Montecito Enhanced Recycled Water Feasibility Study: Draft Executive Summary Discussion

August 30, 2022

Agenda

- Project Overview
- Summary of Technical Memo Contents
- Reuse Project Overviews
- Evaluation Criteria
- Preliminary Project Scoring Results

Project Overview

Project Purpose: provide the Montecito Sanitary District (MSD) and the Montecito Water District (MWD) with clear direction for implementation of water reuse.

Four approaches analyzed for water reuse:

- **Montecito Non-Potable Reuse (NPR)** – local project producing tertiary quality water for irrigation of large commercial and institutional landscapes in Montecito.
- **Carpinteria Indirect Potable Reuse (IPR)** – regional project partnering with neighboring special district(s) and the use of the Carpinteria Groundwater Basin.
- **Montecito Direct Potable Reuse (DPR)** – local project in Montecito utilizing treatment at Montecito Sanitary District and raw water augmentation at the Montecito Water District water treatment facility.
- **Santa Barbara DPR** – regional project partnering with the City of Santa Barbara involving raw water augmentation at the City's regional Cater Water Treatment Facility.

Summary of Technical Memo Contents

Technical Memo	Key Takeaways
TM1: MSD Flow and NPDES Permit Analysis	• The future average future dry weather flow (ADWF) is 0.7 mgd. • Equalization may be needed to manage peak wet weather flows, depending upon future water reuse project components.
TM2: CSD and Santa Barbara WRP Capacity	• Santa Barbara can readily accept the addition of an equalized flow of 0.7 mgd of untreated wastewater. Higher flows with less EQ can be likely managed. • Carpinteria appears to have WWTP capacity to accept fully equalized flow of 0.7 mgd of untreated wastewater. However, addition of this flow will have a significant impact on overall treatment capacity.
TM3: Condition Assessment	• There are assets within the MSD plant that are in need of repair, some of which in the very near term. There are also many aspects of the MSD plant that are doing well and repair is minimal. • Repairs/replacements are Urgent (0-2 years), Priority (3-5 years), Short Term (6-10 years), Mid-Term (11-20 years), Long Term (20+ years)
TM4: Evaluation of MSD Performance and Capacity	• The capacity evaluation showed that all MSD processes meet the projected average annual flow of 0.7 mgd.
TM5: Cost for Rehabilitation and 30-Year Operations	• MSD will need to implement an estimated ~$7.7M of capital improvements over the next 30 years to maintain current treatment and operations at the plant, of which approximately ~$5.3M will occur within the next 10 years.

Summary of Technical Memo Contents

Technical Memo	Key Takeaways
TM6: Cost for MBR Construction and 30-Year Operations	• Alternative 1: New MBR facilities would require several new structures that could be built in the open area on the western end of the WWTP property. • Alternative 2: Existing structures could be retrofit to fit the new bioreactor and membrane tanks. Based on the condition assessment results, concrete repair would be required. • Estimated construction costs are similar for the two alternatives.
TM7: Oil and Grease Treatment at MSD	• Additional treatment for O&G is a necessary precursor to water reuse to protect downstream membranes. • Secondary DAF is more cost effective than primary DAF.
TM8: Recycled Water Treatment Options at MSD.	• A reuse facility at MSD WWTP could be located in the open area at the western end of the plant. • Costs for treatment systems range from <$10M for a non-potable reuse system to >$30M for a direct potable reuse system.
TM9: Infrastructure Analysis	• The costs for distributed infrastructure (pipelines, pump stations) are significant, ranging from <$15M to >$40M.

Executive Summary

- Brings information from all TMs together, including flows, costs, and layouts
- Provides more complete picture of each project type
- Compares projects across evaluation criteria to determine best project(s)

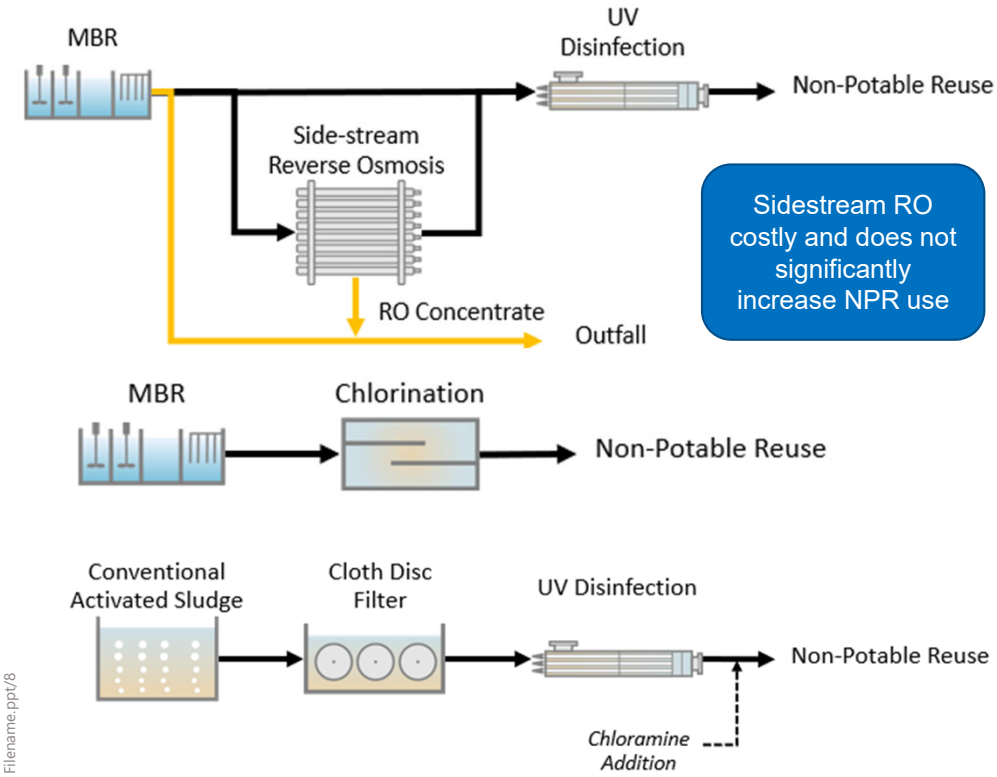
Reuse Project Overviews

Montecito Non-Potable Reuse

Production: **128 AFY (MWD)**

Use: **Irrigation**

POTENTIAL TREATMENT TRAINS:



Sidestream RO costly and does not significantly increase NPR use

BENEFITS	CHALLENGES AND RISKS
• Agency controlled, drought-resistant water supply • Lower capital cost than potable reuse alternatives • Operationally less complex than potable reuse • Near term implementation	• Limited users • Minimal demand, thus minimal reuse • Need for larger irrigation customers to accept recycled water • Requires significant conveyance infrastructure • Some smaller users may want lower salt concentrations and thus may require sidestream RO • High unit cost

Montecito Non-Potable Reuse

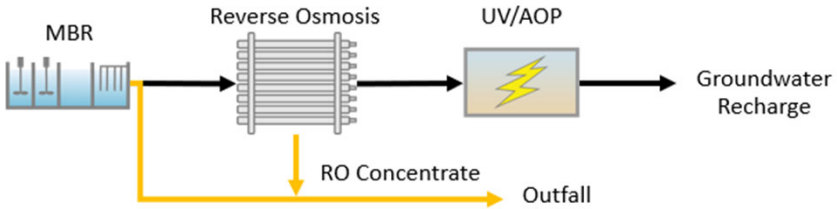
Carpinteria IPR: Storage in Carp Basin

WW Treatment in Montecito | Purification in Montecito | Injection in Carpinteria

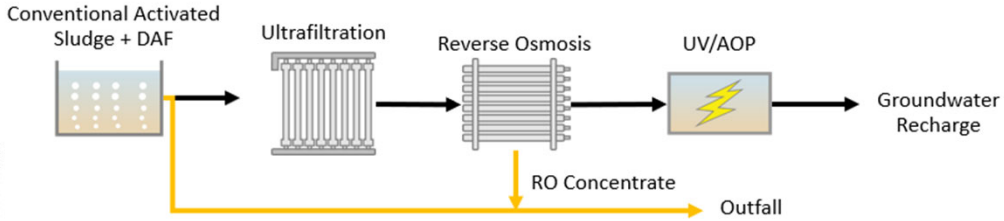
Production: **504 AFY (MWD) 560 AFY (MWD & CVWD)**

Use: **IPR**

TREATMENT TRAIN A.



TREATMENT TRAIN B.



BENEFITS

- Maximizes reuse of available MSD wastewater
- Minimizes ocean discharge
- Utilizes the potable distribution system for delivery
- Provides drought-resistant supply of drinking water
- Provides seasonal storage benefit

CHALLENGES AND RISKS

- Requires interagency coordination with Carpinteria and Groundwater Sustainability Agency
- Requires significant transmission infrastructure
- Requires further groundwater modeling to confirm storage capability
- Involves more complex operations of an AWPF

Carpinteria Indirect Potable Reuse: Purified Water from Montecito

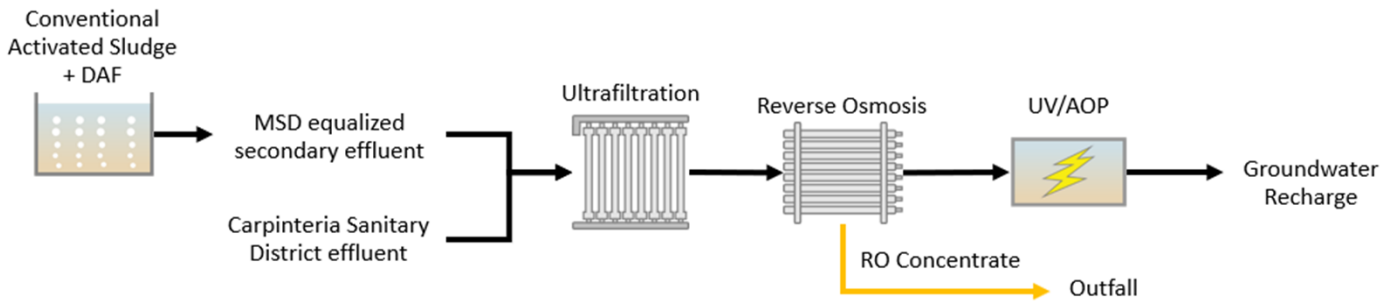
Carpinteria IPR: Purification in Carpinteria

Production: **504 AFY (MWD) & 1,792 AFY (MWD and CVWD)**

Use: **IPR**

WW Treatment in Montecito | Purification in Carpinteria | Injection in Carpinteria

PROJECT CONFIGURATION



This project builds on existing Carpinteria IPR project to create a larger regional project

BENEFITS

- Achieves some economy of scale
- Does not impact CSD WWTP capacity
- Reduces operational complexity for MSD/MWD
- Maximizes reuse of available MSD wastewater
- Minimizes ocean discharge
- Utilizes the potable distribution system for delivery
- Provides drought-resistant supply of drinking water
- Provides seasonal storage benefit

CHALLENGES AND RISKS

- Requires interagency coordination with Carpinteria and Groundwater Sustainability Agency
- Requires significant transmission infrastructure
- Potential public concern with Montecito's wastewater going to Carpinteria (via ROC)

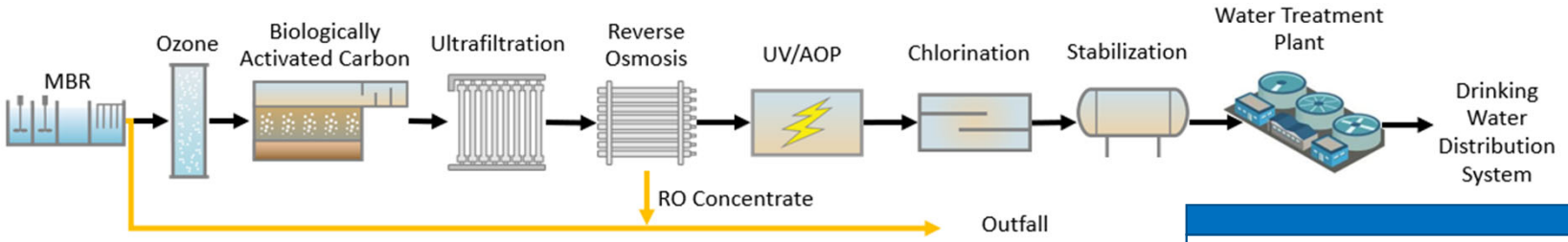
Carpinteria Indirect Potable Reuse: Secondary Effluent from Montecito

Montecito Direct Potable Reuse

Production: 560 AFY (MWD)

Use: DPR

TREATMENT TRAIN A. Using MBR



TREATMENT TRAIN B. Using conventional activated sludge + DAF

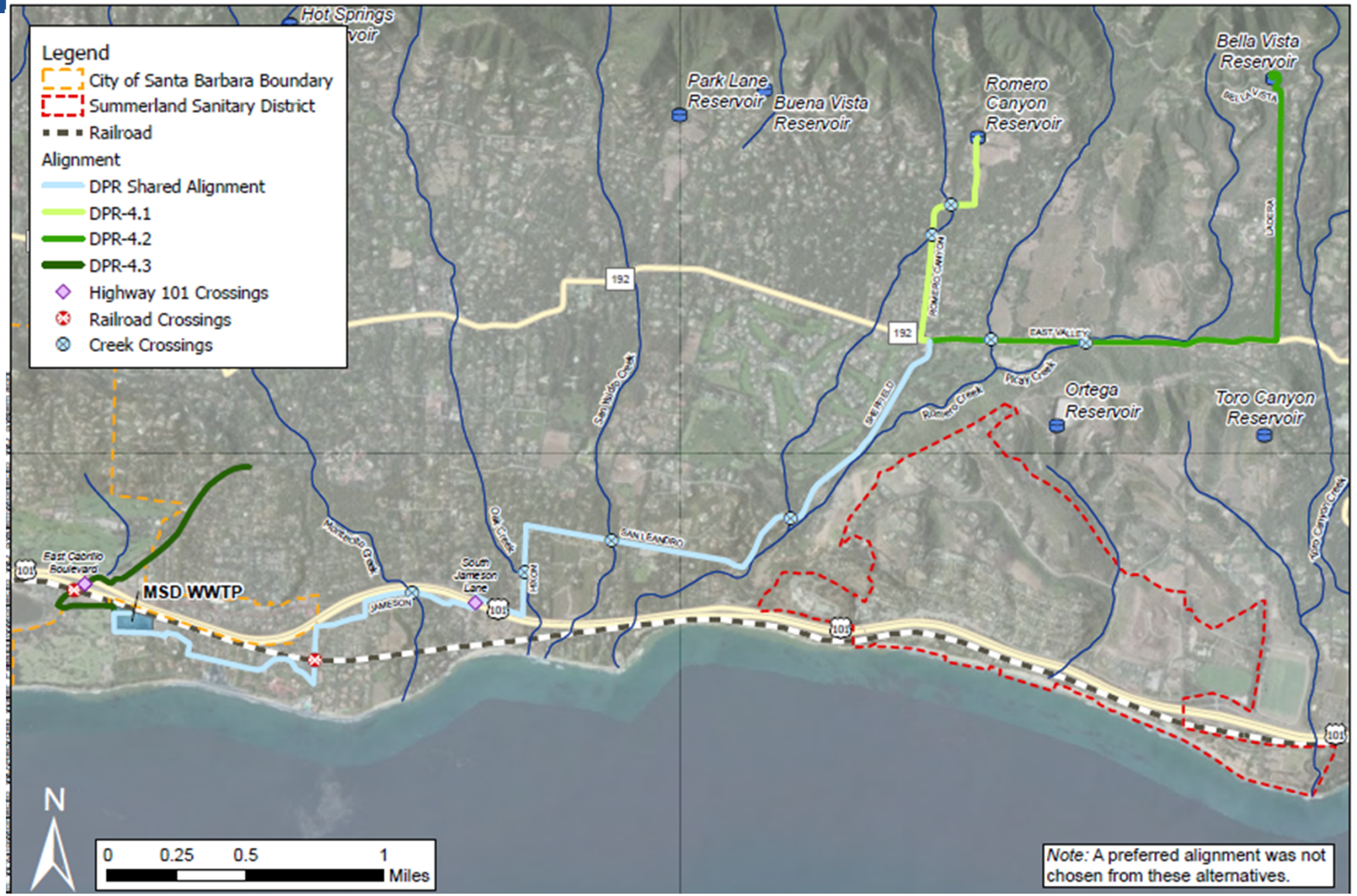
BENEFITS

- Provides agency controlled, drought-resistant supply of drinking water
- Maximizes reuse of available MSD wastewater
- Minimizes ocean discharge
- Utilizes the potable distribution system for delivery

CHALLENGES AND RISKS

- Significantly more complex operation of AWPF
- Requires real time use
- Potential water loss during periods when desal and DPR combined flow exceed demand
- Must meet extensive regulatory requirements, including technical and managerial capacity
- Public engagement and acceptance

Montecito Direct Potable Reuse



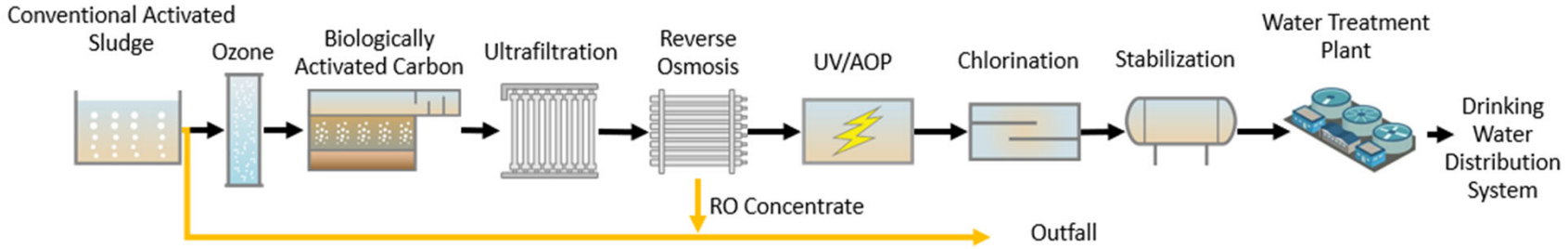
Santa Barbara Direct Potable Reuse Pretreatment Options Dictated by Pipeline Challenges (and Costs)

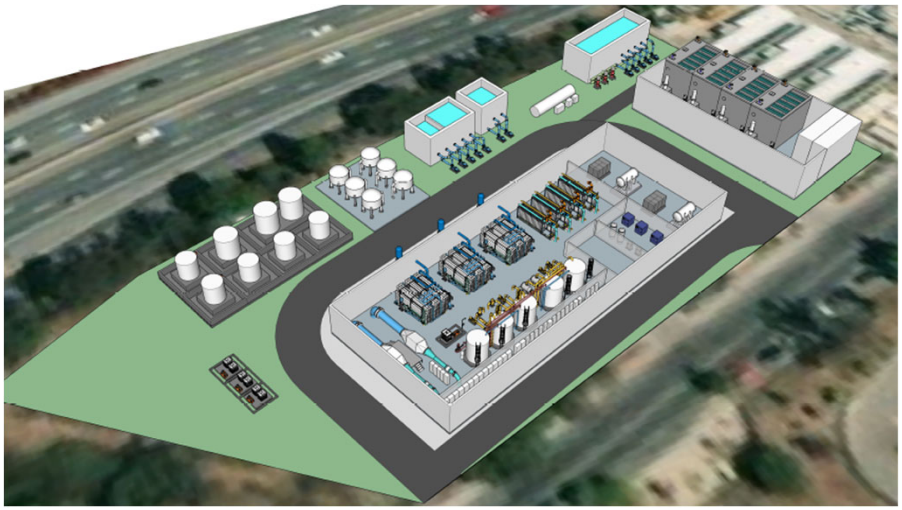
Santa Barbara Direct Potable Reuse

Production: 560 (MWD) 6,945 AFY or 4,145 AFY (MWD and Santa Barbara)

This smaller project is more realistic, minimizing assets that sit idle

Use: DPR





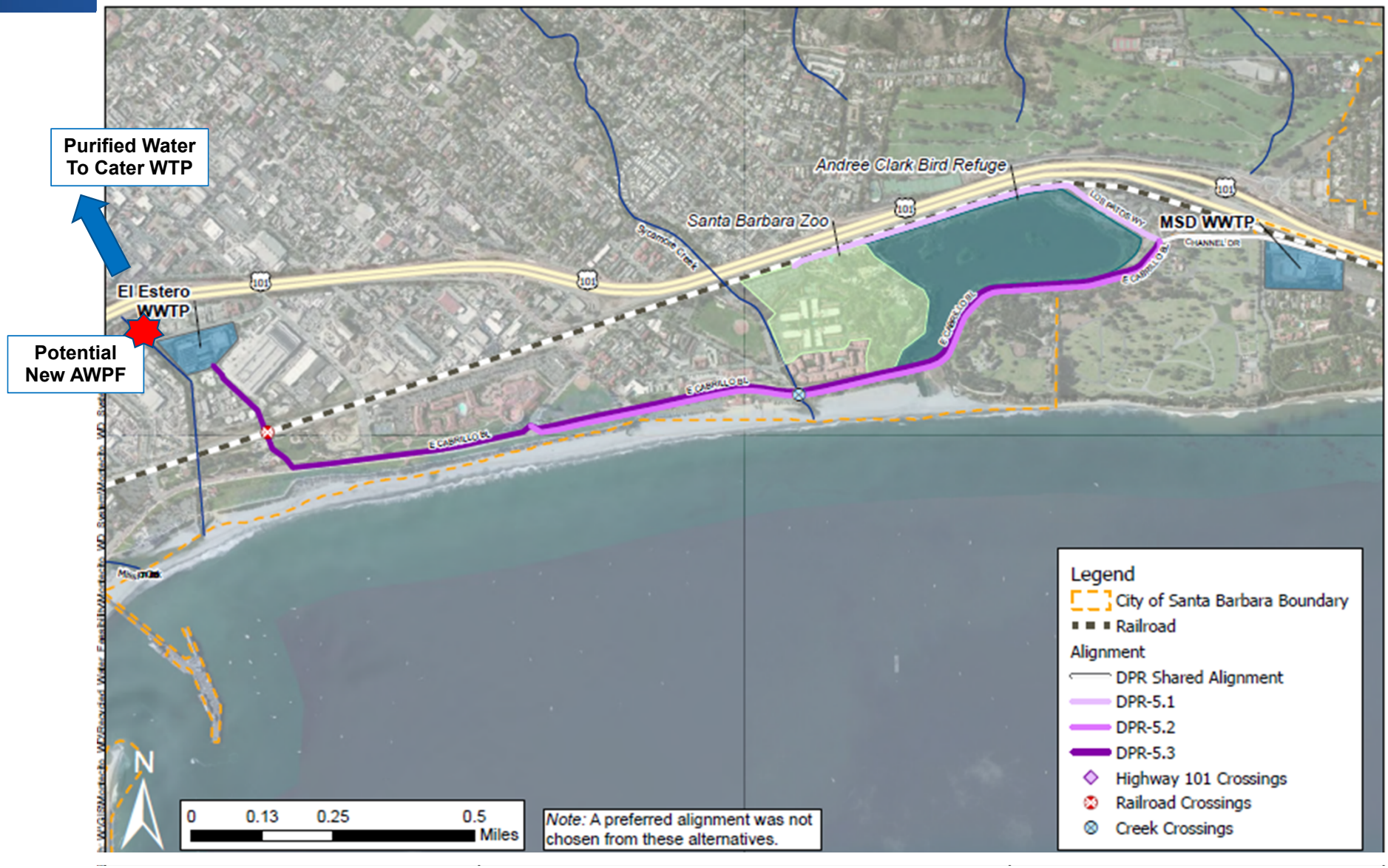
BENEFITS

- Provides drought-resistant supply of drinking water
- Removes responsibility for AWPF operations from MSD
- Larger project leverages economies of scale and may be more likely to receive grant funding
- Utilizes existing potable water delivery systems
- Potentially ends need for ocean discharge

CHALLENGES AND RISKS

- Requires interagency collaboration with Santa Barbara
- Will not provide new water supply until at least 2035

Santa Barbara Direct Potable Reuse



Project Evaluation

Evaluation Criteria

Criterion	Details
Cost of Water	Cost per unit of water based on capital cost for reuse treatment systems, infrastructure needed to move water and/or wastewater, and annual operations and maintenance costs; consideration of potential longer term significant costs associated with climate change including sea level rise.
Annual Water Supply Benefit	Total amount of water produced by a project; and MWD's ability to fully benefit from or fully utilize the new water.
Implementation Timeline	Timing of when recycled water would become available for use; timing of Montecito's need for an additional drought proof water supply.
Political Support	
Public and NGO Support	
Technical and Managerial Capacity	
Grant Funding Potential	
Agency Control	
Permitting Complexity	

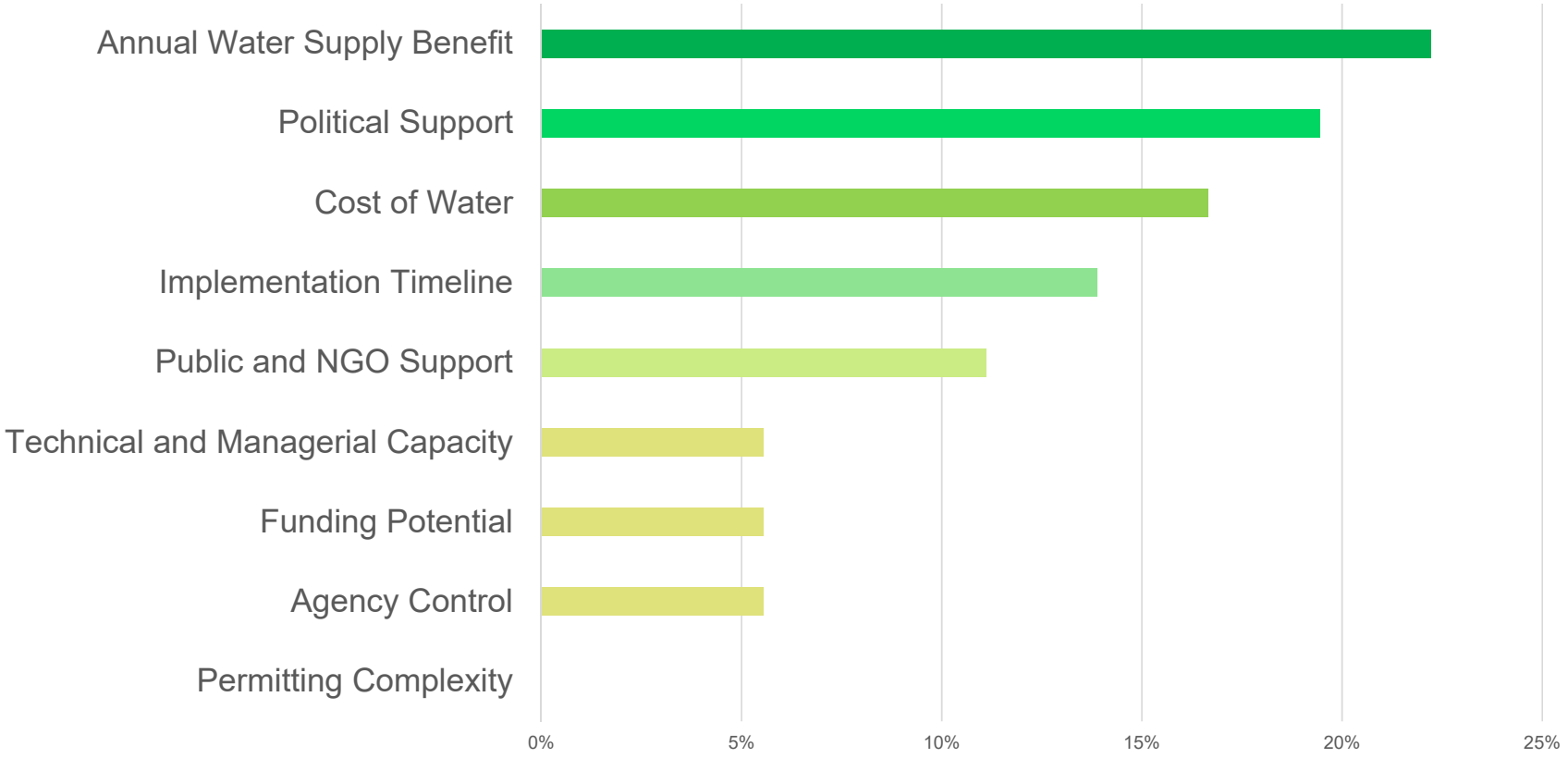
Evaluation Criteria

Criterion	Details
Cost of Water	
Annual Water Supply Benefit	
Implementation Timeline	
Political Support	Likelihood of support from elected officials including governing bodies of potential regional partners; consider political impacts and challenges associated with projects (e.g., Montecito only vs. regional)
Public and NGO Support	Likelihood of support from public and NGOs; consider factors like sustainability, customer understanding of each project, rate impacts, and challenges like RO concentrate discharge.
Technical and Managerial Capacity	Complexity of staffing for Montecito (particularly engineering, management, O&M, and laboratory); this increases significantly going from NPR to IPR to DPR in Montecito. Complexity decreases for regional projects where Montecito does not operate advanced treatment
Grant Funding Potential	
Agency Control	
Permitting Complexity	

Evaluation Criteria

Criterion	Details
Cost of Water	
Annual Water Supply Benefit	
Implementation Timeline	
Political Support	
Public and NGO Support	
Technical and Managerial Capacity	
Grant Funding Potential	Likelihood to receive grant funding, which is higher for larger and regional projects and those with lower unit costs of water.
Agency Control	Ownership of project within Montecito. Projects in Montecito minimize challenges and effort related to interagency agreements and cost negotiations. Also minimizes complexity of owning & maintaining pipeline in multiple jurisdictions.
Permitting Complexity	Anticipated complexity of permitting process, including the number of agencies involved: RWQCB, DDW, CEQA, CalTrans, Coastal Commission. Also includes consideration of climate change.

Evaluation Criteria Ranking



Project Scoring Approach

- 5 is highest; 1 is lowest

- Rankings are relative and quantitative where possible
  - Example Quantitative: Project Cost
    - Lowest cost of water is set as a 5
    - Remaining costs normalized to this cost
  - Example Qualitative: Agency Control
    - Score of 5 given to Montecito projects (NPR, DPR)
    - Lower scores given to regional projects, varying based on degree of Montecito involvement, e.g. higher score if purification occurs in Montecito

Initial Project Scoring Results

Criterion	Criterion Weight	Project 1: NPR in Montecito	Project 2: Carpinteria IPR: Storage in Carp Basin	Project 3: Carpinteria IPR: Purification in Carpinteria	Project 4: DPR in Montecito	Project 5: DPR in Santa Barbara
Annual Water Supply Benefit	22%	1.5	5	5	5	5
Political Support	19%					
Cost of Water	17%					
Implementation Timeline	14%					
Public and NGO Support	11%					
Grant Funding Potential	6%					
Agency Control	6%					
Technical and Managerial Capacity	6%					
Permitting Complexity	0%					
WEIGHTED SCORE						

provides 128 AFY

provides 560 AFY

Initial Project Scoring Results

Criterion	Criterion Weight	Project 1: NPR in Montecito	Project 2: Carpinteria IPR: Storage in Carp Basin	Project 3: Carpinteria IPR: Purification in Carpinteria	Project 4: DPR in Montecito	Project 5: DPR in Santa Barbara
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Political Support	19%	3	3.5	2	5	3
Cost of Water	17%					
Implementation Timeline	14%					
Public and NGO Support	11%					
Grant Funding Potential	6%					
Agency Control	6%					
Technical and Managerial Capacity	6%					
Permitting Complexity	0%					
WEIGHTED SCORE						

Lower score reflects anticipated political concern about wastewater from Montecito going to Carpinteria

Higher score reflects maximized reuse and agency control

Initial Project Scoring Results

Criterion	Criterion Weight	Project 1: NPR in Montecito	Project 2: Carpinteria IPR: Storage in Carp Basin	Project 3: Carpinteria IPR: Purification in Carpinteria	Project 4: DPR in Montecito	Project 5: DPR in Santa Barbara
Annual Water Supply Benefit	22%	1.5	5	5	5	5
Political Support	19%	3	3.5	2	5	3
Cost of Water	17%	1.5	2	2	1	4.5
Implementation Timeline	14%					
Public and NGO Support	11%					
Grant Funding Potential	6%					
Agency Control	6%					
Technical and Managerial Capacity	6%					
Permitting Complexity	0%					
WEIGHTED SCORE						

Lower score for highest cost/AF

Higher score for lowest cost/AF

Initial Project Scoring Results

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Political Support	19%	3	3.5	2	5	3
Cost of Water	17%	1.5	2	2	1	4.5
Implementation Timeline	14%	5	3	3.5	1.5	1
Public and NGO Support	11%					
Grant Funding Potential						
Agency Control						
Technical and Managerial Capacity						
Permitting Complexity	0%					
WEIGHTED SCORE						

Higher score for likely soonest supply availability (2025)

Lower score for likely latest supply availability (after 2035)

Initial Project Scoring Results

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Political Support	19%	3	3.5	2	5	3
Cost of Water	17%	1.5	2	2	1	4.5
Implementation Timeline	14%	5	3	3.5	1.5	1
Public and NGO Support	11%	4	4.5	3	3	3
Grant Funding Potential	6%					
Agency Control	6%					
Technical and Managerial Capacity	6%					
Permitting Complexity	0%					
WEIGHTED SCORE						

Higher score reflects likely support for local project to maximize reuse

Lower score reflects anticipated public concern about wastewater from Montecito going to Carpinteria

Initial Project Scoring Results

Criterion	Criterion Weight	Project 1: NPR in Montecito	Project 2: Carpinteria IPR: Storage in Carp Basin	Project 3: Carpinteria IPR: Purification in Carpinteria	Project 4: DPR in Montecito	Project 5: DPR in Santa Barbara
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Political Support	19%	3	3.5	2	5	3
Cost of Water	17%	1.5	2	2	1	4.5
Implementation Timeline	14%	5	3	3.5	1.5	1
Public and NGO Support	11%	4	4.5	3	3	3
Grant Funding Potential	6%	1	3	4	3	5
Agency Control	6%					
Technical and Managerial Capacity	6%					
Permitting Complexity						
WEIGHTED SCORE						

Lower score reflects small overall water supply benefit and less regional benefits

Higher score reflects largest water supply benefit and regional benefits

Initial Project Scoring Results

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Implementation Timeline	14%	5	3	3.5	1.5	1
Public and NGO Support	11%	4	4.5	3	3	3
Grant Funding Potential	6%	1	3	4	3	5
Agency Control	6%	5	4	2	5	1
Technical and Managerial Capacity	6%					
Permitting Complexity	0%					
WEIGHTED SCORE						

Lower score for regional projects

Higher score for full agency control

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Implementation Timeline	14%	5	3	3.5	1.5	1
Public and NGO Support	11%	4	4.5	3	3	3
Grant Funding Potential	6%	1	3	4	3	5
Agency Control	6%	5	4	2	5	1
Technical and Managerial Capacity	6%	5	3	4	1	4
Permitting Complexity	0%					
WEIGHTED SCORE						

Higher score for least operational complexity

Lower score for highest operational impact to MWD/MSD

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Grant Funding Potential	6%	1	3	4	3	5
Agency Control	6%	5	4	2	5	1
Technical and Managerial Capacity	6%	5	3	4	1	4
Permitting Complexity	0%	5	3	3	2	1.5
WEIGHTED SCORE						

Higher score for least complexity

Lower score for higher complexity due to DPR

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Grant Funding Potential	6%	1	3	4	3	5
Agency Control	6%	5	4	2	5	1
Technical and Managerial Capacity	6%	5	3	4	1	4
Permitting Complexity	0%	5	3	3	2	1.5
WEIGHTED SCORE		3.0	3.6	3.2	3.3	3.5

Discussion

Backup

Evaluation Criteria

Criterion	Details
Cost of Water	Cost per unit of water based on capital cost for reuse treatment systems, infrastructure needed to move water and/or wastewater, and annual operations and maintenance costs; consideration of potential longer term significant costs associated with climate change including sea level rise.
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