

# Burlingame Recycled Water and Wastewater Discharge Reduction Project

01/20/26 – BACWA Recycled Water Committee Update



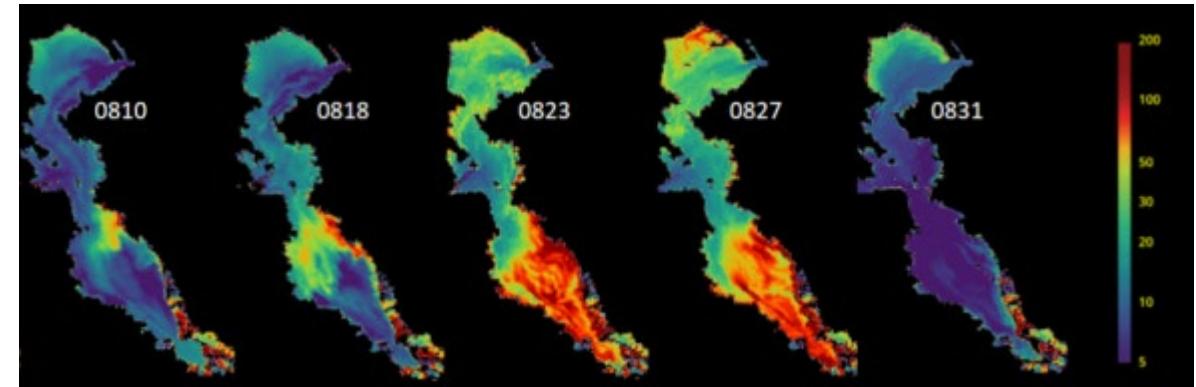
# Agenda

- Project Goals
- Project Area
- Project Status
- Reuse Strategies
- Nutrient Reduction Strategies
- Alternatives Walk-through
- Q&A

# Project Goals



- Reduce drought vulnerability and supplement water supply via water reuse

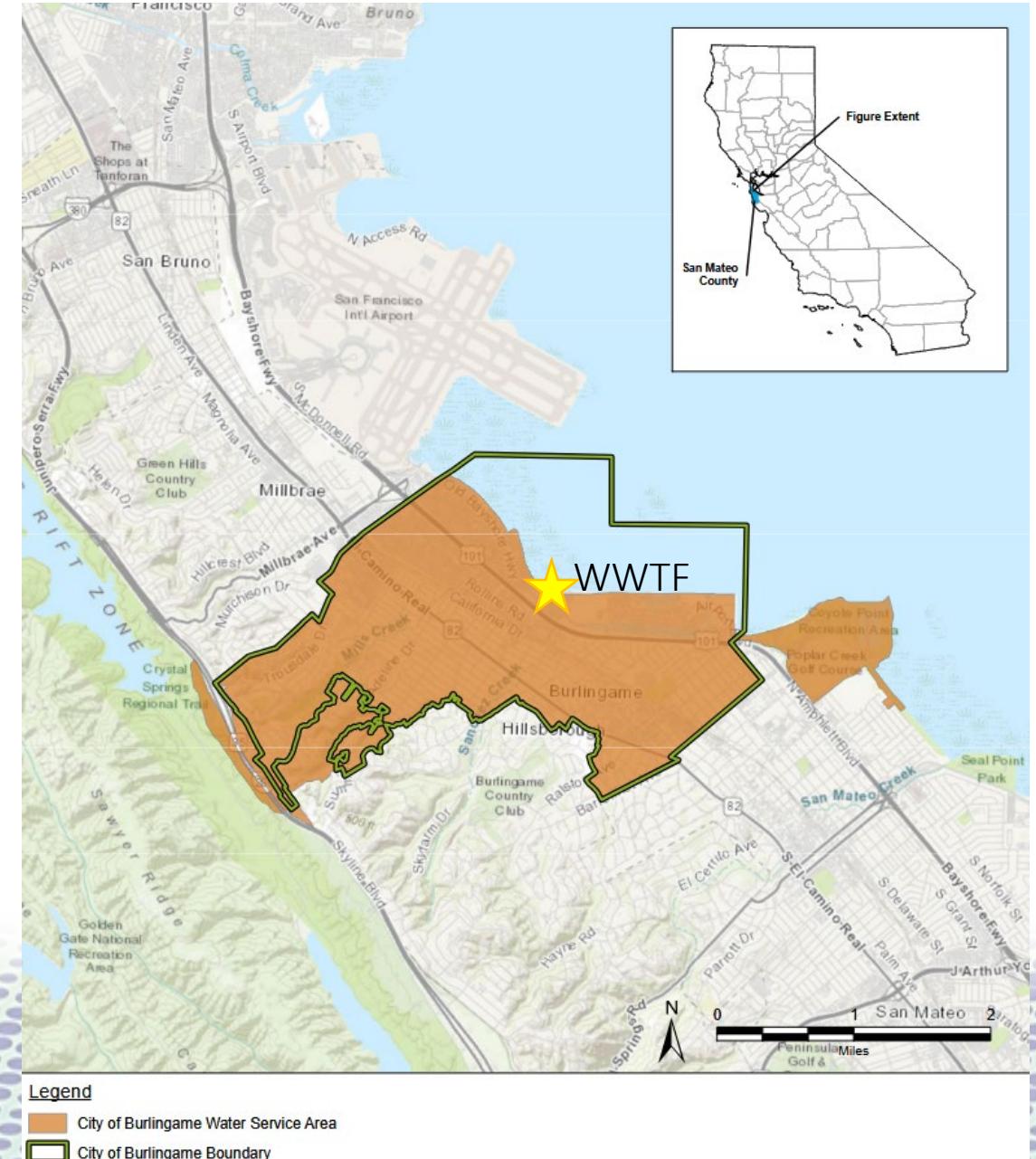


Chlorophyll estimates ( $\text{mg/M}^3$ ) during August 2022 algal bloom (SFEI, 2023).

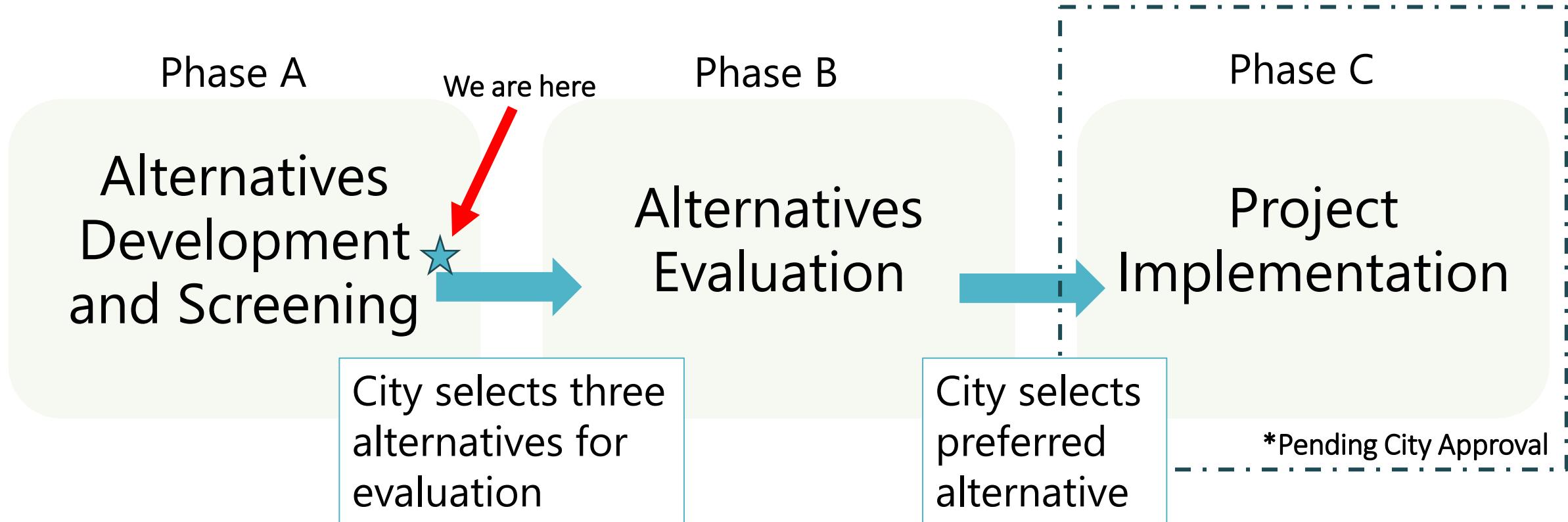
- Improve environment and achieve compliance (RWQCB Order R2-2024-0013) by reducing TIN discharge to SF Bay by 40%.

# Project Area

- Population: ~31,000
- Water: From SFPUC
- Wastewater: City treats and discharges to South San Francisco through a shared force main.



# Project Status



# Reuse Strategies

- Recycled Water – Non-Potable Reuse
  - Primarily irrigation, with some industrial/commercial opportunities in Burlingame
- Purified Water – Indirect/Direct Potable Reuse
  - Indirect:
    - *Treated water - Groundwater injection*
    - *Treated water - Surface water augmentation*
  - Direct:
    - *Purified water blended with treated drinking water supply and distributed throughout system*

# Nutrient Reduction Strategies

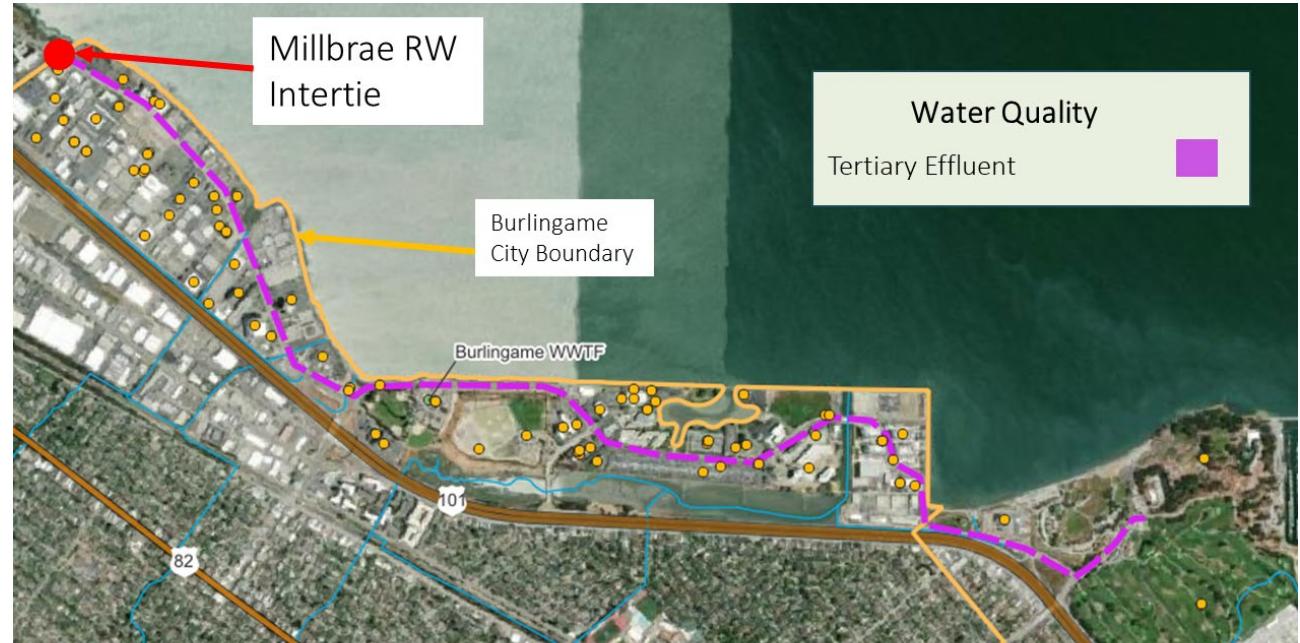
- **Diversion via Recycled Water Supply**
  - Considering the identified users, achieves partial compliance
- **Wastewater Treatment Process Optimization/Densification**
  - May not be sufficient to meet RWQCB requirements alone
- **Water Quality Trading Program**
  - Freshwater Trust's feasibility study indicates viable
- **Membrane Bioreactor (MBR) Upgrade**
  - More expensive, would meet RWQCB nutrient requirements
- **Other treatment options:**
  - Membrane Aerated Bioreactor, Biological Aerated Filter + Denitrification Filters

# Alternatives Development

- Outreach meetings with several potential project partners:
  - *SFPUC, Millbrae, OneShoreline, San Bruno, San Mateo, BAWSCA, SVCW, Cal Water, Poplar Creek Golf Course*
- Nearly 20 potential project scenarios were considered:
  - *10+ Recycled water scenarios*
  - *4 Indirect Potable Reuse scenarios*
  - *3 Direct Potable Reuse scenarios*
- Alternatives ruled out based on feasibility, cost effectiveness, interest of project partners
- Reduced to short-list of 4 potential alternatives (for now)

# Alt. 1 Cloth Filtration Purple Pipe RW

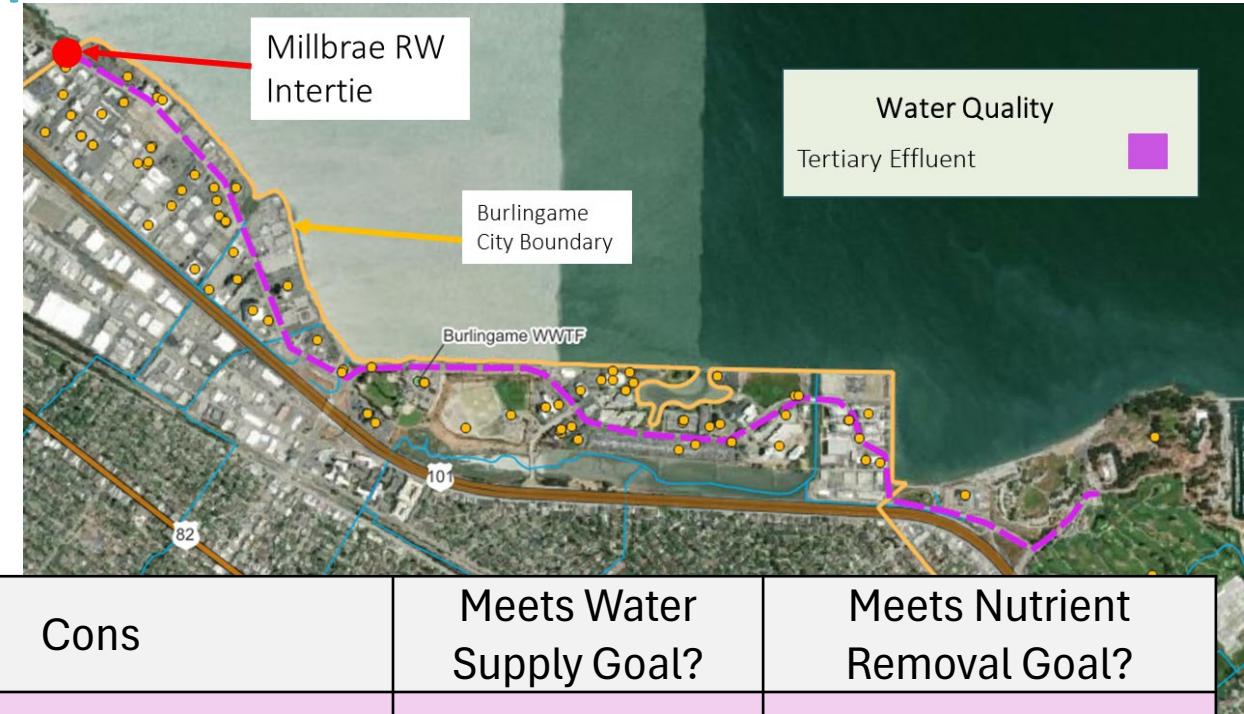
- Treatment: Tertiary cloth filtration/disinfection at Burlingame WWTF
- Infrastructure: New RW distribution system in East side of City
- Project Partners: Millbrae (potential)
- Nutrient Strategy: Nutrient diversion via RW, coupled with WWTF optimization/densification or credit purchase



Pros	Cons	Meets Water Supply Goal?	Meets Nutrient Removal Goal?
<ul style="list-style-type: none"><li>• Low cost</li><li>• Operationally simple</li></ul>	<ul style="list-style-type: none"><li>• Small, seasonal water supply benefit</li><li>• Requires additional WWTF optimization/densification</li></ul>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> With WWTF optimization or credit purchase

# Alt. 2 MBR Purple Pipe RW

- Treatment: MBR/disinfection at Burlingame WWTF
- Infrastructure: New RW distribution system in East side of City
- Project Partners: Millbrae (potentially)
- Nutrient Strategy: MBR treatment



Pros	Cons	Meets Water Supply Goal?	Meets Nutrient Removal Goal?
<ul style="list-style-type: none"><li>• MBR process should fully satisfy RWQCB TIN reduction requirements</li><li>• Potential water quality credit generation</li><li>• Produces high-quality, "RO-ready" effluent</li></ul>	<ul style="list-style-type: none"><li>• Added costs/operational complexity</li><li>• Small, seasonal water supply benefit</li></ul>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

# Alt. 3 DPR – PureWater Peninsula Add-on

- Treatment: Shared DPR treatment at SVCW
- Infrastructure: New WW conveyance to San Mateo WWTP
- Project Partners: [PureWater Peninsula Partners](#)
- Nutrient Strategy: MBR treatment at San Mateo



Pros	Cons	Meets Water Supply Goal?	Meets Nutrient Removal Goal?
<ul style="list-style-type: none"><li>• Accomplish nutrient compliance in near term</li><li>• PureWater Peninsula is a mature project with momentum</li></ul>	<ul style="list-style-type: none"><li>• TIN compliance dependent on San Mateo</li><li>• Reliant on several Agencies' timelines to receive water supply benefit</li><li>• Bureaucratic challenges of a project with 7+ partners</li></ul>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

# PureWater Peninsula

- Basis of Design Report completed in 2024
- Phase 2 planned for 2040

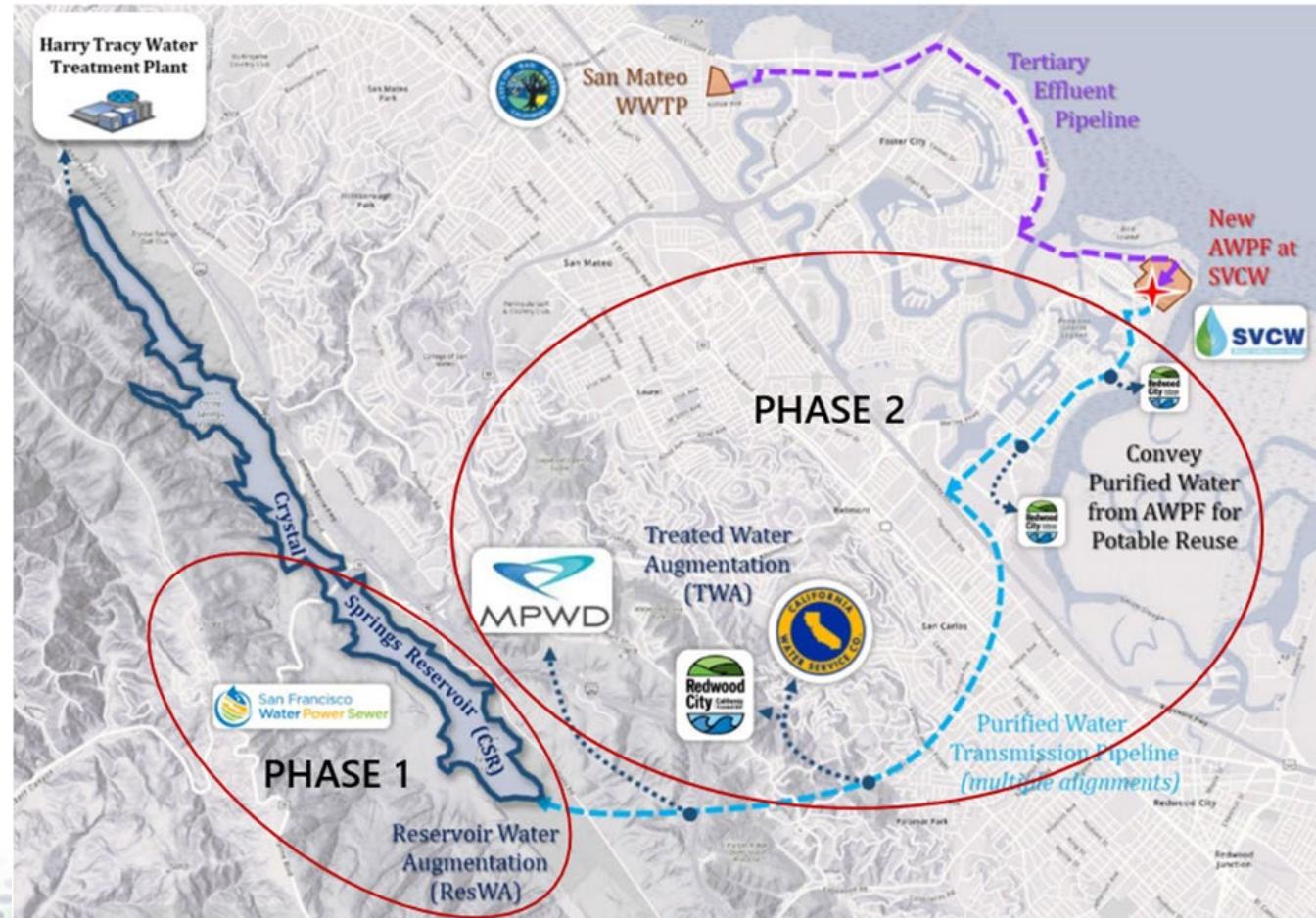


Image courtesy of the SFPUC. [2024 Pure Water Peninsula Basis of Design Report](#)

# Alt. 4: DPR – Burlingame + San Mateo

- Treatment: Shared DPR treatment at San Mateo WWTP
- Infrastructure: New WW conveyance to San Mateo WWTP
- Project Partners: San Mateo, Cal Water
- Nutrient Strategy: MBR treatment at San Mateo



Pros	Cons	Meets Water Supply Goal?	Meets Nutrient Removal Goal?
<ul style="list-style-type: none"><li>• More control over implementation timeline</li><li>• Avoids costly conveyance from San Mateo to SVCW</li></ul>	<ul style="list-style-type: none"><li>• TIN compliance dependent on San Mateo</li><li>• Larger capital investment</li><li>• Larger operating expenses</li></ul>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

# Summary – Viable Alternatives

Alt.	Description	Nutrient Compliance Strategy
1	Cloth Filtration Purple Pipe RW	Diversion + Optimization or Credit Purchase
2	MBR Purple Pipe RW	MBR Treatment Upgrade
3	DPR – PureWater Peninsula Add-on	MBR Treatment at San Mateo
4	DPR – Burlingame + San Mateo	MBR Treatment at San Mateo

# Other Considerations

- Extend RW service into San Mateo area?
- Horizontal Levee for reverse osmosis concentrate management?
  - Multi-benefit solution with nutrient and CEC treatment potential
- Monitor BACWA Water Quality Trading program developments
- Incorporate PFAS treatment?

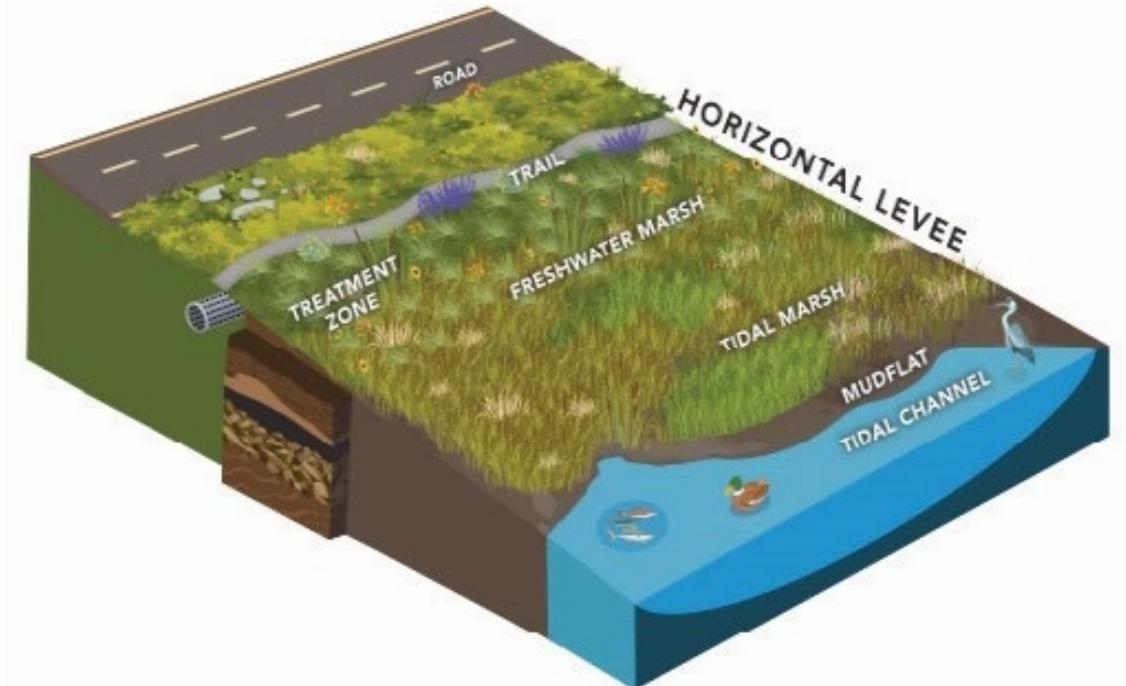


Image courtesy of the City of Palo Alto. [Palo Alto Horizontal Levee Pilot Project – City of Palo Alto, CA](#)

# Next Steps

- Additional analysis to complete alternatives development
- Further refine candidate alternatives
- Select three alternatives to take forward
- Prepare Feasibility Study and develop detailed cost estimates

# Q & A

- Thank you!