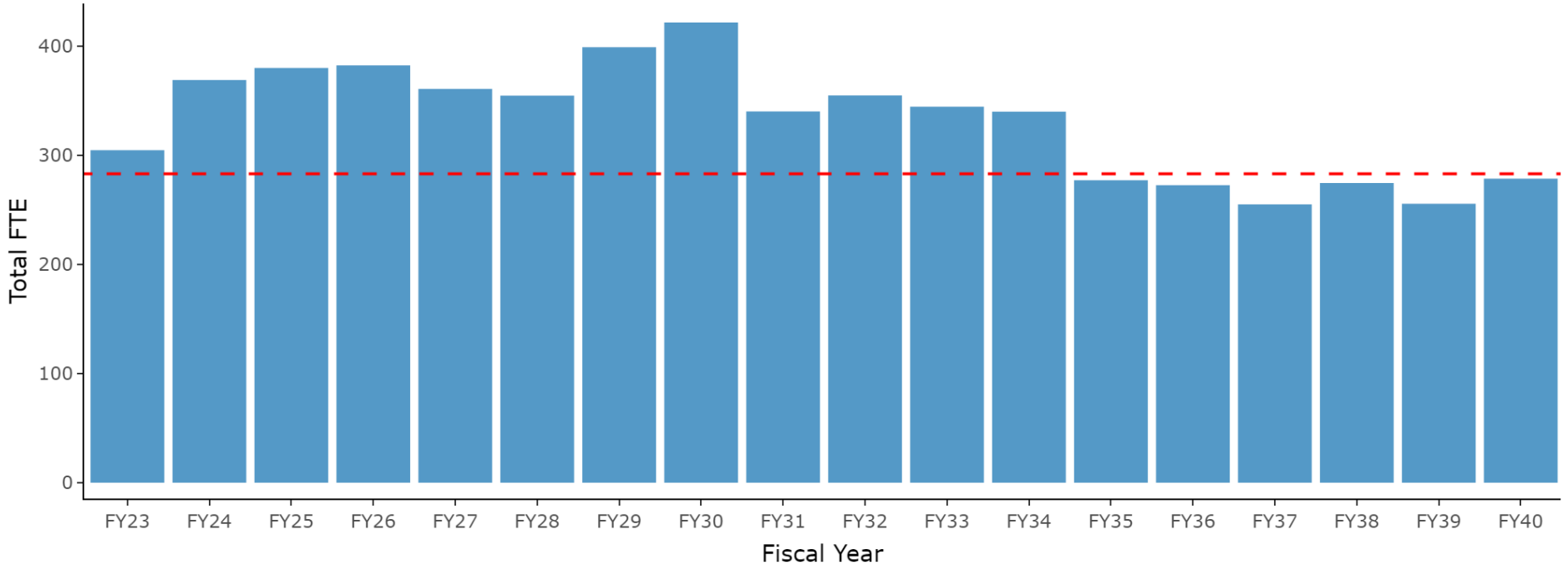
Resource Needs

Resource Loading Model



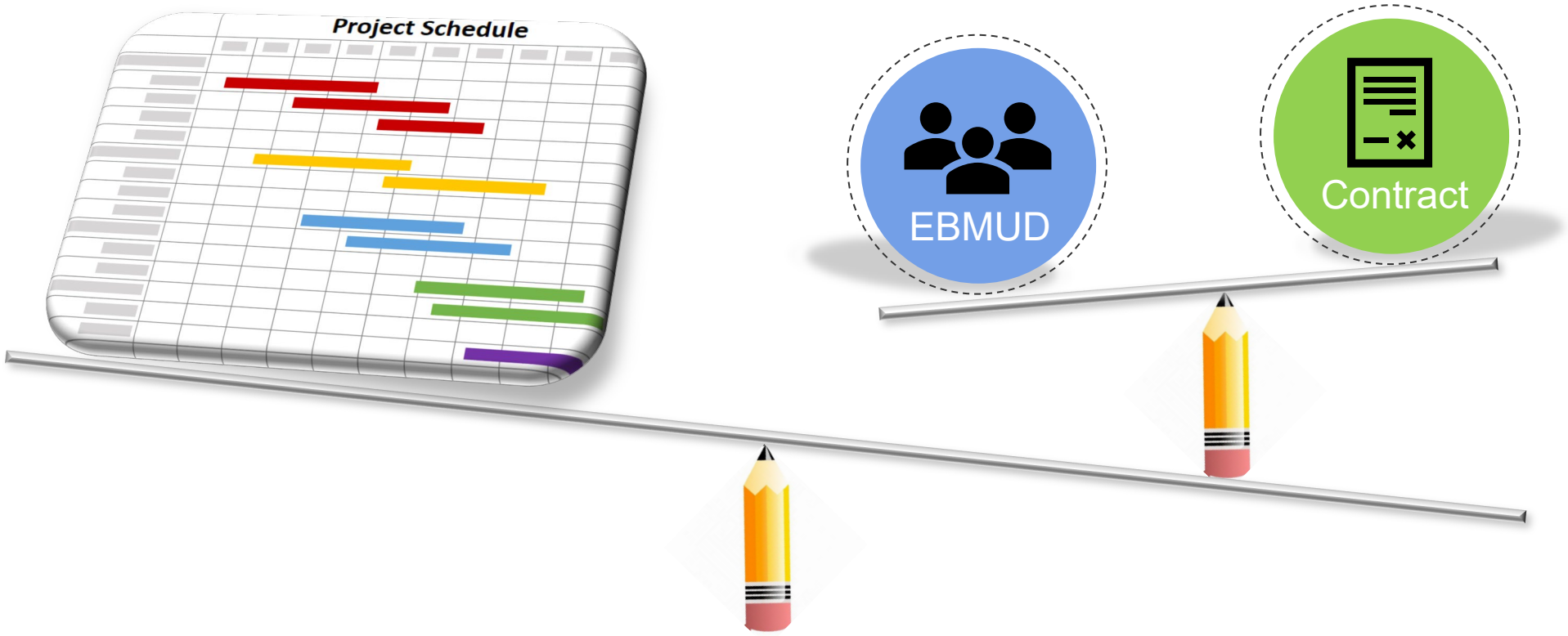
Projected Resource Needs for CIP

Example: Engineering and Construction



--- Total 283 FTEs

Long-term Strategy is to Balance Resources for Implementing CIP



Approach for Resources to Implement CIP FY24/25

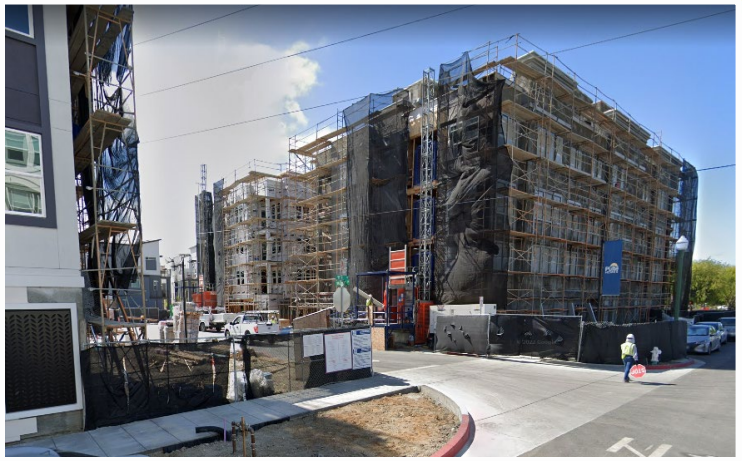
- Convert LT/TC positions to regular positions
- Add positions in conjunction with contracting out some design, CM and inspection
- Plan for future staff reduction by attrition after the peak
- Prioritize projects and adjust schedules based on fiscal and resource constraints

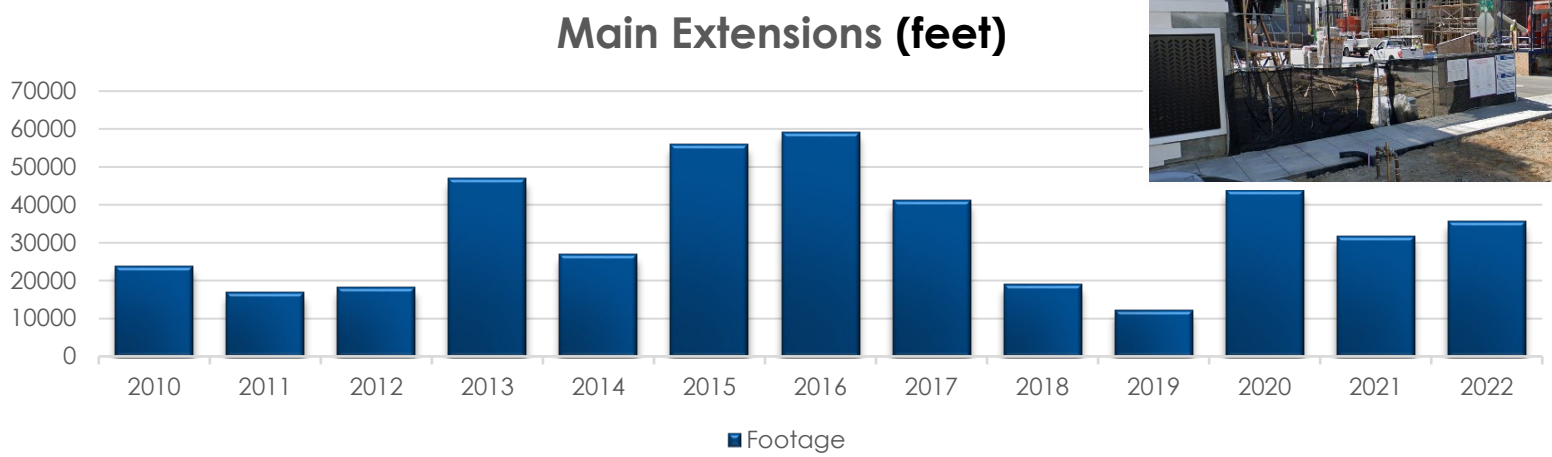
Approach for Resources to Perform Pipeline Rebuild FY24/25

- Add positions for refining condition assessment and pipe selection criteria to identify the worst pipe for replacement
- Add positions to enhance capacity to replace 25 miles of pipe annually and reduce FM&O contracting
- Evaluate appropriate mix of District installation and contracting for goals over 25 miles
- Develop staffing strategy to meet long-term sustainable replacement rate

Applicant Main Extension Projects

- Demand for new housing fluctuates





- Regional housing needs allocation goals
  - Contra Costa and Alameda County anticipated to add ~463,000 units
- State grants accelerating additional housing development
- Cities under pressure to deliver new housing units

Approach for Resources to Perform Applicant Work FY24/25

- Leverage contracting out to perform designs during peak workload
- Add positions to support administrative and design review
- Explore options for applicants to perform excavation, backfill, and paving during peak workload

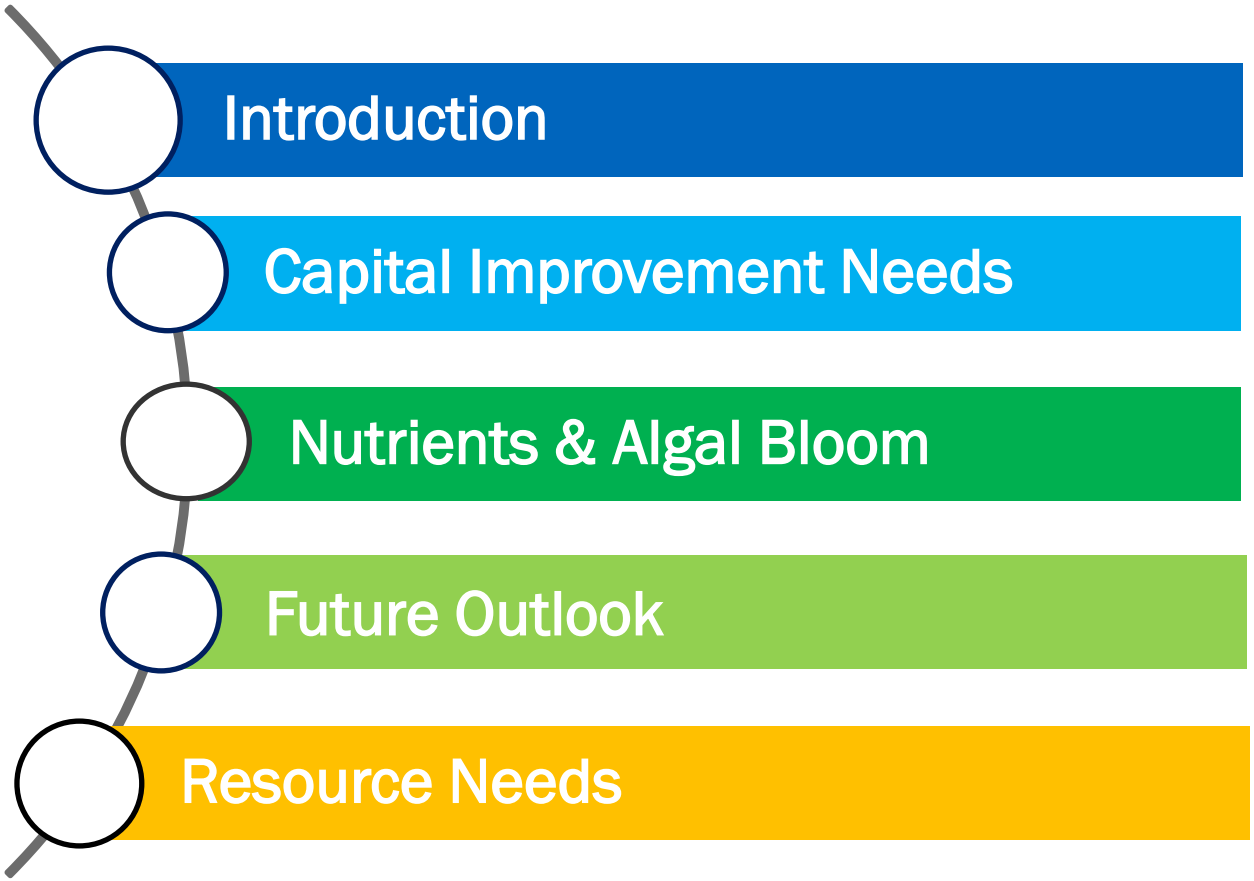
Water Infrastructure Summary

- Challenge to balance infrastructure needs with fiscal and resource constraints
- Increasing options for contracting provides flexibility
- Some additional positions needed to meet goals

EAST BAY MUNICIPAL UTILITY DISTRICT

Wastewater Department Infrastructure Investment

Agenda


Introduction
Capital Improvement Needs
Nutrients & Algal Bloom
Future Outlook
Resource Needs

Today's Speakers

Matt Hoeft
Supervisor of
Wastewater Planning

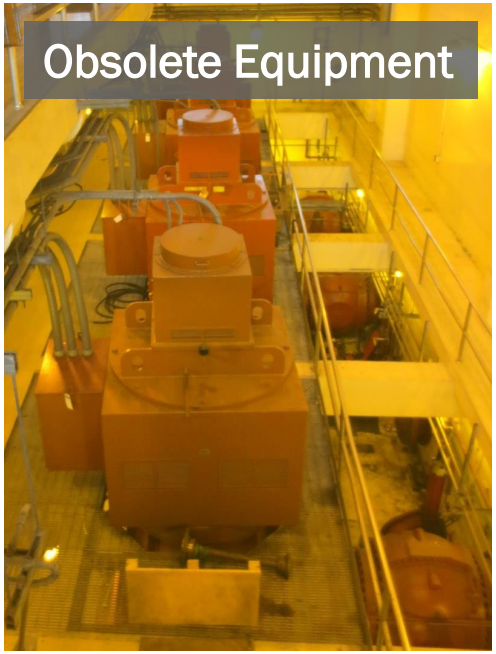
Don Gray
Acting Director of
Wastewater

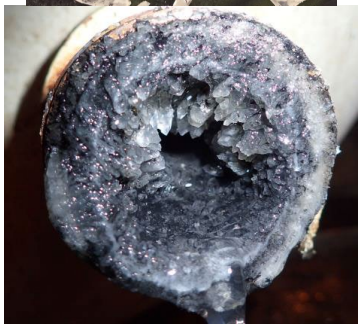
Glenn Dombeck
Manager of
Wastewater Treatment

Infrastructure Workshop

Capital Improvement Needs

MWWTP Improvement Needs





KEY TAKEAWAY

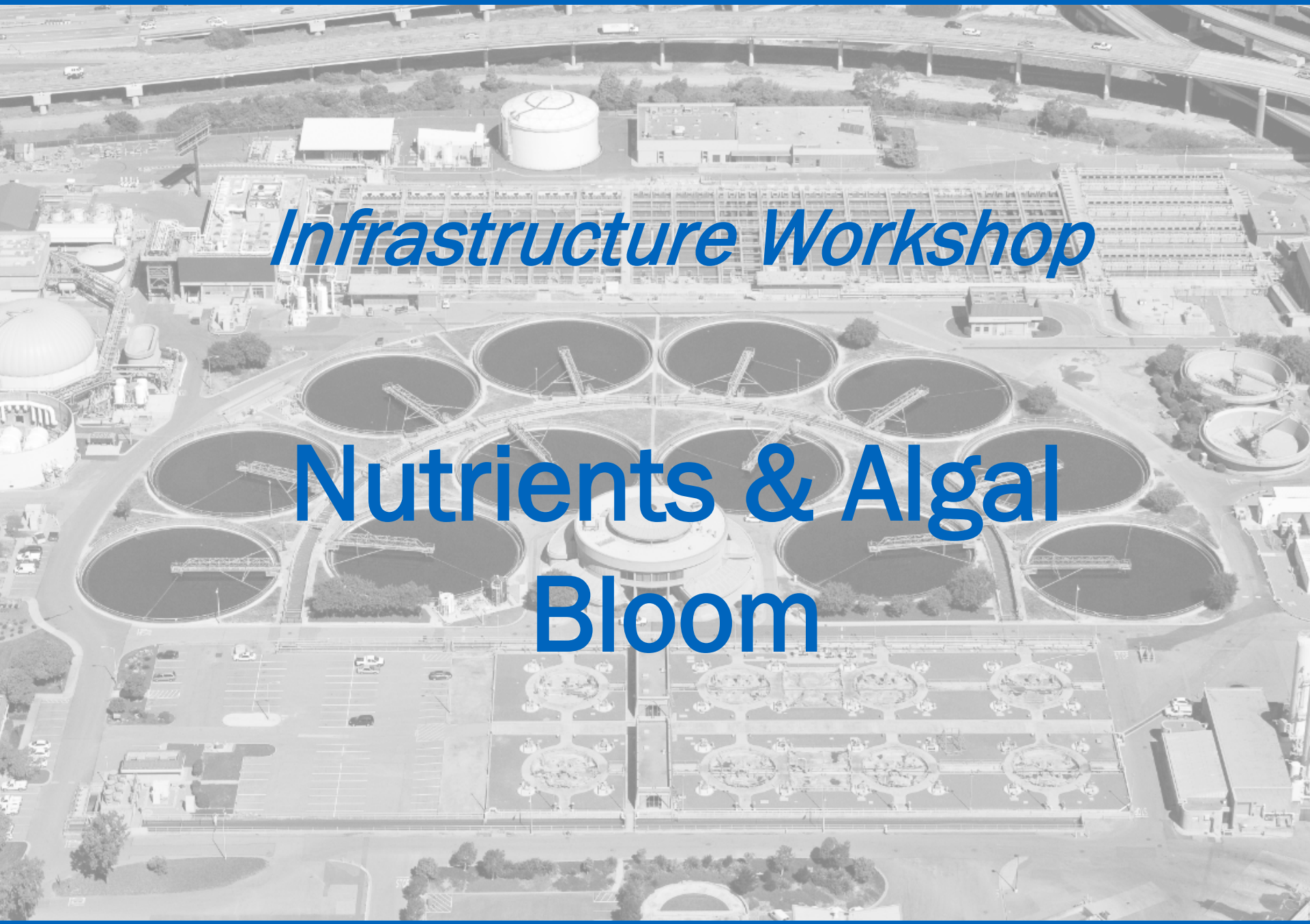
1 The MWWTP has an ongoing need for aging infrastructure renewal in a challenging, corrosive environment.

Seismic Vulnerability
MWWTP Facilities

KEY TAKEAWAY

1 Seismic retrofits will be phased over the next 10 years focusing on protecting life safety and our most critical processes.

Interceptor System



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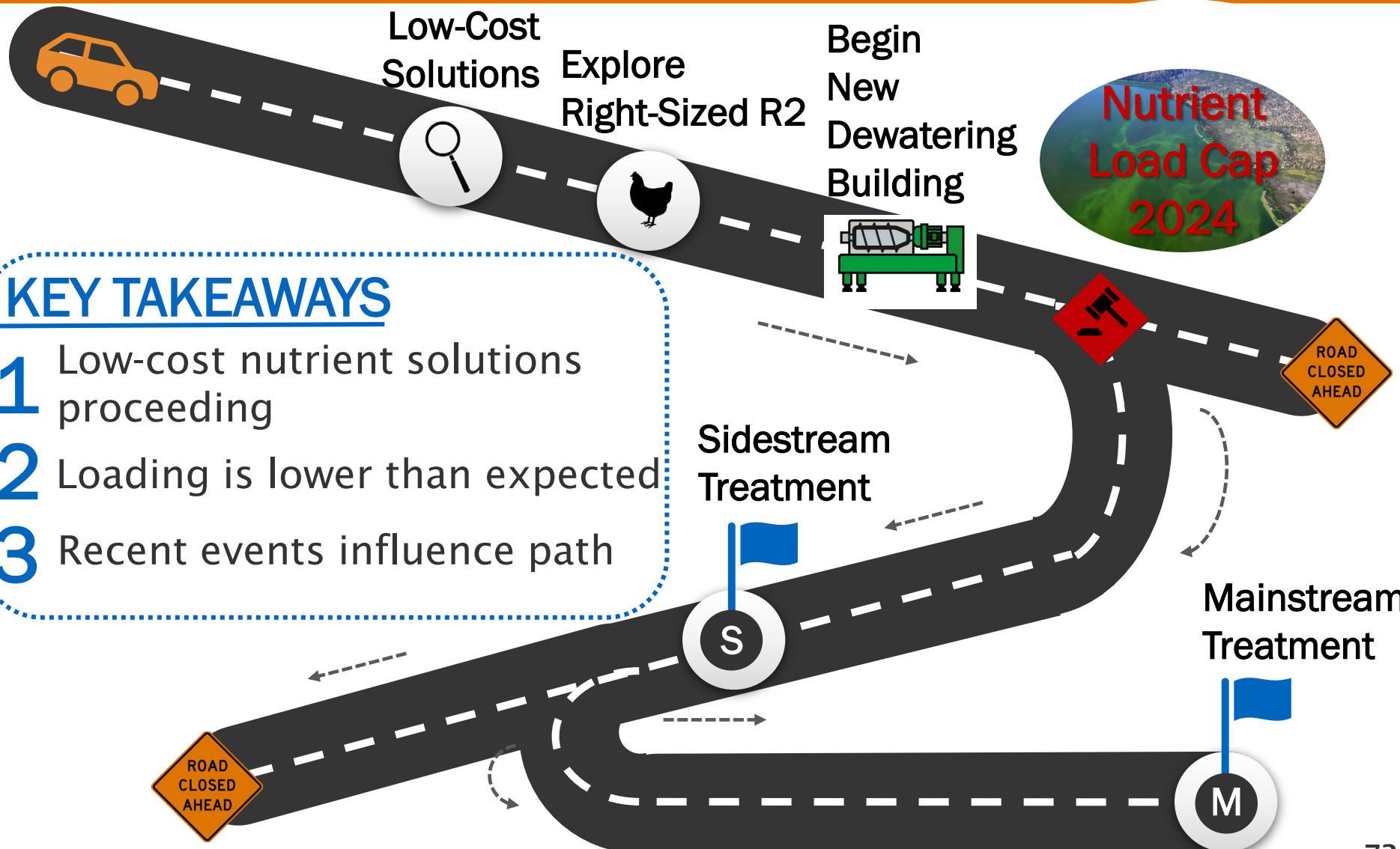
Nutrients & Algal Bloom

Nutrient Roadmap Update

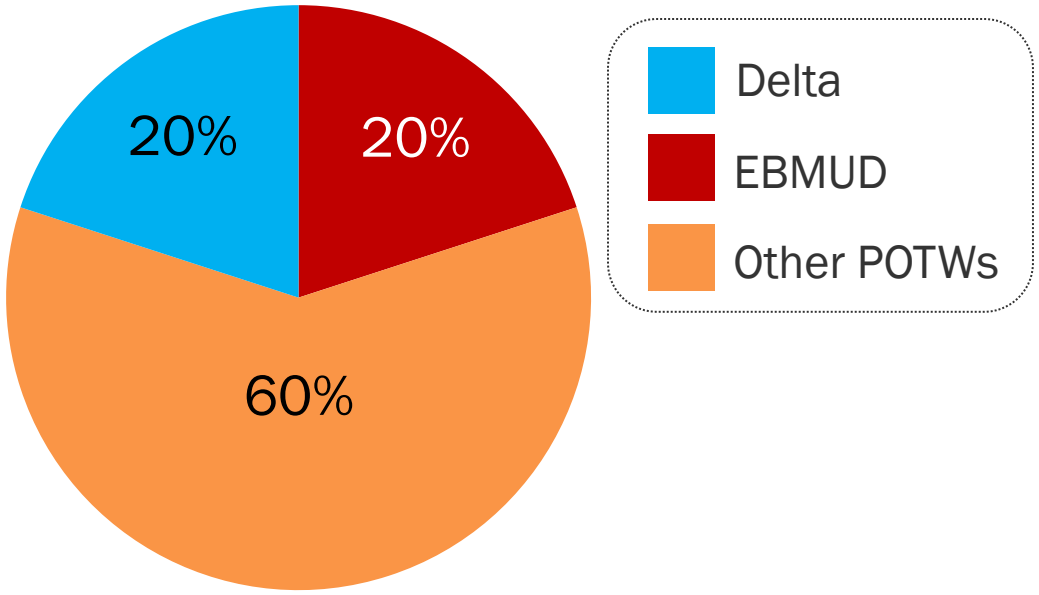


KEY TAKEAWAYS

1. Low-cost nutrient solutions proceeding
2. Loading is lower than expected
3. Recent events influence path

Nutrients in SF Bay

Nitrogen in Central SF Bay



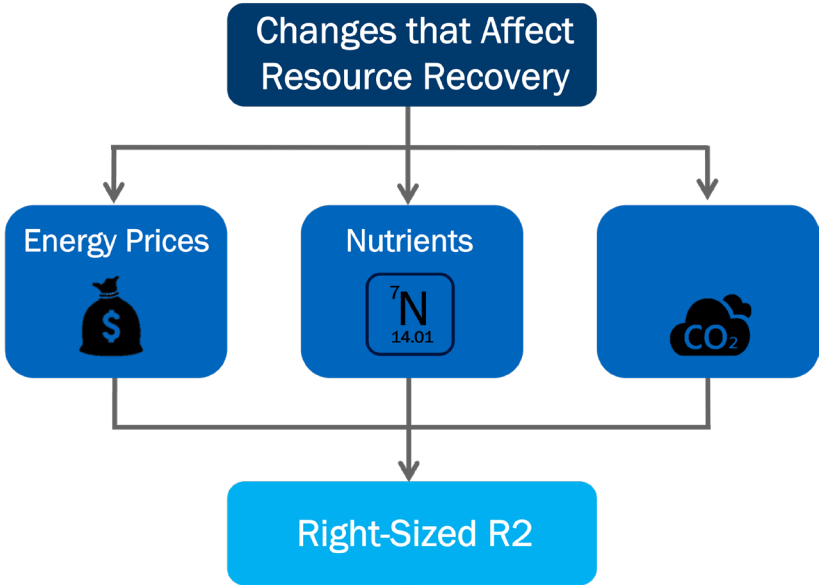
KEY TAKEAWAYS

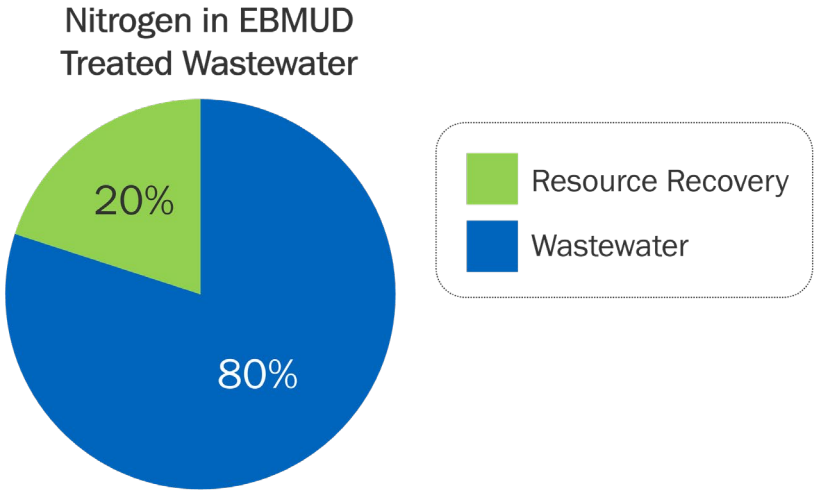
1. Over 80% of nutrients in the Central Bay are from wastewater.
2. EBMUD contributes the most nitrogen to the Bay of any POTW.

Master Plan Identified Steps To Reduce Discharged Nitrogen

- Reduce Resource Recovery high strength waste ("Right-Size" R2)
- Design and build sidestream treatment Facility
- Design and build full nutrient treatment facility

R2 Overview & Impact of R2 on Nutrients

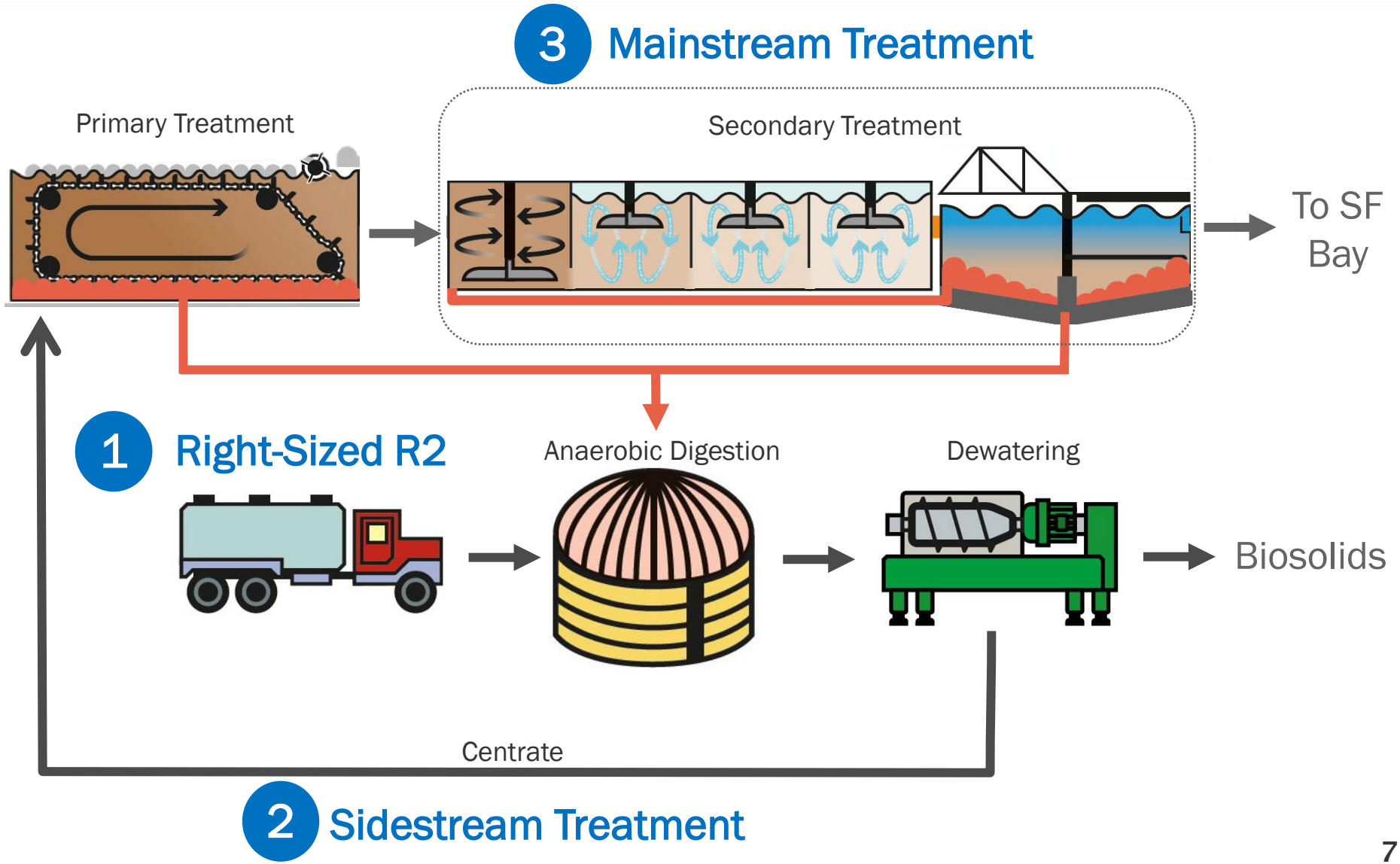




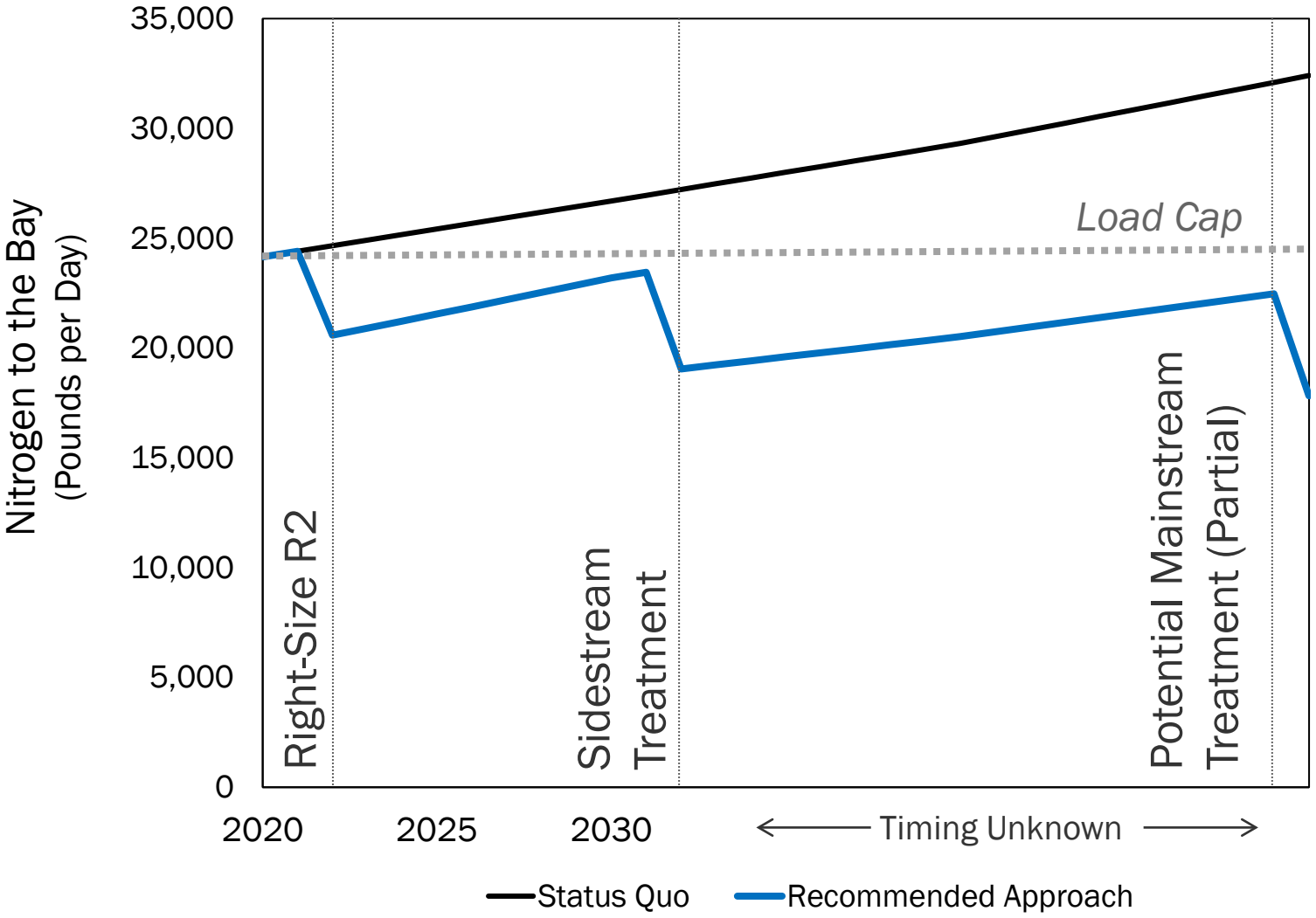
KEY TAKEAWAY

1 Approximately 20% of nitrogen in EBMUD's treated wastewater is from Resource Recovery.

Sidestream and Mainstream



Roadmap: Nitrogen



Review of Options

- "Right-Size" Resource Recovery (R2)
  - May remove less than the 20% of nitrogen expected
  - Will result in $4.7 million in annual lost revenue
  - Would still save about $2 million a year compared to debt service for sidestream treatment

- Sidestream Treatment
  - Removes up to 20% of nitrogen from District's discharge
  - Will take about 10 years to have operational process
  - Approximately $100 million

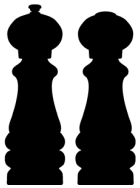
- Full Treatment
  - Will take about 10+ years to have operational facility
  - Cost estimated $1.3 to $2 billion
  - Operational costs expected to be significant

Additional Options Being Considered

- Targeted trucked waste reduction to reduce nitrogen, while minimizing the impact to renewable energy generation
- Accelerate full implementation of nitrogen removal pilot process using existing facilities
- Increase recycled water
- Reduce nutrient strength of wastewater entering the treatment plant
- Wetlands treatment

R2 Waste Streams

Increasing Amount of Nitrogen


Salty Liquids


Winery


Water Treatment Plant Sludge


Food


Septage


Dairy


Blood

KEY TAKEAWAYS

1. The R2 waste streams have very different chemical characteristics.
2. Our recommended approach is to strategically reduce the high-nitrogen waste streams.

District's Full-Scale Nitrogen Removal Pilot

- Piloting a full-scale nitrification/denitrification process in existing secondary treatment process for the past three dry weather years
- Process has treated 5 MGD and removed as much as 75% of the total inorganic nitrogen
- Staff will accelerate testing by running the pilot longer if wet weather conditions allow
- Once treatment limits are well documented, further treatment may require additional oxygen and solids separation to achieve full nitrogen removal

Expanding Recycled Water
East Bayshore Recycled Water Project

Current capability: ~9 MGD

Goal: 20 MGD by 2040

EBMUD Recycled Water Program

East Bayshore Water Quality Improvements Study

- Reliably produce high-quality recycled water
- Pilot testing of treatment alternatives
- Evaluate alternative supply sources
- Recommended improvements will increase customer base
- Potential collaboration with UC Berkeley
- Provide update at 2023 LTWS Workshop

Potential New Recycled Water Customers

- Golden Gate Fields
- Bayer
- USDA Research Lab
- UC Berkeley

KEY TAKEAWAY

1 Water quality study and customer outreach in progress to expand the East Bayshore Recycled Water Project to build-out capacity of 2.6 MGD.

Urine Separation

- Urine contributes 50-80% of nitrogen in domestic sewage
- Urine has been processed into a fertilizer
- A number of papers and reports 10+ years ago
- Only small-scale implementation to date
- Large-scale collection not currently feasible
  - Different toilets required
  - Separate urine piping to residences?
  - Urine truck pick-ups? Special handling also needed for unsterilized urine

Wetlands Treatment: SFEI Findings

- Few opportunities for open water wetlands were identified in the highly urban area around the EBMUD plant
- EBMUD's facility is extremely constrained by its geography
- Land use regulatory conflicts high

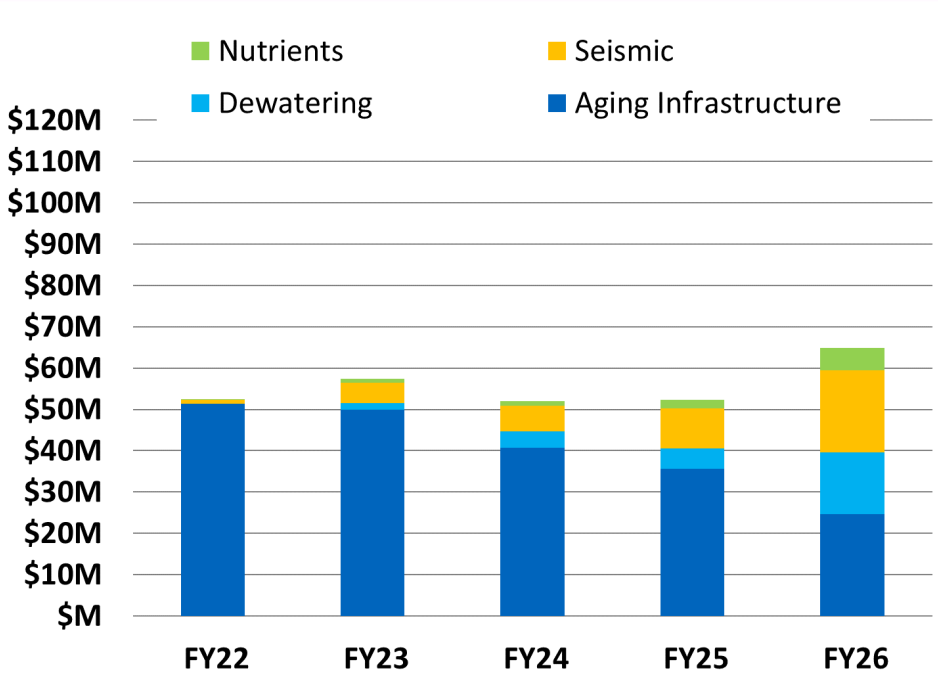
Total Inorganic Nitrogen (TIN) Discharge Load Caps

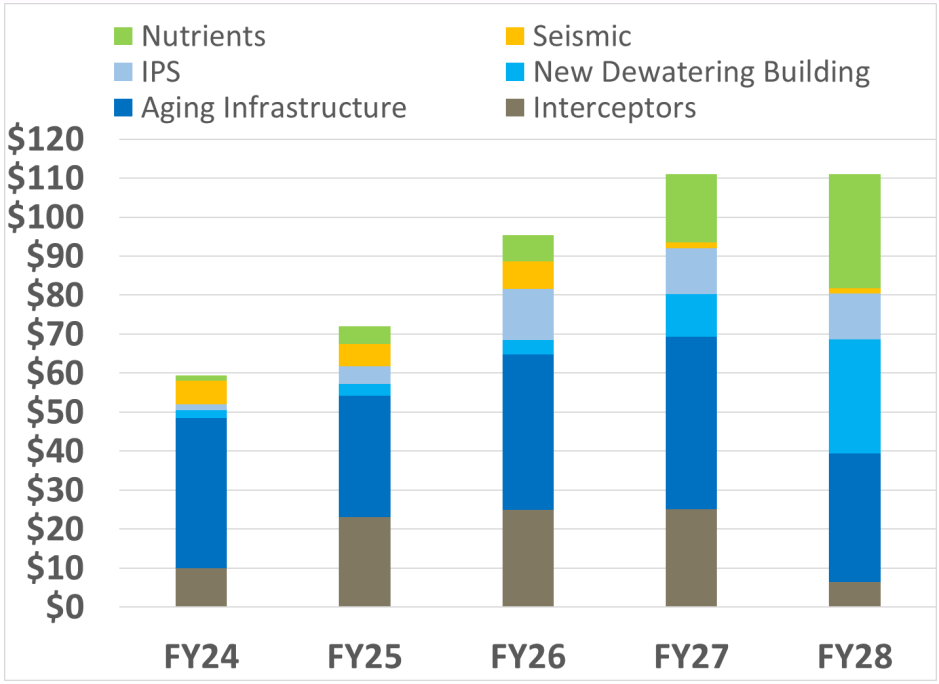
- In our current nutrient watershed permit TIN load caps are identified
- TIN Load caps determined by previous TIN discharges to the SF Bay
- Based on no adverse conditions in SF Bay observed
- Since the algal bloom, the Regional Water Board asking for additional TIN reductions sooner
- Next nutrient watershed permit in 2024
- EBMUD and San Francisco Public Utilities Commission (SFPUC) are the largest wastewater treatment plant TIN dischargers to SF Bay
- Regional Water Board wants EBMUD and SFPUC to do more

Infrastructure Workshop

Future Outlook

Comparison: 5-Year CIP

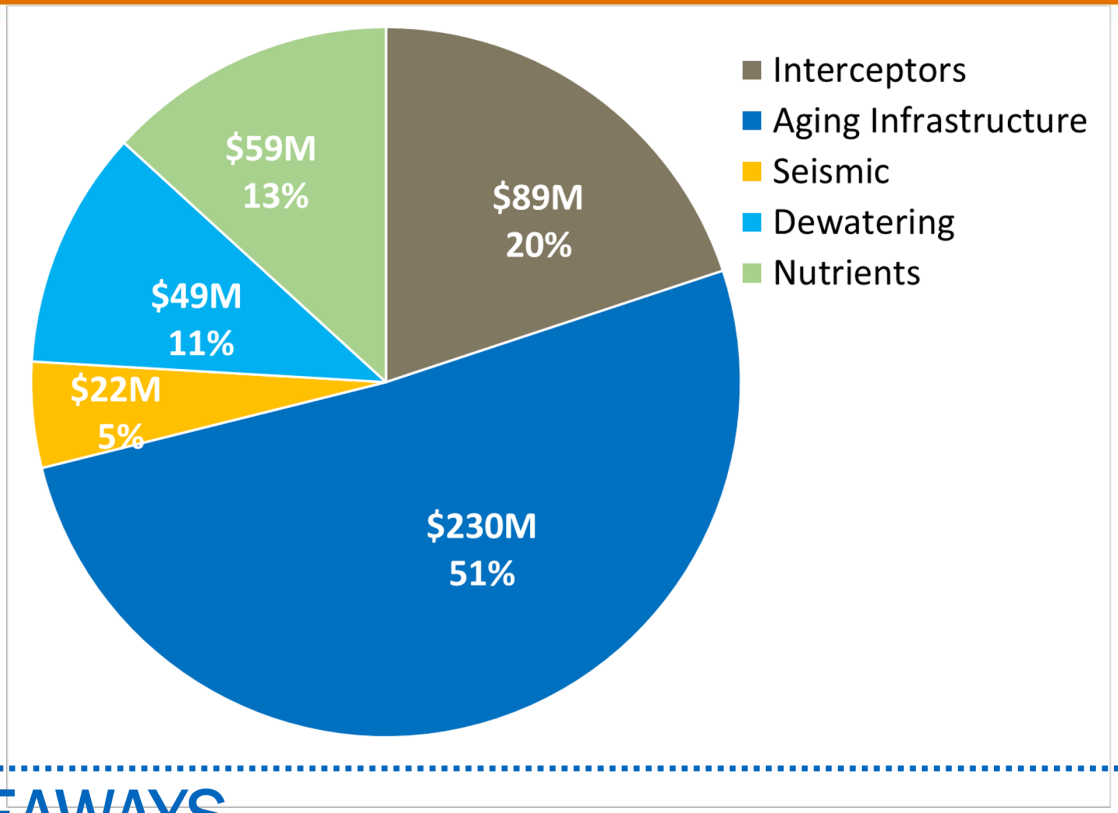




KEY TAKEAWAYS

1. Focus has shifted—more interceptor rehabilitation work.
2. The peak is coming—we need more staff to complete more work.
3. Nutrient removal spending will increase over the 5-years.

5-Year CIP



KEY TAKEAWAYS

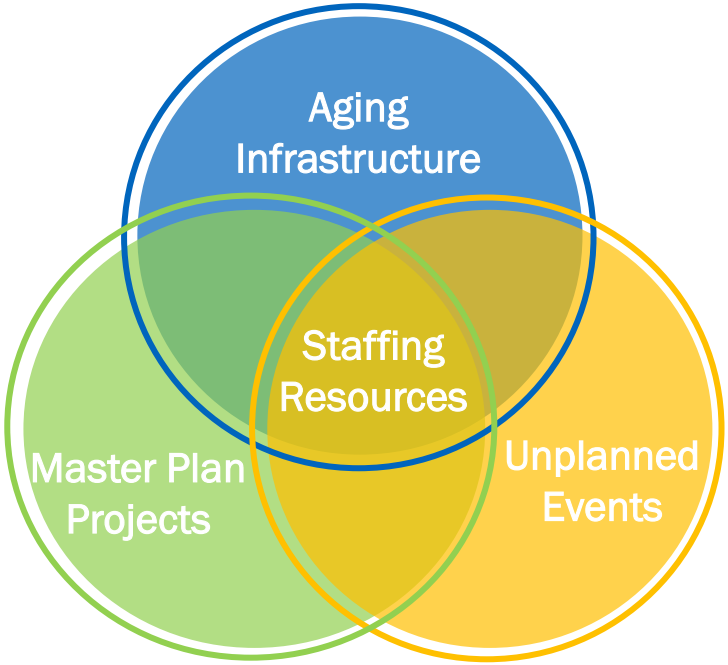
1. Many newly identified interceptor rehabilitation projects in near term.
2. Nutrient removal (sidestream) project construction is planned to occur during this 5-year period.

Infrastructure Workshop

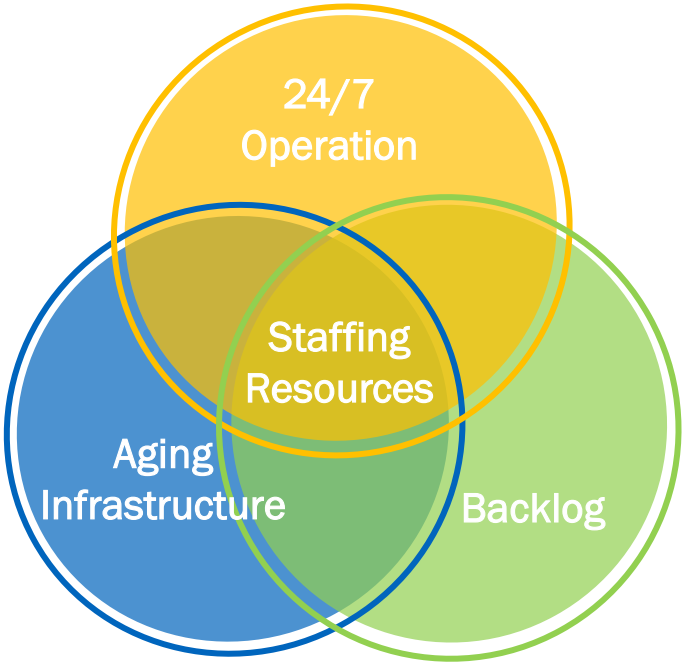
Resource Needs

Wastewater Department Long-Term Need for Staffing

Wastewater Engineering Division (WED)



Wastewater Treatment Division (WTD)



KEY TAKEAWAY

1 To complete the increasing number and complexity of capital projects, as well as to respond to unplanned events, additional WED and WTD staffing is needed.

Current Operations and Maintenance Staffing Approach

- No reduction in Operator positions
  - Agreement to contract electrical work
  - Request additional Electrical staff in FY24/25 budget
- Optimize Operations Staffing Levels
- Actively fill open positions
  - Operations Training Coordinator
  - Electrical Technician
  - Power Plant Mechanic Operator

Infrastructure Workshop

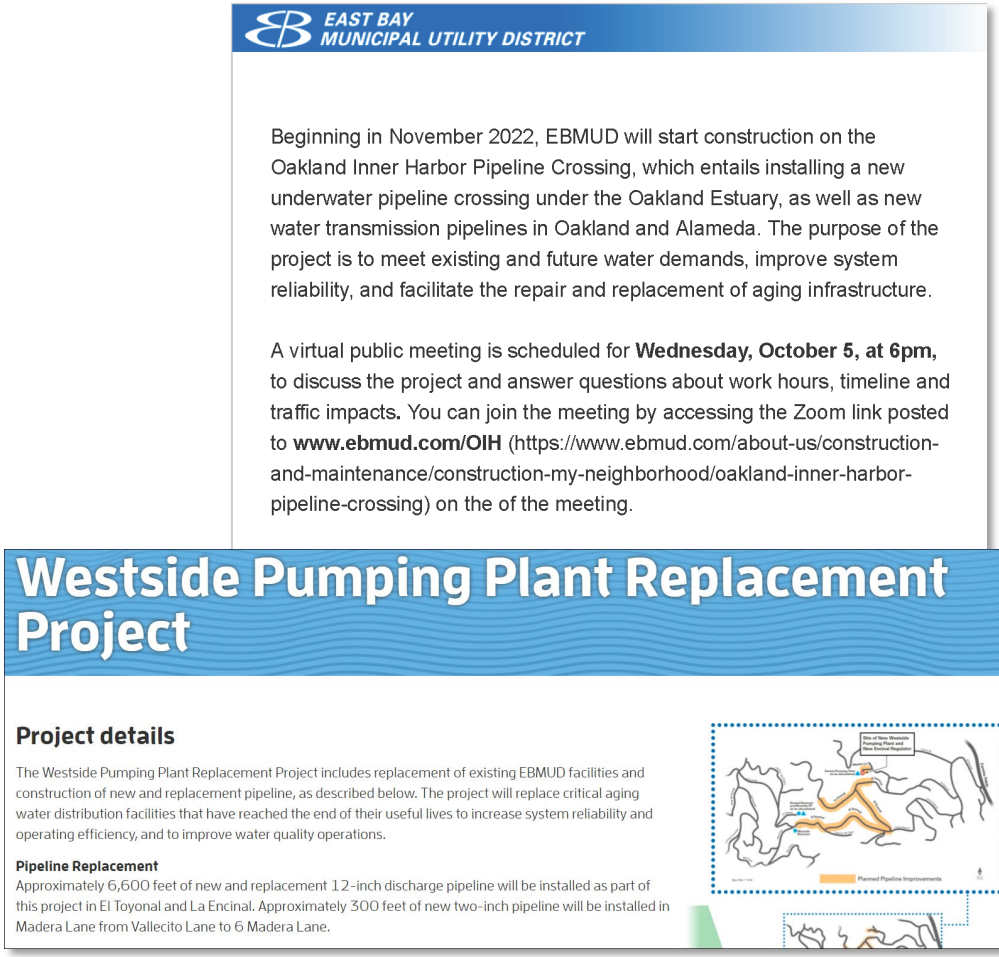
Community Outreach and Rate Considerations

Community Outreach

The increase in capital and rebuild projects will have a direct impact on public outreach.

Residents expect more communication in a variety of formats and rapid response to questions.

Additional resources may be needed as CIP increases.



EAST BAY MUNICIPAL UTILITY DISTRICT

Beginning in November 2022, EBMUD will start construction on the Oakland Inner Harbor Pipeline Crossing, which entails installing a new underwater pipeline crossing under the Oakland Estuary, as well as new water transmission pipelines in Oakland and Alameda. The purpose of the project is to meet existing and future water demands, improve system reliability, and facilitate the repair and replacement of aging infrastructure.

A virtual public meeting is scheduled for **Wednesday, October 5, at 6pm,** to discuss the project and answer questions about work hours, timeline and traffic impacts. You can join the meeting by accessing the Zoom link posted to **www.ebmud.com/OIH** (https://www.ebmud.com/about-us/construction-and-maintenance/construction-my-neighborhood/oakland-inner-harbor-pipeline-crossing) on the of the meeting.

Westside Pumping Plant Replacement Project

Project details

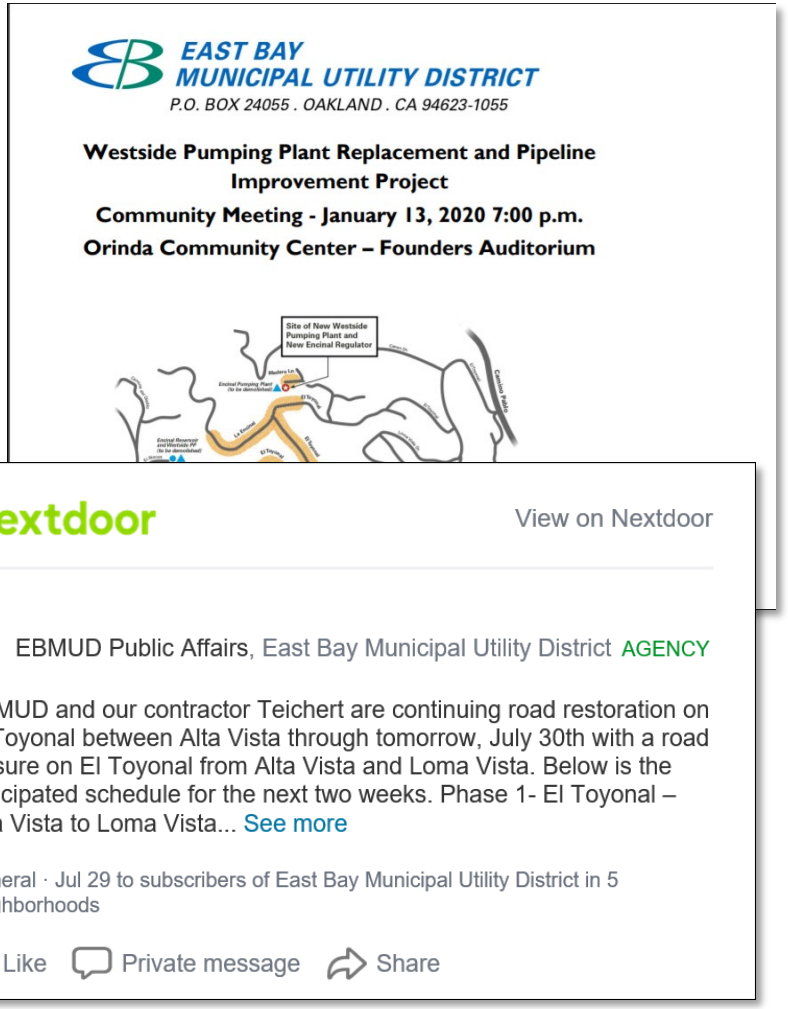
The Westside Pumping Plant Replacement Project includes replacement of existing EBMUD facilities and construction of new and replacement pipeline, as described below. The project will replace critical aging water distribution facilities that have reached the end of their useful lives to increase system reliability and operating efficiency, and to improve water quality operations.

Pipeline Replacement

Approximately 6,600 feet of new and replacement 12-inch discharge pipeline will be installed as part of this project in El Toyonal and La Encinal. Approximately 300 feet of new two-inch pipeline will be installed in Madera Lane from Vallecito Lane to 6 Madera Lane.

Community Outreach

- **Extensive outreach completed prior to construction**
  - Meetings with cities, community, agencies, community groups, in-person and virtual
  - Provide project updates the community using email, social media posts, website
- **Develop outreach plan**
  - Prepare project map and communication list
  - Community outreach via mailers, customer messaging, individual emails, social media posts, and phone calls
  - Respond to resident questions and concerns
- **Regular updates**
  - Update the cities and community on status using email, social media posts, website, direct mail; use visuals (photos/video)
  - Open house events during and at the completion of major projects
- **Media outreach**
  - Feature significant/interesting projects to illustrate infrastructure renewal
  - Media advisories to alert residents of project impacts



EAST BAY MUNICIPAL UTILITY DISTRICT
P.O. BOX 24055 . OAKLAND . CA 94623-1055

Westside Pumping Plant Replacement and Pipeline Improvement Project
Community Meeting - January 13, 2020 7:00 p.m.
Orinda Community Center – Founders Auditorium

nextdoor View on Nextdoor

EBMUD Public Affairs, East Bay Municipal Utility District AGENCY

EBMUD and our contractor Teichert are continuing road restoration on El Toyonal between Alta Vista through tomorrow, July 30th with a road closure on El Toyonal from Alta Vista and Loma Vista. Below is the anticipated schedule for the next two weeks. Phase 1- El Toyonal – Alta Vista to Loma Vista... See more

General · Jul 29 to subscribers of East Bay Municipal Utility District in 5 neighborhoods

Like Private message Share

Positions and Resources to Implement CIP

- Reviewing resource requirements for other support groups, schedules, and prioritization of the CIP
- Major initiatives such as LVE, AMI, mainstream nutrient removal are not currently in the CIP
- Balancing needs while maintaining long-term financial stability and affordability
- Considering best approach to support CIP
- Board feedback will be incorporated as part of the overall budget and staffing recommendation

Rate Considerations for Upcoming FY24-28 Water System

- Prior FY22-FY26 5-yr Water System CIP was $2.2 B with 4% rate increases
- Preliminary projected FY24-FY28 5-yr Water System CIP reflecting financial pressures of inflation and drought:
  - ~6% rate increases support 5-year CIP of $2.6 B
  - Each $150M added to $2.6 B CIP adds ~1% to rate increases
  - All projects in FY24-28 CIP totaling $3.2 B require rate increases of ~9.5% for 5 years

Rate Considerations for Upcoming FY24-28 Wastewater System

- Prior FY22-FY26 5-yr Wastewater System CIP was $280 M with 4% rate increases
- Preliminary projected FY24-FY28 5-yr Wastewater System CIP reflecting financial pressures of inflation and drought:
  - ~6% rate increases support 5-year CIP of $380 M
  - Each $50M added to $380 M CIP adds ~1% to rate increases
  - All projects in FY24-28 CIP totaling $450 M require rate increases of ~7.5% for 5 years

Infrastructure Tour

- Tuesday, October 18, 2022,
  - Meet at Administration Building, 8:30 AM
  - Point Isabel Wet Weather Facility
    - 9:30 AM -10:00 AM
  - San Pablo Clearwell
    - 10:30 AM – 11:00 AM
  - Center for Smart Infrastructure
    - 11:30 AM – 12:15 Noon
  - Return to Administration Building, 12:30 PM

Next Steps

- Staff review of FY24/25 Budget proposals
- 11/8/22 Board Planning Committee
  - Paving and Other Related Services
- 1/24/23 Board Budget Workshop #1
- 3/28/23 Board Budget Workshop #2


Thank you!
Questions?
EAST BAY
MUNICIPAL UTILITY DISTRICT