



Subcommittee on Pure Water Southern California and  
Regional Conveyance

# Assessment of Reuse Alternatives for Pure Water Southern California

Item 3c

September 26, 2023

# Topics Covered Today

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- Reuse Alternatives and Approach to Direct Potable Reuse
- Assessment of Groundwater Storage and Recovery to Metropolitan Feeders



# Reuse Alternatives for Pure Water Southern California

## *Questions received:*

- *Has Metropolitan considered Treated Water Augmentation, given proposed DPR regulations could now allow for it?*
- *Why do we need to take the PWSC water (from Carson) up to the Water Treatment Plant?*

## Response outline:

- California Recycled Water Regulations
- Progressive approach to DPR alternatives
- Considerations of DPR approaches
- Future opportunities to expand DPR approach

SWRCB, DDW

# California Recycled Water Regulations

*Expansion of planned reuse projects resulting from decades of research and advancement in monitoring, treatment technologies, and compliance.*



Non-Potable  
Reuse

***Irrigation  
Industrial Uses***

2000



Indirect  
Potable Reuse

***Groundwater  
Replenishment***

2014



Indirect  
Potable Reuse

***Surface Water  
Augmentation***

2018



Direct Potable  
Reuse

***Raw & Treated  
Water  
Augmentation***

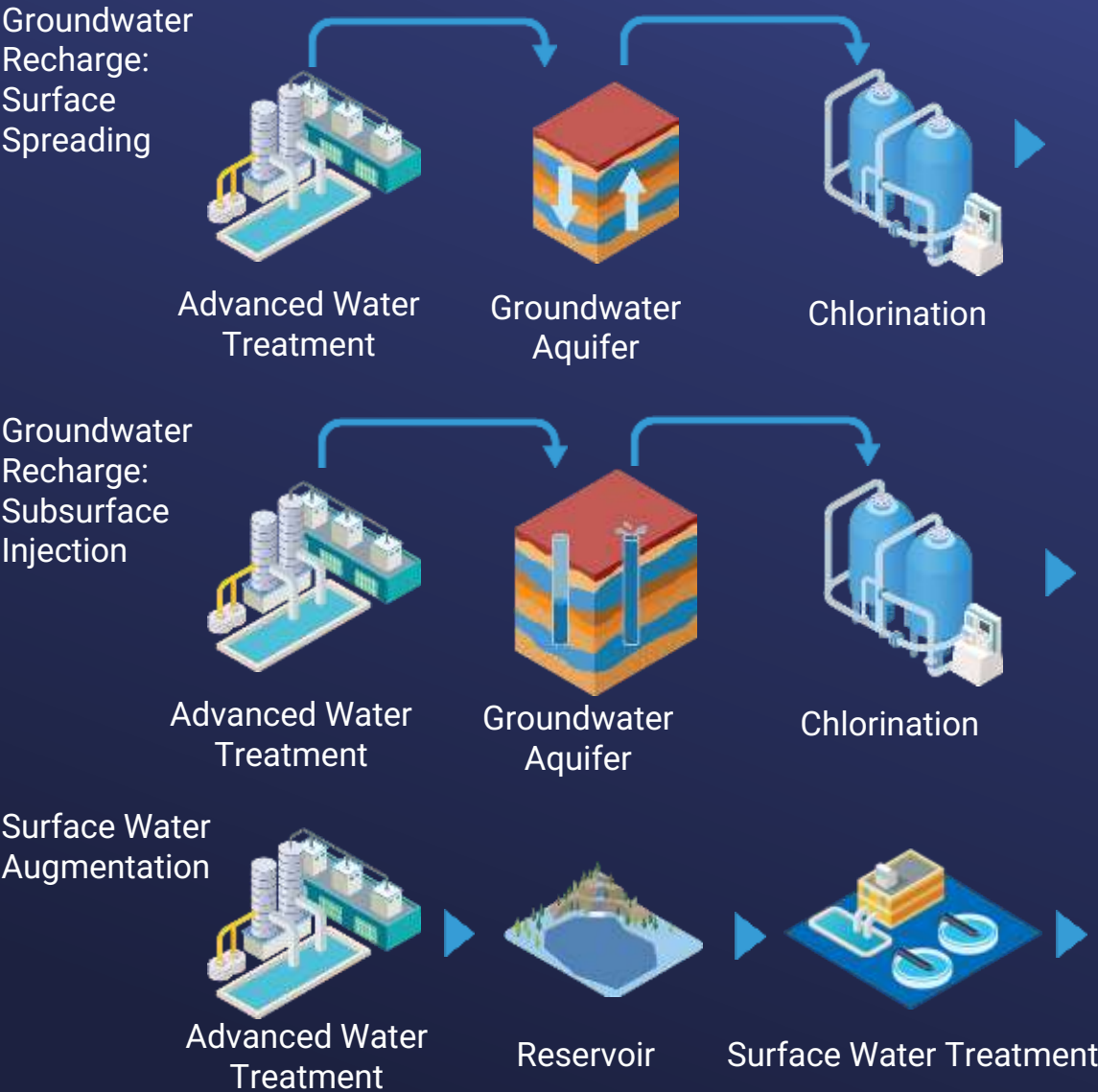
~2023/2024

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

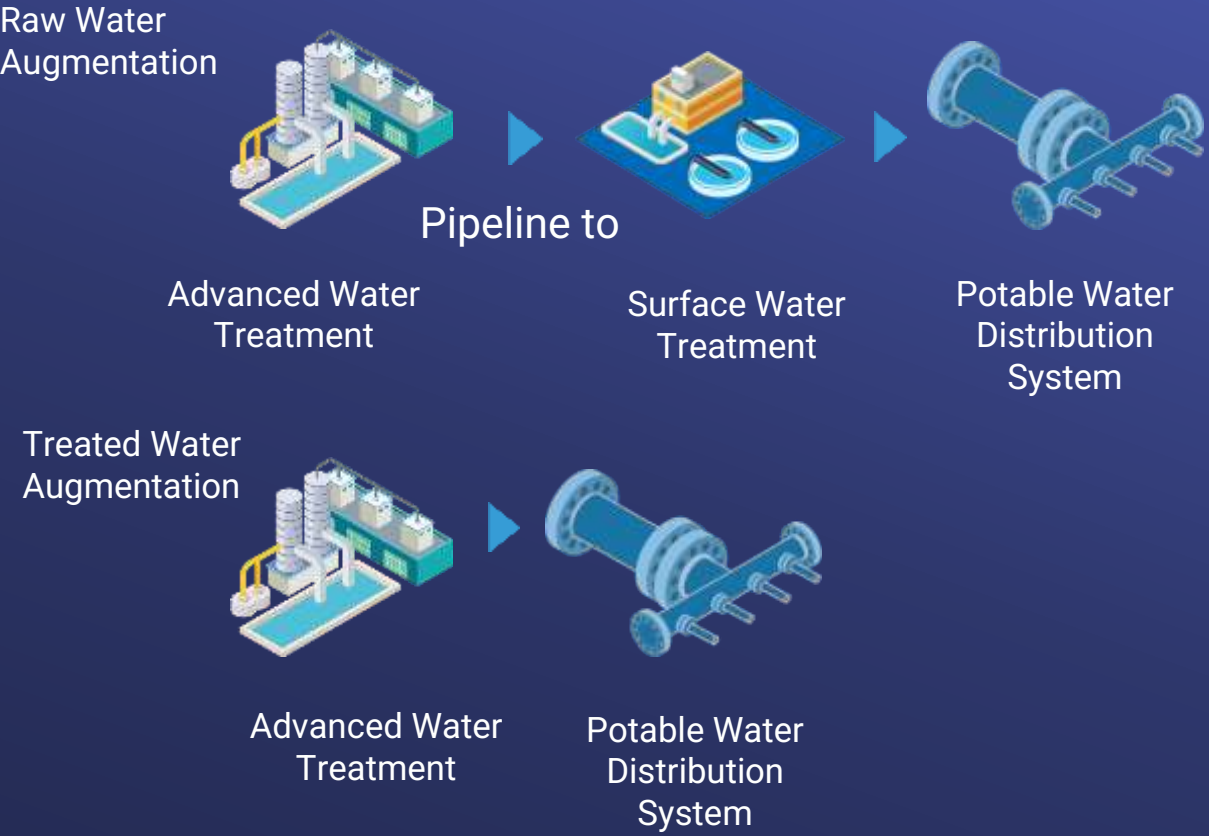


# Progressive Approach to PWSC Reuse Alternatives

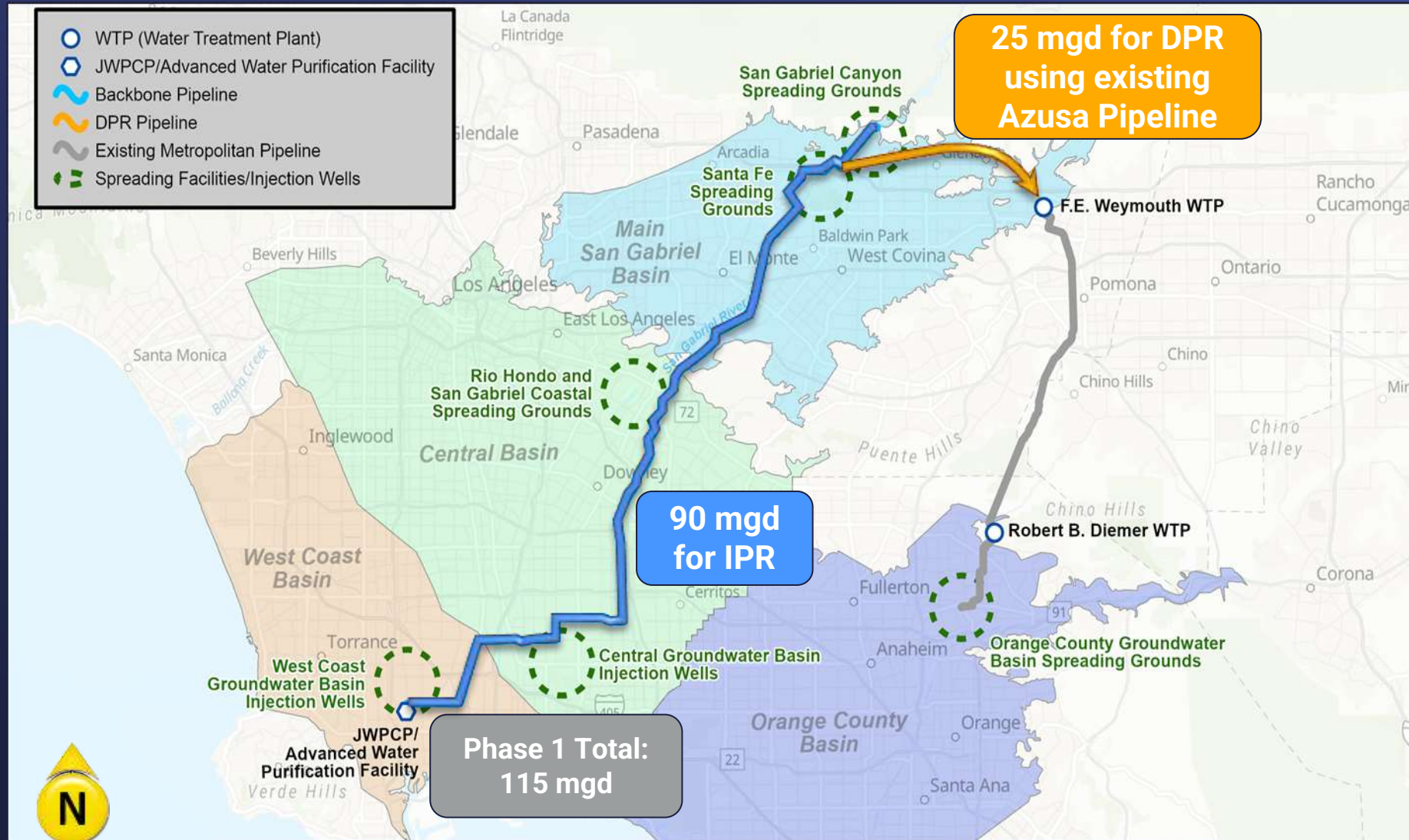
## Indirect Potable Reuse



## Direct Potable Reuse



# PWSC Program Overview – Phase 1 (25 mgd for DPR)



## Phase 1 DPR RWA Approach at Weymouth

Convey AWT water to  
Weymouth/Diemer;  
Blending opportunities  
with

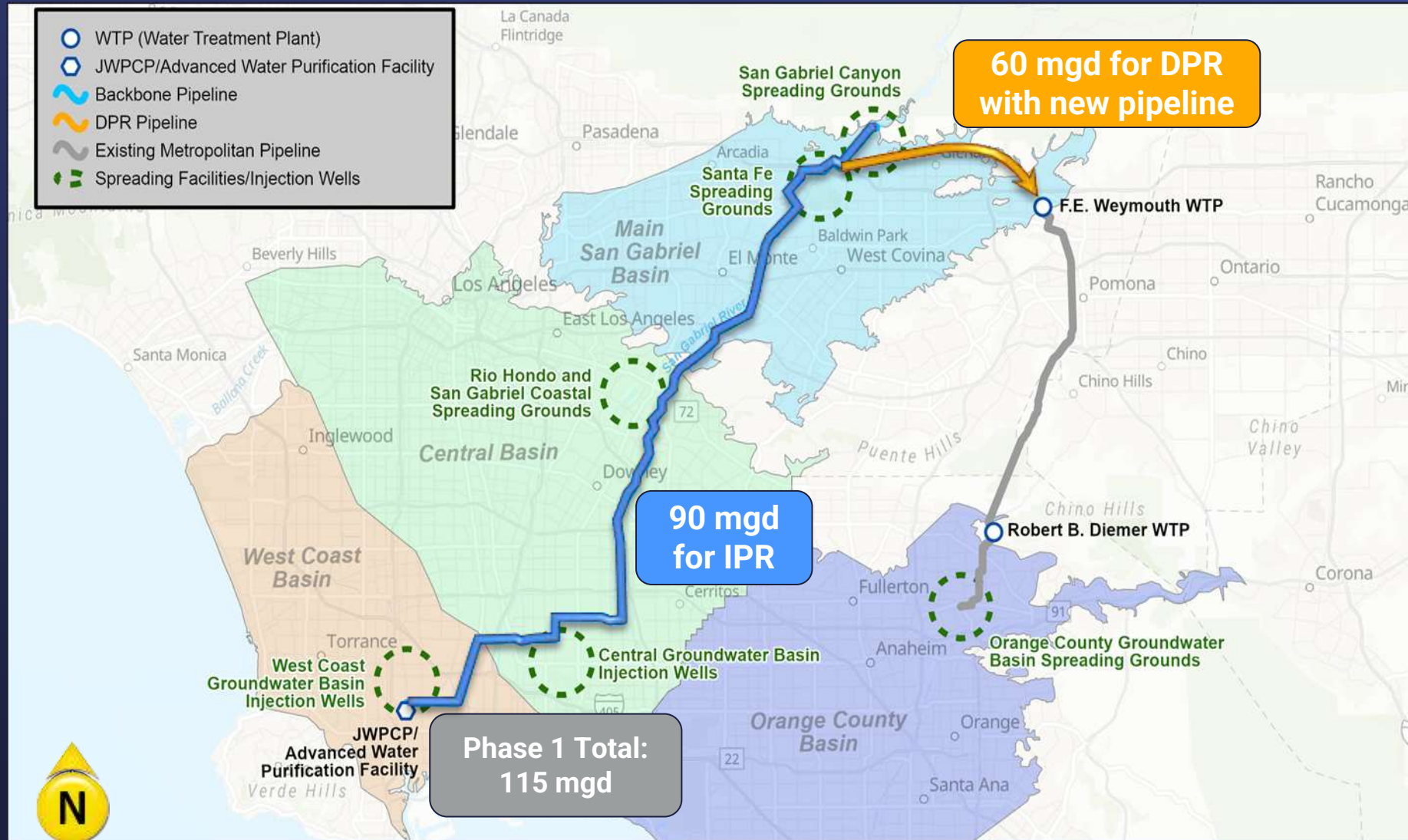
- CRA
- SWP
- <10% AWT

Additional treatment  
for regulatory pathogen  
control requirements

- Chlorine dioxide
- Ultraviolet light



# PWSC Program Overview – Phase 2 (60 mgd for DPR)



## Phase 2 DPR RWA Approach

New pipeline to Weymouth WTP needed; can also go to Diemer

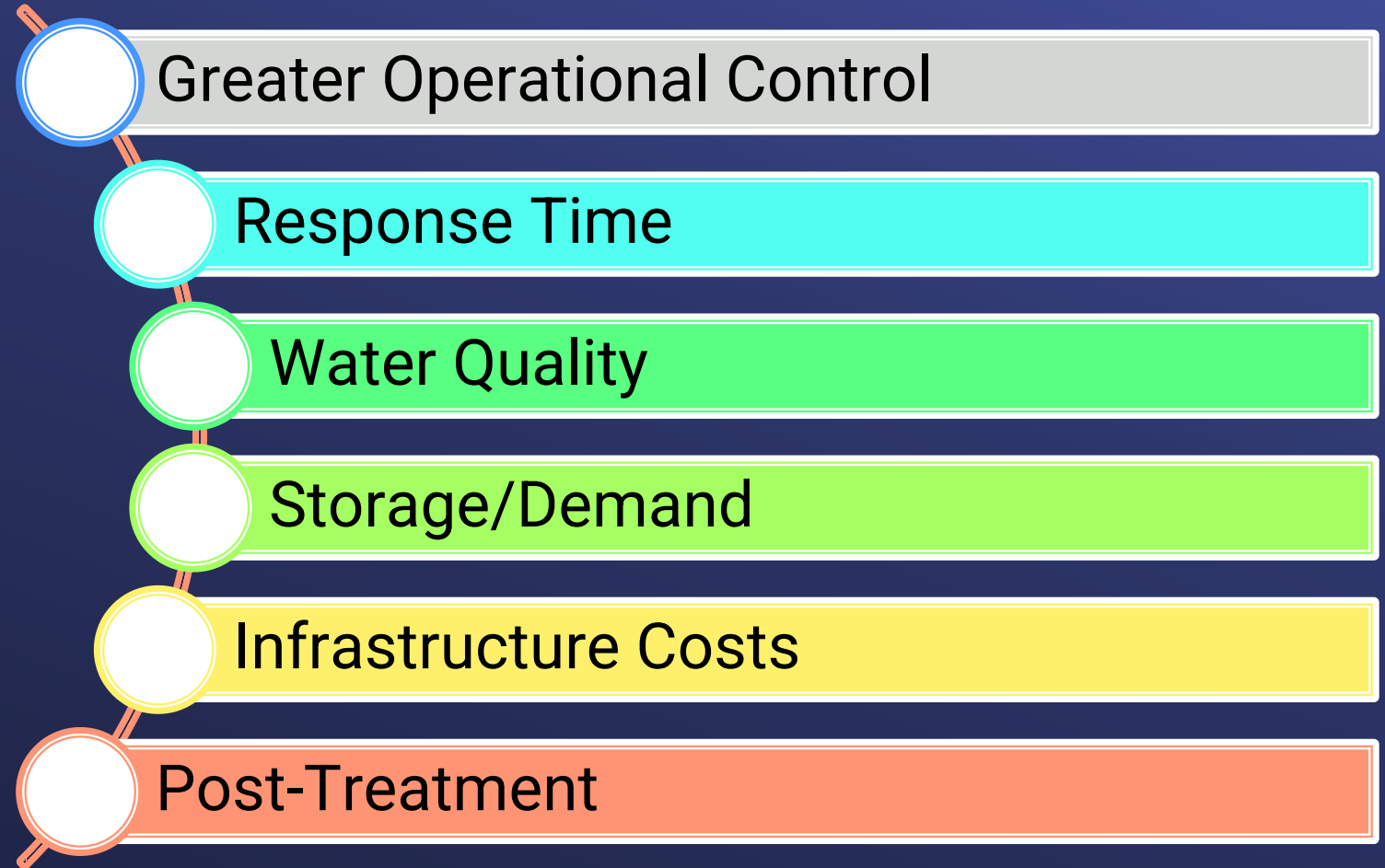
Increase in percent blend of AWT water (would be > 10%)

Triggers additional treatment for regulatory **pathogen and chemical** control requirements

- Process - TBD
- Location - TBD

## CA Direct Potable Reuse Regulations

# Considerations of Direct Potable Reuse





# Regulatory Requirements Balanced with Project Framework for Potable Reuse Approach

Projects must ensure  
Safe Water  
and  
Protection of Public Health

Reliability

Redundancy

Robustness

Resilience

*Credit: The Four R's, Pecson et al, JAWWA, 2015*



## Direct Potable Reuse Raw Water Augmentation

*RWA – planned introduction of recycled water into a raw water supply immediately upstream of a Surface Water Treatment Plant*

# Benefits to PWSC pursuing RWA

- Provides Regional Accessibility
  - Leverages existing infrastructure
  - Potential integration with other reuse projects
- Increases Operational Control
  - Allows additional buffer in pipeline
  - Expands response time
  - Blending opportunities
  - Advantages and value of Surface Water Treatment Plant operations
    - Enhances water quality and process performance
    - Balances water quality objectives

# Considerations for Treated Water Augmentation

Response Time  
(limited)

Level of Treatment

Hydraulics/  
Demands

Control Logic

Storage Needs  
(additional)

Monitoring  
(real-time)

Risk Contingency

Post-Treatment



# Next Steps for DPR Development



- Continue to pursue flexible/hybrid RWA approach for Phase 1
- Plan for additional testing and modifications at Demonstration Plant to help inform DPR full-scale operations
- Engage in DPR research/development and monitor/assess lessons learned with reuse sector
  - In consideration for future Treated Water Augmentation opportunities

# Reuse Alternatives for Pure Water Southern California

## Assessment of Groundwater Storage and Recovery to Metropolitan Feeders

# Assessment of Groundwater Storage and Recovery to Metropolitan Feeders

## *Question received:*

- *Could the PWSC program expand the use groundwater basins to eliminate the need for a new pipeline to Weymouth WTP?*

## Response outline:

- Current Demands for Pure Water Southern California
- Description of Groundwater Storage and Recovery to Metropolitan Feeder Alternative
- Groundwater Storage and Recovery to Metropolitan Considerations
- Constraints Analysis



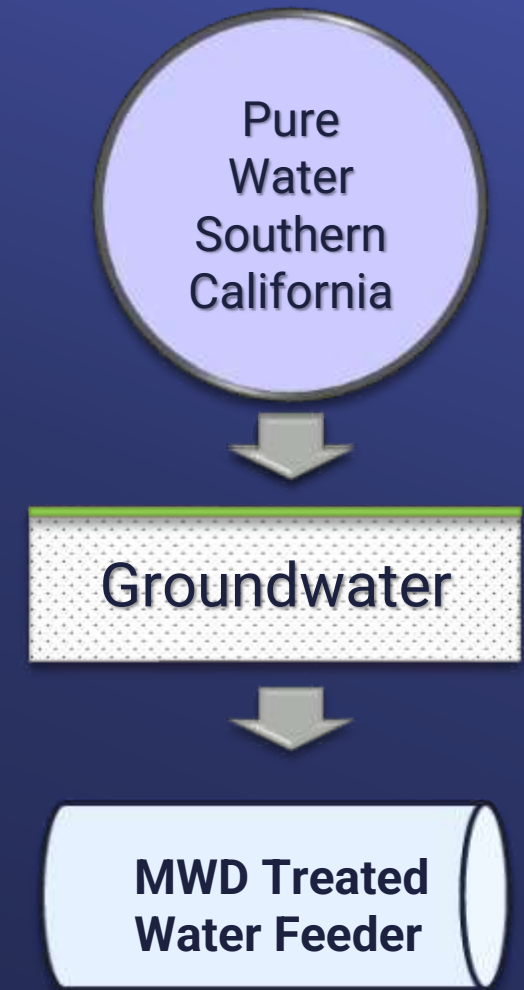
# Current Demands for Pure Water Southern California

- Phase 1 (115 mgd)
  - 35 mgd in Central/West Coast Basins
  - 55 mgd in Main SG Basin
  - 25 mgd RWA @ Weymouth and/or Diemer via Azusa Pipeline
- Phase 2 (35 mgd)
  - 35 mgd RWA @ Weymouth and/or Diemer



# Description of Groundwater Storage and Recovery to Metropolitan Feeder Alternative

- Current demands for groundwater replenishment are accounted for in Phase 1
- Groundwater storage and recovery to Metropolitan feeders in Phase 2
  - Pure Water delivered for groundwater storage in West Coast, Central, or Main San Gabriel Basins
  - Stored water extracted and conveyed to Metropolitan treated water feeders



# Groundwater Storage and Recovery to Metropolitan Considerations

What are the considerations for the groundwater storage and recovery to Metropolitan Feeders alternative?

Demand in Feeders

Recharge & Extraction Capacity

Water Quality

Groundwater Impacts



# Potential Groundwater-Metropolitan Feeder Tie-in Locations

## Middle Feeder @ San Gabriel River

- Capacity: 161.5 mgd
- Median Demand: 42 mgd

## Lower Feeder @ San Gabriel River

- Capacity: 161.5 mgd
- Median Demand: 77 mgd

## Second Lower Feeder @ Alameda St.

- Capacity: 87 mgd
- Median Demand: 30 mgd



# Constraints Analysis

## Demand Assessment

- Limited downstream demand in Metropolitan feeders, especially during low demand periods
- Limited need for additional recharge. Would potentially need to leave in storage until dry year

## Recharge & Extraction Capacity

- Limited additional recharge capacity
- Basins are currently near or above upper operating range
- Additional injection/extraction wells are required

## Groundwater Impacts

- New injection and extraction wells could impact travel time estimates
- Local agency ownership and operation of new wells
- Potential water rights issues

## Water Quality

- Several constituents in groundwater exceed ambient quality in Metropolitan feeders, which would require treatment

# Next Steps



- Continue to pursue flexible/hybrid RWA for Phase 1
- Evaluate groundwater storage and recovery to Metropolitan feeders prior to making a future decision on approach to DPR in Phase 2



