

# The Initial Step for Metropolitan's Regional Recycled Water Program

August 13, 2019



**SANITATION DISTRICTS OF LOS ANGELES COUNTY**



# OUTLINE

- Program Overview
- AWT Demonstration Plant
- Direct Potable Reuse (DPR) Considerations
- Demonstration Testing



# PROGRAM OVERVIEW

# PROGRAM BACKGROUND

- Pilot Scale Studies (2010-12)
- Progress Report (Sept. 2015)
- Board approval and appropriation for Demonstration Plant (Nov. 2015)
- Feasibility Study Report (Nov. 2016)
- Demonstration Plant
  - Completion of Final Design (Feb. 2017)
  - Construction Completion & Start-up (Sept. 2019)
- Conceptual Planning Studies Report (Feb. 2019)
- White Papers (July & Fall 2019)



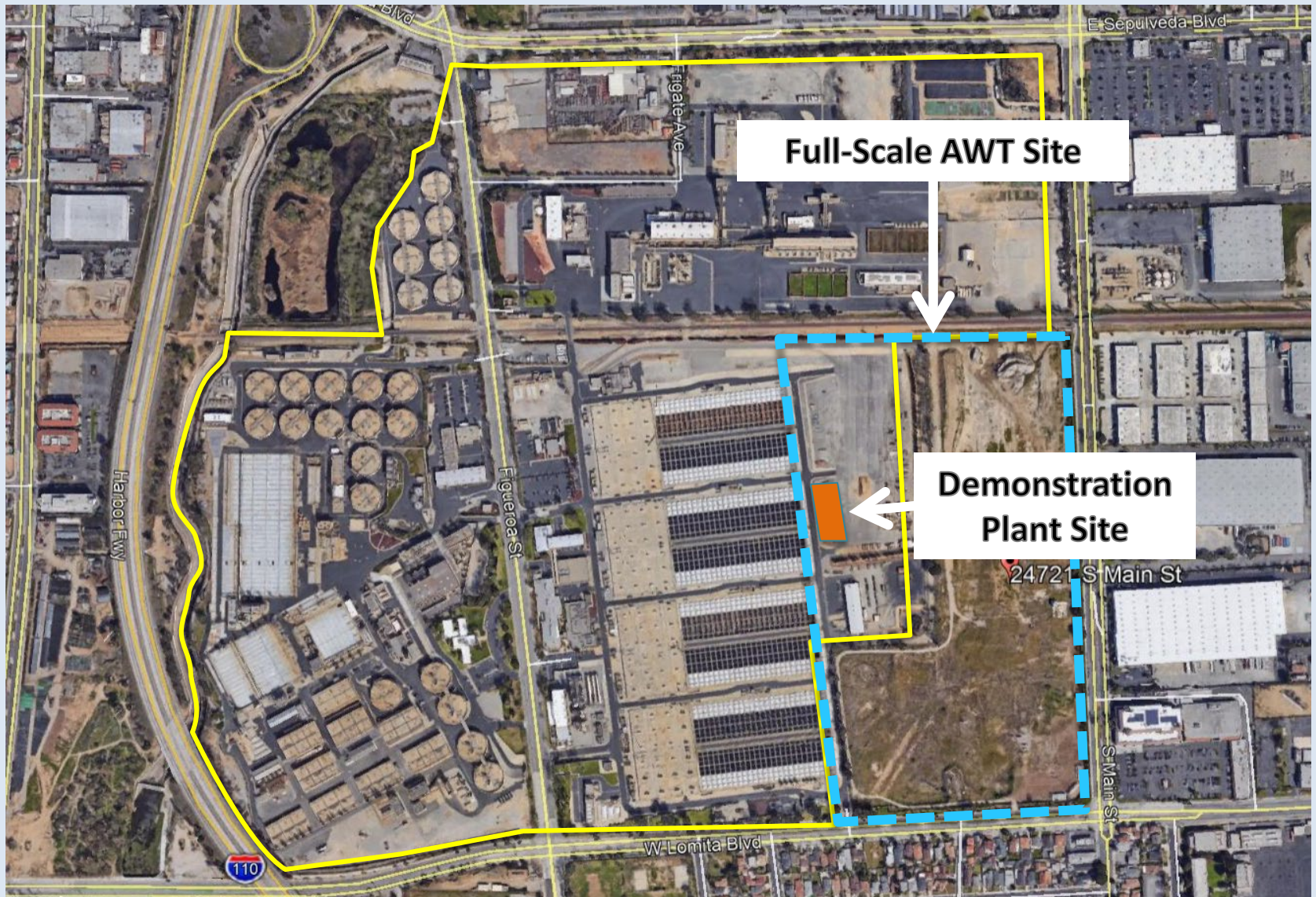
# PROGRAM APPROACH

- Primary objective indirect potable reuse for groundwater recharge
- Two-phase approach (100 mgd followed by 50 mgd or more)
- Built around backbone conveyance system
- Preserving flexibility for the future
  - DPR utilizing raw water augmentation
  - Additional effluent from JWPCP
  - Integration with City of Los Angeles and other purified water systems



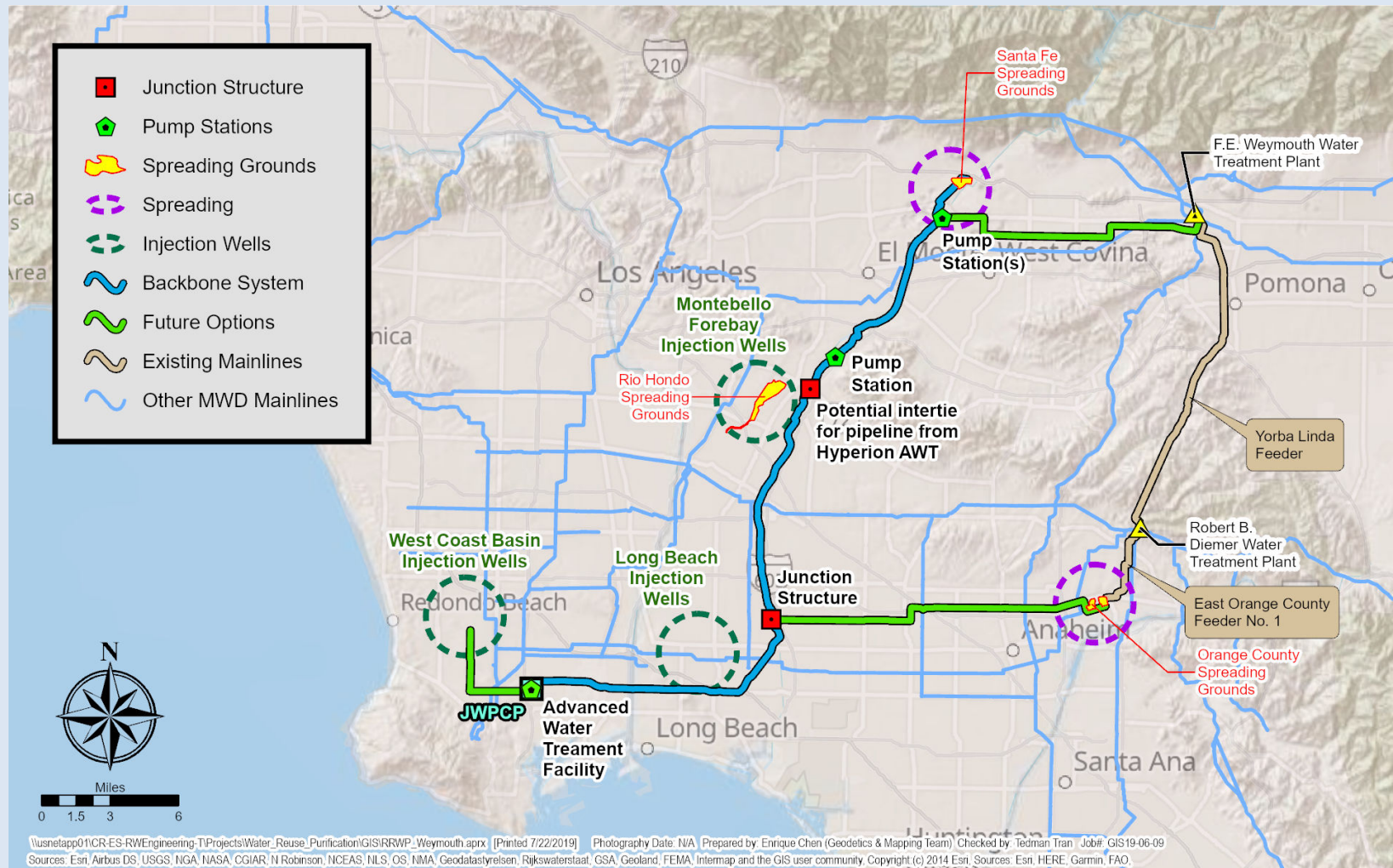


# AWT LOCATION AT JWPCP





# PROGRAM ELEMENTS



# IMPLEMENTATION OPTIONS

## Traditional Option

Programmatic EIR (PEIR)

## Accelerated Construction

Everything above plus:

- Tiered project-level document for 3.5-mile pipeline

## Accelerated Water Delivery

Everything above plus:

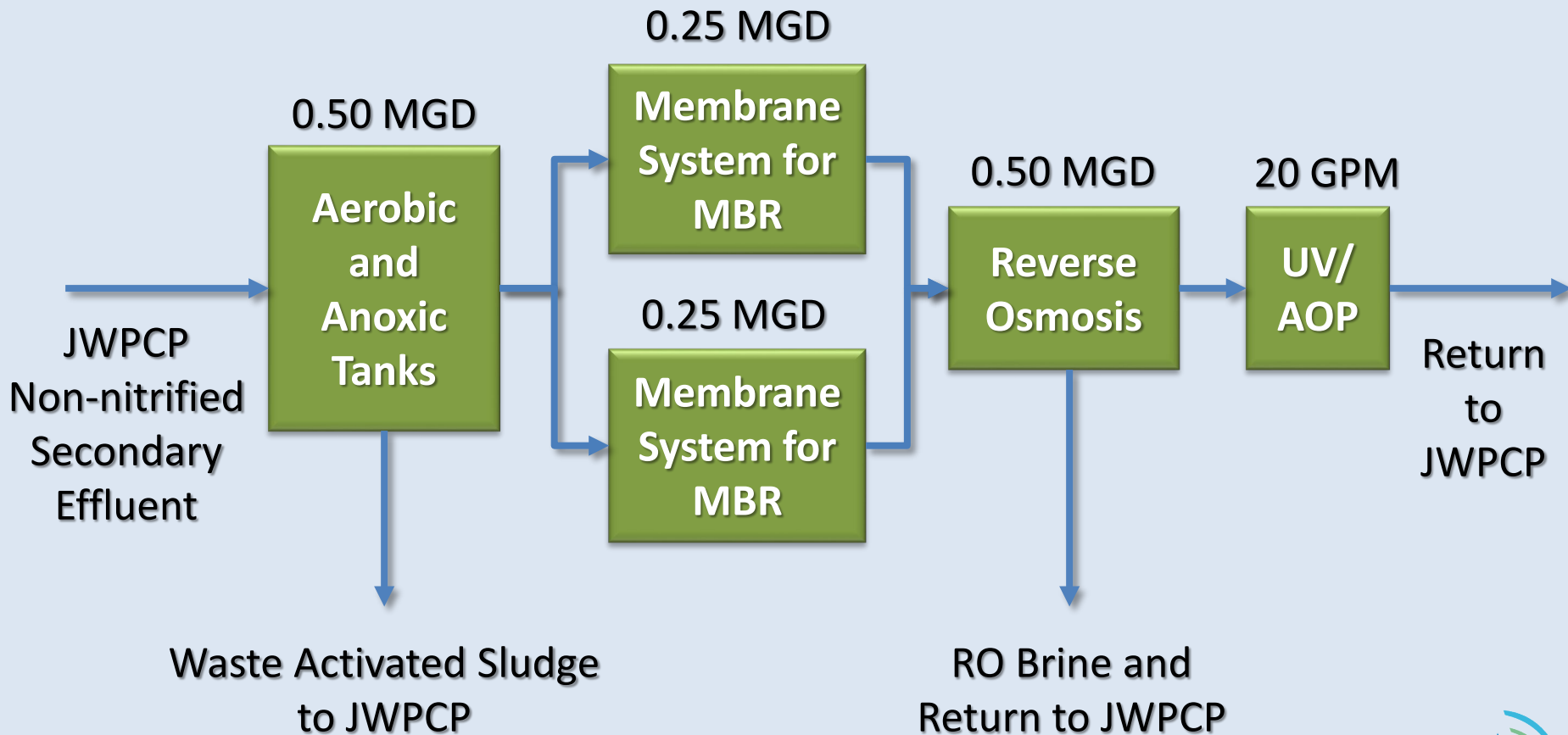
- Initial AWT plant (approx. 20 mgd)
- Conveyance to West Coast Basin



# ADVANCED WATER TREATMENT DEMONSTRATION PLANT

# DEMONSTRATION PROCESS

## 0.5-MGD Capacity





# Regional Recycled Water Advanced Purification Center

**Chemical Feed Systems**

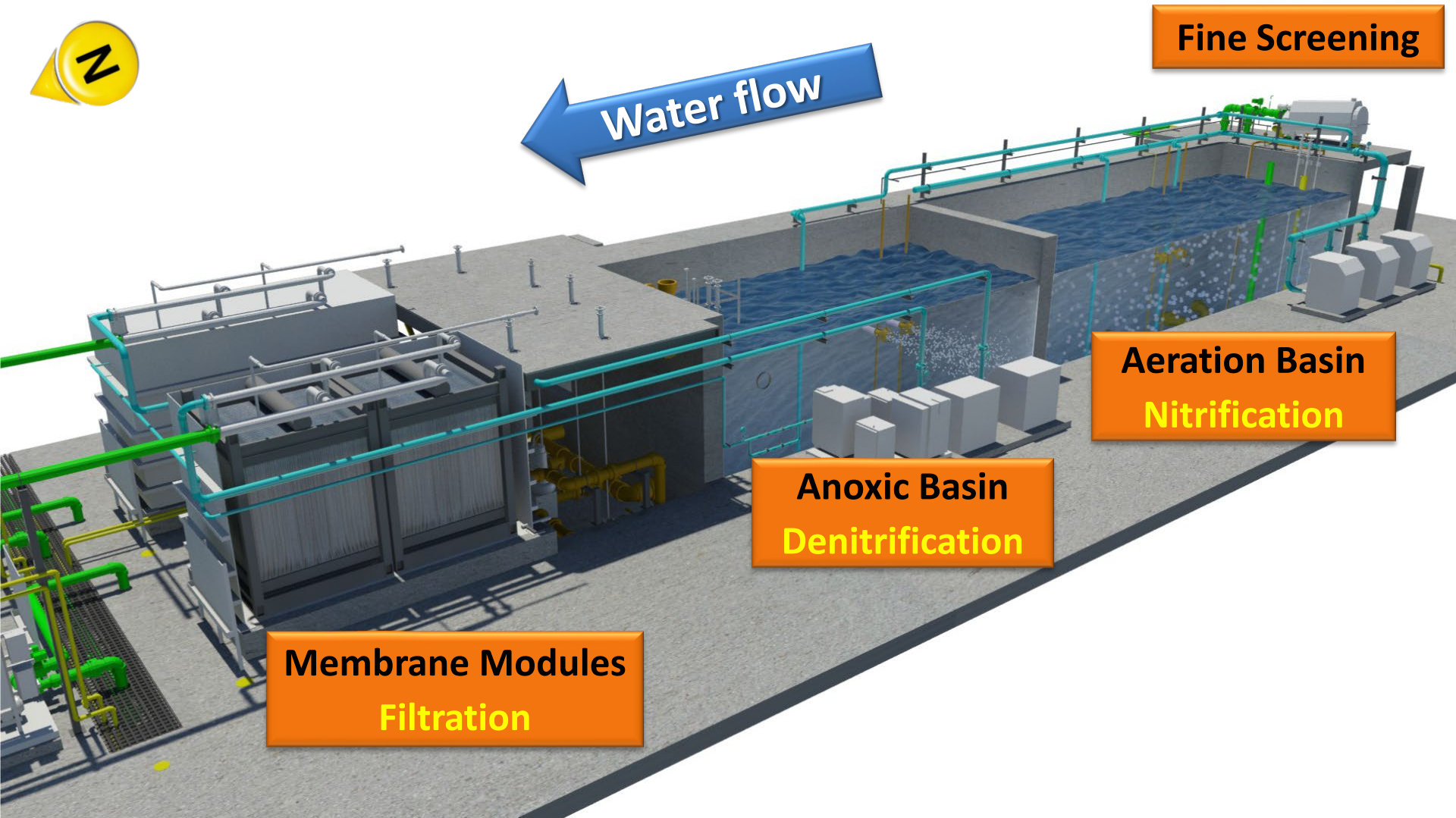
**Reverse  
Osmosis**

**UV/Advanced  
Oxidation Process**

**MBR – Aerobic  
and Anoxic  
Tanks**

**MBR –  
Membrane  
Modules**

# MBR AT DEMONSTRATION PLANT





# MBR FOR WATER REUSE

- Commonly used in non-potable reuse applications
- Limited use in potable reuse projects due to lack of pathogen removal regulatory credit to date
- Ongoing industry efforts to quantify pathogen removal through MBR
- Effective technology for treating JWPCP effluent
  - Removes pathogens
  - Manages nitrogen
  - Minimizes RO fouling
  - Removes biodegradable CECs





# MBR System





# MBR Membrane Modules

MBR-1  
(Suez)



MBR-2  
(Evoqua)





# FACILITY UNDER CONSTRUCTION (BEFORE CANOPY)

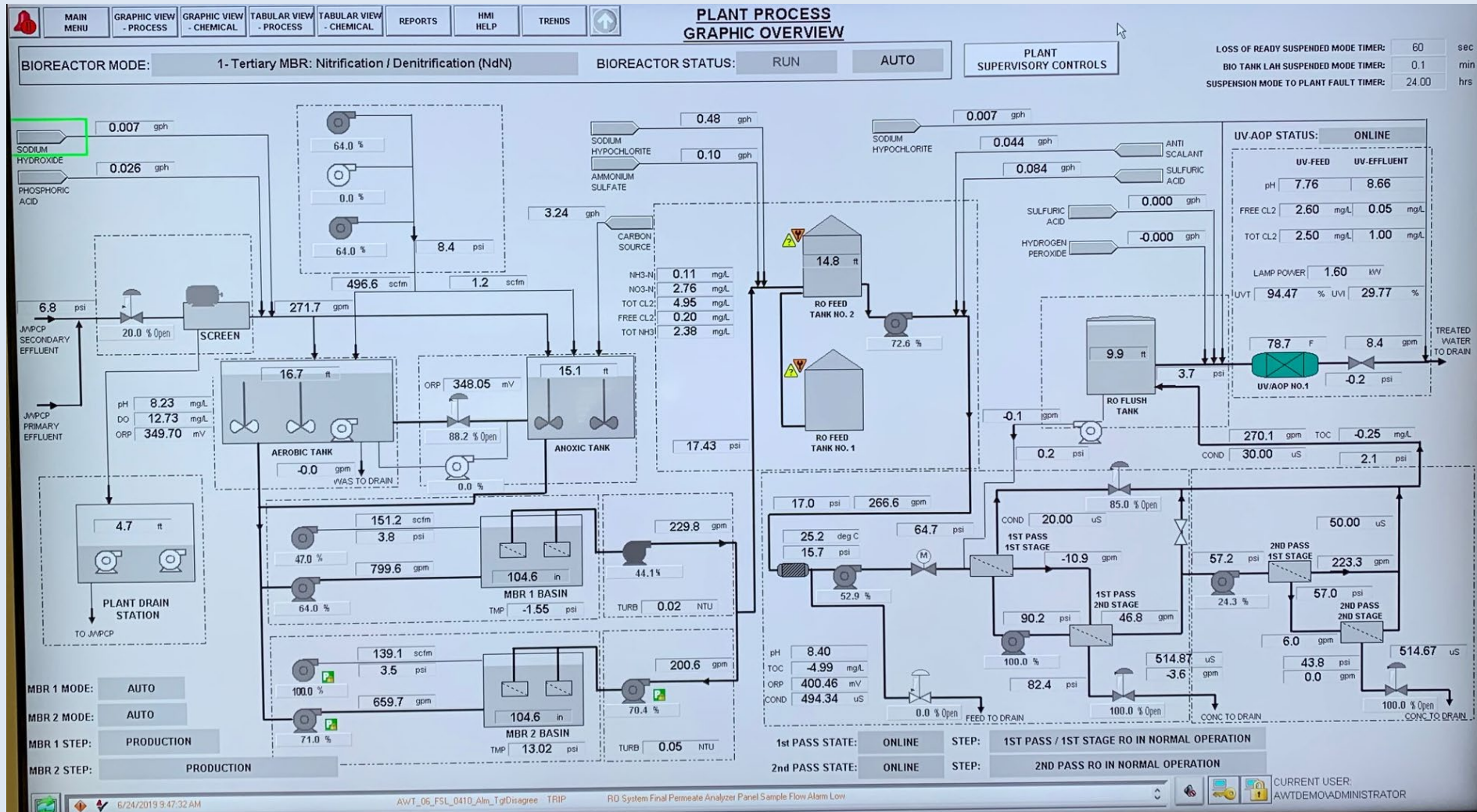




# CONSTRUCTION COMPLETE



# SYSTEM COMMISSIONING





# DIRECT POTABLE REUSE CONSIDERATIONS

# CALIFORNIA RECYCLED WATER REGULATIONS



Non-Potable  
Reuse

***Irrigation  
Industrial Uses***

2000



Indirect  
Potable Reuse

***Groundwater  
Augmentation***

2014



Indirect  
Potable Reuse

***Reservoir  
Water  
Augmentation***

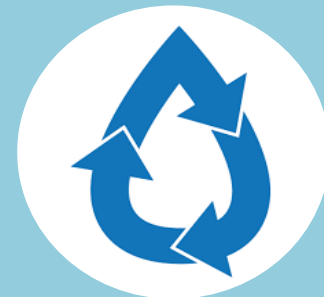
2018



Direct  
Potable Reuse

***Raw Water  
Augmentation***

2023



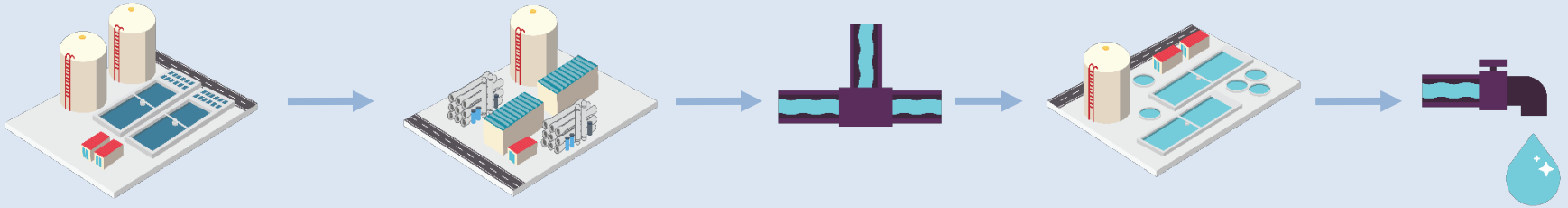
Direct  
Potable Reuse

***Treated  
Drinking Water  
Augmentation***

TBD

***Increasing requirements for public health protection***

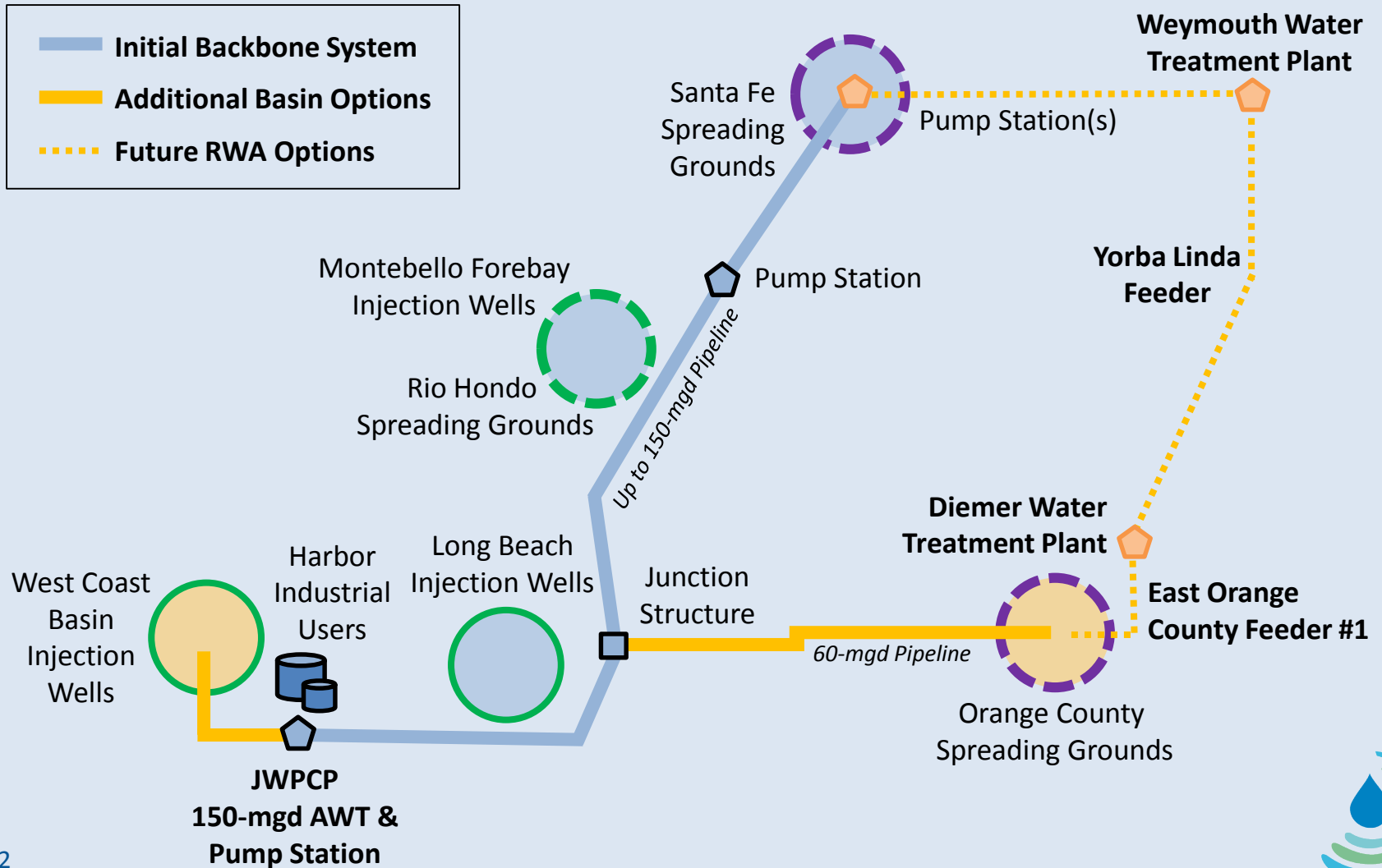
# RAW WATER AUGMENTATION



- Direct potable reuse (DPR) through **raw water augmentation (RWA)** is the placement of advanced treated water into a raw water conveyance system upstream of a drinking water treatment plant
- State Water Resources Control Board (State Board) is required to adopt uniform water recycling criteria for RWA by the end of 2023
  - Regulatory adoption could be delayed to mid-2025 depending on state of science at that time



# RAW WATER AUGMENTATION OPTIONS



# RWA CONSIDERATIONS AND ANTICIPATED REQUIREMENTS

- Enhanced source control and wastewater treatment optimization
- Higher levels of advanced treatment and treatment redundancy through multiple independent barriers
- More rigorous monitoring and enhanced tools to respond to “off-spec” events
- System integration that minimizes impacts on blended water quality





# TREATMENT FACILITY OPTIONS

- Additional RWA treatment processes could be:
  - Part of the AWT facility planned at JWPCP, or
  - At a potential satellite facility downstream; only flow to be used for RWA would be treated to more stringent requirements
- Further discussion with State Board is needed to determine potential acceptance of a satellite facility concept



# BLENDING SUPPLIES AT WEYMOUTH



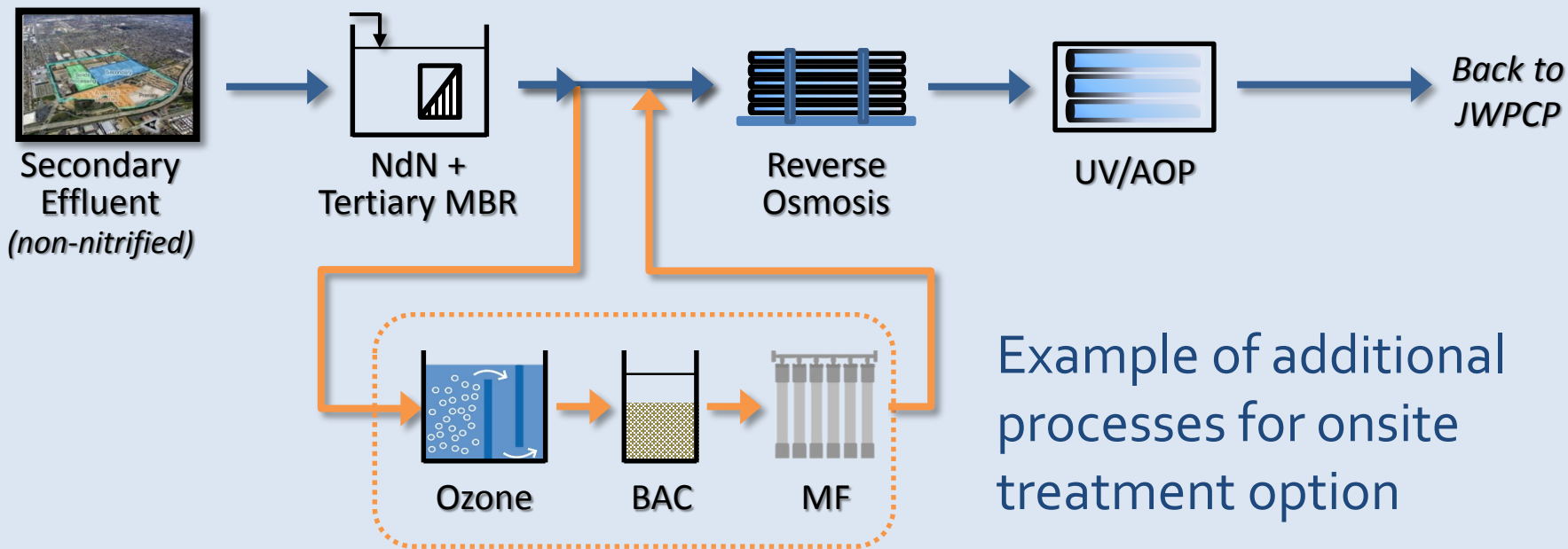
# DEMONSTRATION TESTING

# — DEMONSTRATION TESTING OBJECTIVES —

- Demonstrate efficacy of additional treatment processes for pathogen and chemical control
- Demonstrate appropriate treatment train (for onsite or satellite facility) to meet anticipated RWA regulatory requirements
- Develop and evaluate water quality criteria and blending strategies for advanced treated water upstream of drinking water treatment plants
- Develop, evaluate, and optimize analytical methods for detecting microbial and chemical contaminants



# DEMONSTRATION FACILITY TESTING OPTIONS FOR RWA

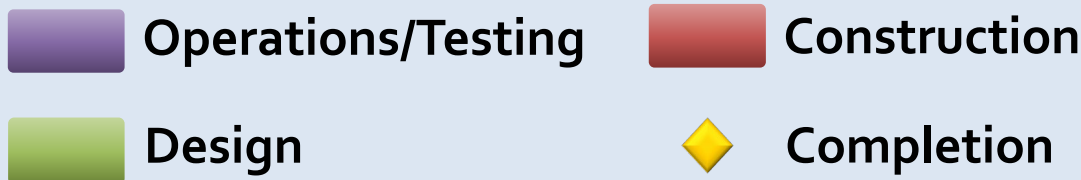
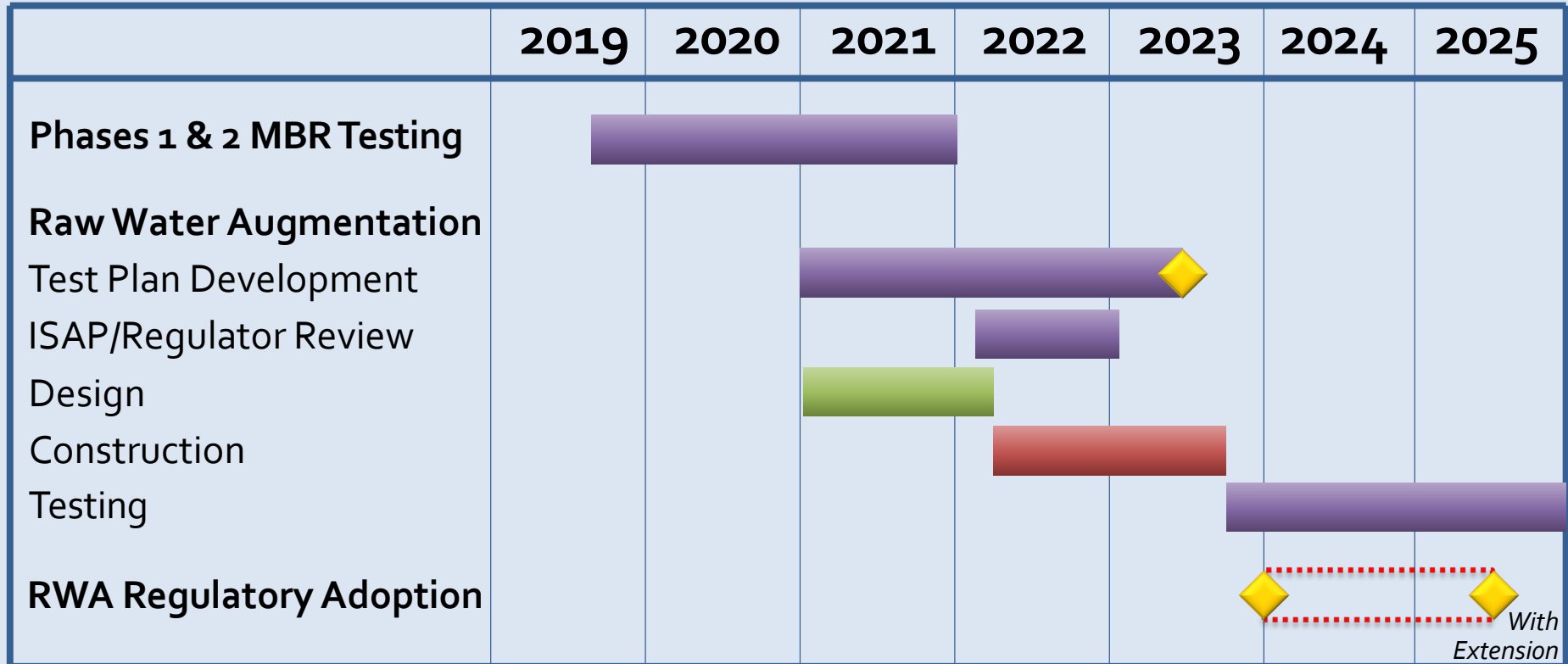


- Additional processes could be applied at pilot or demonstration scale in various treatment train configurations





# DEMONSTRATION FACILITY PRELIMINARY TESTING SCHEDULE



[mwdh2o.com/rrwp](http://mwdh2o.com/rrwp)



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