



Montecito Sanitary District

1042 Monte Cristo Lane *A Public Service Agency*
Santa Barbara, CA 93108

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BOARD PACKET

For the Special Board Meeting of

Friday, December 9, 2022

1. AGENDA.....[Agenda+2022-12-09.pdf \(montsan.org\)](#)
2. STAFF REPORT: ENHANCED RECYCLED WATER FEASIBILITY STUDY2
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MONTECITO SANITARY DISTRICT

STAFF REPORT

DATE: December 9, 2022
TO: Board of Directors
FROM: Bradley Rahrer, General Manager
SUBJECT: Review, Discussion and Approval of Enhanced Recycled Water Feasibility Study

RECOMMENDATION – STAFF RECOMMENDS THAT THE BOARD:

1. Receive a presentation from Carollo Engineers on the Enhanced Recycled Water Feasibility Study (Study);
2. Review, discuss and approve the Study, prepared by Carollo Engineers and in collaboration with the Montecito Water District; and
3. Discuss support for the preferred project and next steps to implementing recycled water for the Montecito community.

BACKGROUND:

On August 5, 2022, the District’s Board of Directors authorized a contract with Carollo Engineers to prepare an Enhanced Recycled Water Feasibility Study (Study). The Study, prepared in collaboration and jointly funded with Montecito Water District (MWD), builds upon MWD’s 2018 Recycled Water Feasibility Study and focuses primarily on potential potable reuse projects, including regional partnerships with the City of Santa Barbara, and the Carpinteria Valley Water and Sanitary Districts. The State’s release of updated draft potable reuse regulations in mid-2021, favoring potable over non-potable reuse, necessitated this additional Study. The Study evaluated four reuse approaches including a local non-potable reuse project, a regional indirect potable reuse project, and both local and regional direct potable reuse projects. This Study, in contrast with previous studies, included a more thorough analysis of Montecito Sanitary District’s (MSD) treatment facilities, the wastewater quality and treatment processes required for a potable reuse project. The Study also provided project costs estimates, performed a pairwise comparison for ranking each project, and provided recommended next steps should the interested participants choose to move forward with a project.

Collaboration with potential regional partners was essential for the preparation of the Study, specifically including the City of Santa Barbara, the Carpinteria Valley Water District, and the Carpinteria Sanitary District. At specific points during the preparation of

the Study, representatives from these agencies met with representatives of the Districts as well as Carollo to review concepts and provide valuable input. Comments from these agencies have been incorporated into this Study.

The Study has progressed on schedule and is nearing completion. Multiple Joint Strategic Planning Committee meetings, consisting of members from both District's Strategic Planning Committees have been held over the course of the Study to review the analysis and provide feedback. Most recently, the Joint Strategic Planning Committee met on August 30 and November 18, 2022 to review and provide comments on the draft final Study.

DISCUSSION:

Report Structure

The Study is comprised of an Executive Summary and nine (9) technical memoranda (TM) briefly described below:

- TM1 reviews current and anticipated wastewater flows to establish relevant flows for facility sizing. It also evaluated the minimum flow required to keep the outfall operational based on the National Pollutant Discharge Elimination System (NPDES) permit for effluent discharge.
- TM2 reviews historical wastewater flows for both Carpinteria Sanitary District and Santa Barbara to establish available capacity to accept raw wastewater from MSD.
- TM3 presents condition assessment results from an onsite assessment at the MSD WWTP. Structural, electrical, and process engineers, working with MSD engineering and operations staff, determined the current condition of assets at the WWTP to support this project.
- TM4 provides a description of the existing MSD WWTP, an evaluation of the WWTP process performance, and a capacity assessment of the WWTP.
- TM5 used results from the condition assessment (TM 3) and the performance and capacity evaluation (TM 4) to develop a prioritized capital improvement plan and operating costs for MSD over the next 30 years.
- TM6 evaluates two approaches for the implementation of a Membrane Bioreactor treatment system, which is a biological wastewater treatment process that can replace conventional activated sludge (CAS) and secondary clarification in a smaller footprint and produce consistent, high-quality effluent.
- TM7 reviews MSD's historical O&G data and discusses primary and secondary dissolved air floatation (DAF) process for O&G removal.
- TM8 evaluated potential treatment trains for all four reuse project concepts.
- TM9 developed distributed infrastructure alternatives for all reuse project concepts and analyzed key infrastructure components include pipelines, pump

stations, storage, and various pipeline crossings (highway, railroad, and creek) necessary for each project concept. This TM also examined the potential NPR opportunities through engagement with potential customers.

Analysis

Attached is the executive summary of the draft final *Enhanced Recycled Water Feasibility Study*. The Executive Summary, as drafted, establishes the top ranked project as a regional Indirect Potable Reuse Project involving advanced purification of MSD's treated wastewater at MSD and its injection into the Carpinteria Groundwater Basin for short-term storage before use. Should both Districts approve the Study and choose to proceed with the preferred project, several next steps are suggested, including groundwater modeling, environmental review and preliminary (30%) design.

District staff is requesting feedback from the Board of Directors before finalizing the Study. The MWD Board of Directors has reviewed and discussed the Study at a special meeting on December 2, 2022.

Grant Opportunities

The Montecito Groundwater Basin Groundwater Sustainability Agency (GSA) has identified a grant funding opportunity through the California Department of Water Resources' (DWR) that could potentially cover 100% of the costs for environmental review and preliminary design for a regional recycled water project that has a groundwater recharge benefit. With the outcome of this Study identifying a regional Indirect Potable Reuse Project with benefits to multiple groundwater basins including the Montecito Groundwater Basin and potentially neighboring Carpinteria Groundwater Basins, the preferred project has the potential to score well and be likely to qualify for grant funding. Some benefits of this regional project include groundwater recharge, prevention of seawater intrusion, and the development of a new rainfall independent potable water supply, all objectives of the grant program.

If the District Board of Directors concurs with the analysis and supports moving forward with the preferred project, then the District should consider providing the GSA with a letter of support to strengthen their application for securing grant funding for the next phase of implementation of recycled water for Montecito. The grant solicitation period ends on December 15, 2022, so a timely decision to finalize the Study and offer support is critical if MSD wants to assist the GSA with its application.

Attachments:

1. Enhanced Recycled Water Feasibility Study – Executive Summary

Links to draft final versions of the Technical Memoranda available on the District's website:

1. [Link to TM1](#) – MSD Flow and NPDES Permit Analysis
2. [Link to TM2](#) – CSD and Santa Barbara WRP Capacity
3. [Link to TM3](#) – MSD Condition Assessment
4. [Link to TM4](#) – Evaluation of MSD Treatment Performance and Capacity
5. [Link to TM5](#) – Cost for MSD Treatment Plant Rehabilitation and 30-yr Operations

6. [Link to TM6](#) – Cost for MBR Construction and 30-yr Operations
7. [Link to TM7](#) – Oil and Grease Treatment at MSD
8. [Link to TM8](#) – Recycled Water Options at MSD
9. [Link to TM9](#) – Distributed Infrastructure



Montecito Sanitary District & Montecito Water
District
Enhanced Recycled Water Feasibility Analysis

EXECUTIVE SUMMARY

DRAFT FINAL | November 2022





Montecito Sanitary District & Montecito Water District
Enhanced Recycled Water Feasibility Analysis

EXECUTIVE SUMMARY

DRAFT FINAL | November 2022

This document is released for the purpose of information exchange review and planning only under the authority of Andrew Thomas Salveson, November 14, 2022, California C-56902.

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Abbreviations

AACE International	Association for the Advancement of Cost Engineering
AF	acre-foot
AFY	acre-feet per year
ADWF	average dry weather flow
AOP	advanced oxidation process
AWPF	advanced water purification facility
AWTO	advanced water treatment operator
BAC	biologically active carbon
CAPP project	Carpinteria Advanced Purification Project
Carollo	Carollo Engineers, Inc.
CAS	conventional activated sludge
Cater WTP	William B. Cater Water Treatment Plant
CCI	construction cost index
City	City of Santa Barbara
CSD	Carpinteria Sanitary District
DAF	dissolved air flotation
CVWD	Carpinteria Valley Water District
DPR	direct potable reuse
ENR	<i>Engineering News-Record</i>
EQ	equalization
GIS	geographic information system
GSA	groundwater sustainability agency
IPR	indirect potable reuse
MBR	membrane bioreactor
MG	million gallons
mgd	million gallons per day
MSD	Montecito Sanitary District
MWD	Montecito Water District
NGO	non-governmental organization
NPDES	National Pollutant Discharge Elimination System
NPR	non-potable reuse
O&G	oil and grease
O&M	operations and maintenance
PWWF	peak wet weather flow

RO	reverse osmosis
ROC	reverse osmosis concentrate
RWA	raw water augmentation
Santa Barbara	City of Santa Barbara
SSD	Summerland Sanitary District
TM	technical memorandum
TWA	treated water augmentation
UF	ultrafiltration
UV	ultraviolet
WRP	water reclamation plant
WTP	water treatment plant
WWTP	wastewater treatment plant

EXECUTIVE SUMMARY

ES.1 Introduction

The purpose of this project is to provide the Montecito Sanitary District (MSD) and the Montecito Water District (MWD) with clear direction for implementation of water reuse. Implementation of water reuse will produce a new local drought-proof water supply for the community and reduce the discharge of treated wastewater to the ocean. Previously, MWD completed a Recycled Water Facilities Plan in 2019 that identified top potential uses of recycled water along with recommended next investigative steps. This new collaborative project, contracted in partnership with MWD and MSD, builds on the previous effort by, evaluating regional partnerships and developing next steps, as well as incorporating updated information, such as the State of California's draft direct potable reuse (DPR) regulations¹.

The project also contains a "mini" master plan for the MSD wastewater treatment plant (WWTP), evaluating flows, capacity, upgrade/replacement needs, and costs. Such analysis is a crucial part of this recycled water analysis, providing valuable information on the long-term viability of the MSD WWTP.

Four distinct approaches to identify the preferred method of pursuing wastewater reuse were evaluated. The analysis considered local and regional partnerships, non-potable and potable reuse alternatives, and various treatment methods and technologies. The project concepts included in the study are as follows:

- **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 DPR** – local project in Montecito utilizing treatment at MSD and either raw water augmentation (RWA) at the MWD water treatment facility or treated water augmentation (TWA), both forms of DPR.
- **Santa Barbara DPR** – regional project partnering with the City of Santa Barbara (Santa Barbara) involving RWA at the William B. Cater Water Treatment Plant (Cater WTP).

The location of relevant regional facilities with potential for inclusion are shown in the map below. Note that Summerland Sanitary District (SSD), while shown on the map, is not part of any particular project detailed herein, but could be incorporated into a regional option.

¹ The State of California's State Water Resources Control Board is mandated by law to develop DPR regulations by the end of 2023. Current draft versions, as of August 2021, are very detailed and allow for proper evaluation of DPR for this project.

ES.2 Regional Partners

Collaboration with regional partners was essential for this project, specifically from Santa Barbara, the Carpinteria Valley Water District (CVWD), and the Carpinteria Sanitary District (CSD). At specific points in the project, representatives from these agencies met with project team staff, reviewed concepts, and provided comments. Comments from these agencies were incorporated into this document, where possible. The participation of these agencies is appreciated.

We do note that findings in this study that include these agencies do not indicate “approval” from these agencies for a particular project. Any regional project that comes out of this effort will require continued dialogue and formal agreement.



Figure ES.1 Regional Wastewater and Water Treatment Map

ES.3 Summary of Technical Memoranda

This project consisted of nine technical memoranda (TMs) (all attached as appendices to this document) that were used to conduct analysis and develop the information needed to assess the four reuse project concepts described above as well as the “mini” master plan for MSD.

- **TM 1: MSD Flow and NPDES Permit Analysis** - This TM reviewed current and anticipated wastewater flows to establish relevant flows for facility sizing. It also evaluated the minimum flow required to keep the outfall operational based on the National Pollutant Discharge Elimination System (NPDES) permit for effluent discharge. Key findings include:
 - As documented in TM 1, the average dry weather flow (ADWF) is 0.62 million gallons per day (mgd), based on data from 2017 to 2019. Flows from 2022 have been slightly lower, about 0.4 mgd, with some users offline. The future ADWF is estimated to be 0.7 mgd. It is important to note that future flows may be impacted by conservation.
 - Includes potential septic to sewer conversions within Montecito.

- Equalization (EQ) would be needed depending upon the potential project application.
 - Small EQ² of tertiary effluent is needed for NPR in Montecito to meet diurnal NPR demands.
 - EQ of secondary effluent for the ADWF is needed for potable reuse project options in order to provide constant flow to the membranes.
 - EQ of raw wastewater would be needed for one Santa Barbara potable reuse option and for any option that includes a new membrane bioreactor (MBR) at MSD.
 - The maximum anticipated EQ volume for future peak wet weather flow (PWWF) that would be needed is estimated to be 2.7 million gallons (MG).
 - There is available space for EQ at MSD.
- An analysis of future ocean discharge was conducted in which anticipated future discharge qualities were compared with existing NPDES³ and Ocean Plan requirements. Based on this analysis for the reuse alternatives considered, and anticipating that future dilution credits through the outfall will increase as flows decrease, there are no anticipated significant issues with future discharge through the outfall.
- **TM 2: CSD and Santa Barbara WRP Capacity** - TM 2 reviewed historical wastewater flows for both CSD and Santa Barbara to establish available capacity to accept raw wastewater from MSD. Key findings include:
 - The CSD water reclamation plant (WRP), could accommodate 0.7 mgd of additional flow for 99 percent of hours based on data from the past year.
 - Such a potential addition of flows to CSD would essentially utilize all existing capacity and would likely trigger a WRP expansion.
 - MSD would need to buy into the CSD facility, paying for the as-built capacity of the facility proportional to the flow delivered, which would be approximately 1/3 of the total flow.
 - EQ of MSD flow would be needed for any CSD collaborative project, the amount depends upon the type of project.
 - ◀ For a project sending raw wastewater to CSD, all MSD flow (including PWWF) would need to be equalized.
 - ◀ For a project sending secondary effluent to CSD, only the ADWF of 0.7 mgd would need to be equalized. Flows exceeding the EQ capacity, such as wet weather flows, would be treated similar to current operation and discharged through the MSD outfall.

² "Equalization" and "storage" can be used interchangeable in this Executive Summary. Both provide the same function.

³ The NPDES permit was renewed in 2022 with no major changes from the previous permit.

- Santa Barbara’s El Estero WRP could accommodate a range of flow from MSD, ranging from an equalized ADWF to potentially all flow without EQ at MSD. Flows could be either raw wastewater or MSD secondary effluent.
 - If flows were not equalized at MSD, EQ would be needed at El Estero WRP.
 - EQ of MSD flows at MSD would reduce transport pipeline capacity requirements while minimizing impact to El Estero WRP capacity.
 - Flows from MSD, if added at the proper times, could help El Estero WRP have a larger minimum flow for treatment while also providing more water for Santa Barbara’s NPR program.
- **TM 3: Condition Assessment** - This TM presented condition assessment results from an onsite assessment at the MSD WWTP. Structural, electrical, and process engineers, working with MSD engineering and operations staff, determined the current condition of assets at the WWTP to support this project.
 - Electrical assets were the only assets that scored in very poor condition, and most of these assets are planned for replacement in an upcoming Electrical CIP project.2022-2023.
 - As noted in TM 3, there are many assets that are doing well and need only minimal repair.
 - Repairs and replacements, ranging throughout the WWTP for nearly all process areas, were categorized into Urgent (0-2 years), Priority (3-5 years), Short Term (6-10 years), Mid-Term (11-20 years), and Long Term (20+ years).
- **TM 4: Evaluation of MSD WWTP Performance and Capacity** - This TM provides a description of the existing MSD WWTP, an evaluation of the WWTP process performance, and a capacity assessment of the WWTP.
 - For each unit process, performance was assessed relative to typical anticipated performance. This evaluation provided a benchmark for assessing unit process capacity.
 - The capacity evaluation showed that all processes meet the projected ADWF of 0.7 mgd. The permitted capacity of the plant is 1.5 mgd.
- **TM 5: Cost for Rehabilitation and 30-Year Operations** - This TM used results from the condition assessment (TM 3) and the performance and capacity evaluation (TM 4) to develop a prioritized capital improvement plan and operating costs for MSD over the next 30 years.
 - MSD will need to implement an estimated \$7.75 million of capital improvements over the next 30 years to maintain current treatment and operations at the plant, of which approximately \$3 million will occur within the next 10 years.
- Additional studies are recommended to further evaluate several process areas (aeration basins, clarifiers, select buildings, and the ocean outfall) that could result in the need for additional capital investments.
- **TM 6: Cost for MBR Construction and 30-Year Operations** - This TM evaluates the implementation of an MBR treatment system, which is a biological wastewater treatment process that can replace conventional activated sludge (CAS) and secondary clarification in a smaller footprint and produce consistent, high-quality effluent. The TM evaluates two alternatives to replacing MSD’s existing secondary treatment facilities: constructing a new MBR facility on undeveloped land, commonly referred as

“greenfield” (Alternative 1), or constructing a new MBR facility via retrofitting the existing secondary process infrastructure (Alternative 2).

- Alternative 1: A greenfield MBR facility would require several new structures that could be built in the open area on the western end of the WWTP property.
 - This facility could be constructed without disruption to existing treatment and operations and would not need to be replaced within the 30-year planning period.
 - Components of the MBR are “right sized” due to the use of all new tankage.
 - Most of the concrete infrastructure that would be abandoned for a new Greenfield MBR can be re-purposed as part of several of the recycled water project concepts.
- Alternative 2: Existing treatment structures could be retrofit to fit the new bioreactor and membrane tanks, maximizing the use of existing concrete infrastructure.
 - Components of the MBR may not be optimally sized due to the use of existing tankage.
 - Based on the condition assessment results, concrete repair would likely be required.
 - These structures would likely need to be replaced within the 30-year planning period.
 - There is significant added constructability challenges and complexity because the plant would need to continue to operate while converting existing infrastructure to an MBR.
- Estimated construction and operations and maintenance (O&M) costs are similar for the two alternatives.
- See Section ES 4.1 below for key cost assumptions.
- **TM 7: O&G Treatment at MSD** – Oil and grease (O&G) can impact membrane treatment systems. Accordingly, a review of historical O&G data from the MSD WWTP was performed ,and it was determined that additional O&G treatment is needed for non-MBR-based potable reuse options to protect downstream membranes. Two alternatives for O&G removal were analyzed: primary and secondary dissolved air flotation (DAF).
 - The MSD historically meets the NPDES requirements for O&G, but is not designed for the robust O&G removal needed to protection the membranes that are part of many of the reuse treatment trains.
 - Cost estimates indicate that the secondary DAF alternative treating the ADWF of 0.7 mgd is significantly less expensive than a primary DAF treating 100 percent of MSD WWTP influent flow.
 - Bench and pilot testing is recommended prior to implementing a DAF for O&G removal.

- **TM 8: Recycled Water Treatment Options at MSD** - This TM looked at potential treatment trains for all four reuse project concepts. It provides treatment train design criteria, layouts, and estimated costs for each option.
 - A reuse facility at MSD (non-potable or potable) could be located in the open area at the westerly end of the plant.
 - There is room for a new MBR, a new advanced water purification facility (AWPF), and new EQ at MSD.
 - For a regional project with Santa Barbara, the AWPF would be located near the Santa Barbara El Estero WRP, at the existing corporation yard (per Santa Barbara’s existing potable reuse plans).
 - For a regional project with CSD, the AWPF could be located at MSD or located at the CSD WRP. Expanding the AWPF at CSD to accommodate the additional flows from MSD may be challenging due to space constraints.
 - Water reuse of MSD flows is maximized for any potable water reuse project, but reduced by ~75 percent for NPR due to limited number of potential customers and seasonal recycled water demand.
 - Costs are directly impacted by scale.
 - A joint project with Santa Barbara has a larger economy of scale and thus reduced costs per gallon produced.
 - A joint project with Carpinteria has a smaller economy of scale for treatment and thus higher relative costs per gallon produced than the Santa Barbara option.
 - A Montecito only project for NPR is the smallest project due to limited demand for NPR water and achieves no economy of scale and thus higher unit cost.
 - A Montecito only project for potable reuse has an improved economy of scale compared to NPR due to larger water production, but smaller economy of scale than Carpinteria or Santa Barbara options.
 - Total costs for treatment systems range from \$9 million for a NPR system to \$112 million for a large project at Santa Barbara. The portion of the total treatment costs that would be borne by Montecito are provided in Table ES.1.
- **TM 9: Distributed Infrastructure Analysis** - This TM developed distributed infrastructure alternatives for all reuse project concepts. Infrastructure components include pipelines, pump stations, storage, and various pipeline crossings (highway, railroad, and creek)⁴. This TM also examined the potential NPR opportunities through engagement with potential customers.
 - Multiple pipeline alignments were developed for each project concept, with a recommended alternative identified for each.
 - Costs are directly impacted by proximity of the MSD WWTP to other project partner facilities.
 - A joint project with Santa Barbara has less pipeline infrastructure compared to other options.
 - A joint project with Carpinteria has longer pipeline infrastructure, increasing project costs.

⁴ The cost for injection wells for the Carpinteria IPR options is included in the treatment costs in Table ES.1 and Table ES.2.

- A Montecito only project for NPR would require fairly extensive infrastructure to transport a relatively small amount of recycled water to various customers, increasing project costs.
- A Montecito only project for potable reuse has options for shorter pipeline infrastructure compared to a Carpinteria option.
- The costs for distributed infrastructure are significant, ranging from \$8 million to \$37 million.
- Customer assessments were conducted for the three “anchor” customers (i.e., Birnam Wood Golf Club, Santa Barbara Cemetery, and Valley Club Montecito) to better estimate recycled water use at each site.
- Customer usage projections for the golf courses were difficult to estimate from potable water use records due to their use of on-site groundwater wells. Also, the golf courses have implemented over the last several years conservation measures, such as turf replacement to reduce irrigation demand.
- The previous 2019 Recycled Water Feasibility Plan assumed groundwater use from all customers could be offset by recycled water use. From the customer surveys it is now understood that recycled water would augment groundwater use. This is primarily driven by cost.
- Lower total irrigation demand combined with only offsetting potable water use created a lower recycled water demand than previously estimated and results in a higher unit cost for NPR.

ES.4 Mini Master Plan

One goal of this project was to provide a “mini” master plan of the MSD WWTP. The mini master plan served to document the performance and necessary upgrades to maintain the wastewater treatment facility into the future to support a recycled water project. TMs 1, 3, 4, 5, and 6 summarize all aspects of the master plan analysis, including flows, treatment capacity, a condition assessment, costs for upgrades, and an evaluation of full replacement with a new MBR.

Regarding the MSD WWTP performance, condition, and rehabilitation needs:

- In terms of capital spending, it is estimated that MSD will need to implement \$7.7 million of capital improvements over the next 30 years to maintain current level of treatment and operations at the plant. Approximately \$3 million will occur within the first 10 years.
- The plant has sufficient capacity for the projected future 0.7 mgd ADWF.

Regarding full replacement of the MSD WWTP with a new MBR:

- The replacement of the existing MSD WWTP with an MBR is costly, in the \$30 million range for either a retrofit or greenfield construction. Recent permitting of a PWWF bypass at Morro Bay for their MBR could also be applied to a Montecito project, resulting in an estimated \$8 million in cost reduction for this option due to reduced EQ needs.

- Maintaining the existing MSD WWTP level of treatment as is would allow for a NPR project, but would not be sufficient to support the implementation of potable reuse without modification.
- Although implementing an MBR is expensive, it provides several benefits for a potable reuse project. MBR effluent is generally consistent and high-quality, which leads to better performance of downstream advanced treatment processes. MBRs can also provide reliable treatment in a small footprint. As it takes the place of two existing treatment processes, CAS and secondary clarification; it also reduces the total number of processes to operate.

Regarding the alternative to an MBR:

- An MBR is not the only way to achieve the water quality needed for potable reuse; the alternative entails the addition of DAF and membrane filtration (ultrafiltration (UF)) following the existing MSD WWTP to attain the same water quality as an MBR. The cost of this option as compared to the MBR cost would include the full rehabilitation of the existing MSD WWTP, along with the addition of DAF and UF. These costs are less than half the costs for MBR, as follows:
 - Full Rehabilitation - \$7.7 million.
 - DAF – \$1.4 million.
 - UF - \$4.6 million.
 - Total cost of \$13.7 million.

The capital costs favor the status quo (keeping the existing facility and adding DAF and UF). The operational costs for MBR are similar to the costs of operating the existing plant plus the costs of operating the DAF and UF. In total, maintaining the existing treatment facilities and supplementing with DAF and UF is more cost effective than converting to MBR.

ES.5 Project Comparison/Cost Analysis

The different types of recycled water projects are summarized in the table below and then further in the pages that follow, including a comparative ranking of projects. Included within the table are important details on project components that impact cost, such as necessary pretreatment, pipelines, and use of existing assets (such as a water treatment plant [WTP]).

ES.5.1 Key Cost Assumptions

All capital cost estimates were prepared consistent with Association for the Advancement of Cost Engineering (AACE International) Class IV Estimates for feasibility and project screening. As such, the expected accuracy range could span -50 to +100 percent. The costs and assumptions used during this exercise were developed from the information available at the time the cost estimate was prepared since the upgrades have not yet been fully designed. There are numerous design related criteria, decisions, and assumptions that will need to be vetted and evaluated, including additional surveys, modeling, permit conditions, and unforeseen circumstances that could impact the cost of the project as the design progresses.

Note on construction costs: Construction costs have been rising at an unprecedented rate since May 2021. The increase in construction costs is largely attributed to workforce shortages, supply chain issues, and increases in energy (fuel) costs and inflation. *Engineering News-Record* (ENR) develops Construction Cost Index (CCI) for 20 cities across the U.S. and 2 in Canada. Using ENR data, national trends can be observed and analyzed. Between May 2021 and March 2022, ENR's

CCI has risen by nearly 6.7 percent. The industry is seeing an increase in projects that are bid at 20 percent over the engineer's estimate, outpacing the CCI increase. Accordingly, there are two key items to recognize when evaluating costs in this document:

1. They are conservative. Refinement of these costs require more detailed engineering analysis, preliminary design level at a minimum, to allow for reduction in safety factors.
2. They are based upon today's (September 2022) costs, as this analysis is not attempting to predict the rate of change (up or down) several years in advance.

Note on grant funding: Potential future grant funding has not been accounted for in cost estimates for this project. Receiving grant funding for a particular project would reduce the associated unit cost for Montecito.

In the sections below, this analysis highlights the approach to costing out the various treatment and delivery infrastructure necessary to implement water reuse for Montecito.

- **Reuse treatment:** Capital costs are based on vendor quotes and similar facilities with allowances for civil, mechanical, structural, and electrical improvements, as well as engineering cost. Construction costs presented include an estimating contingency, sales tax, general conditions, and contractor's overhead and profit. The percentages assumed for these factors are provided in TM 8. Total project costs include a fee for engineering, legal, and administration, as well as an owners reserve for change orders. The percentages assumed for these factors are also provided in TM 8.
- **Reuse O&M:** These O&M costs include power consumption, chemical consumption, maintenance, and staffing. The staffing costs were developed using the results of a Carollo Engineers, Inc. (Carollo) survey of IPR operations, with extrapolation to DPR requirements. For DPR, the staffing costs assume that three Grade 5 advanced water treatment operators (AWTOs) will be needed to provide full staff for 12 hours per day and skeletal staff for 12 hours per day, with an Grade 5 AWTO on call at all times. Staffing costs for both IPR and DPR also include regulatory and compliance staff, as well as new lab staff to supplement existing lab staff, which would encompass costs associated with regulatory compliance (e.g., preparing plans, water quality sampling).
- **Montecito Portions of Reuse Treatment and O&M:** For regional projects where purification is happening at a facility not located in Montecito, it is assumed that capital and O&M costs would be shared with the regional partner. In these cases, the Montecito portion of the treatment and O&M costs were estimated to be proportional to the share of purified water that Montecito would receive versus the total project production. For example, in the case of the Carpinteria IPR project with purification in Carpinteria, Montecito's portion would be 0.56 mgd out of 1.56 mgd, or approximately 36 percent. Montecito would therefore be responsible for 36 percent of the capital and O&M costs for the facility⁵.
- **EQ:** The cost for EQ is included in the cost estimates provided. The existing MSD WWTP currently does not have any EQ. Potable reuse requires EQ of the ADWF to capture and reuse as much water as possible. The maximum EQ that would be needed to equalize the PWWF at MSD is 2.7 MG. For treatment trains with an MBR, 2.1 MG of EQ is needed ahead of the MBR, reducing membrane size but also allowing a peak flow of 1.5 mgd.

⁵ Costs allocated to Montecito in a regional project may be higher than what was assumed here and would depend on the outcome of negotiations with partner agencies.

Several of the options do also require storage of the treated water to meet peak demands or minimize pipeline sizes; these costs are included in the distributed infrastructure cost.

- Distributed Infrastructure:** Capital costs for distributed infrastructure include construction and contractor overhead, contingency for unknown conditions and professional services (or “soft costs”). The capital cost estimates are expressed in March 2022 dollars (the corresponding 20-Cities Average ENR CCI of 12,791). Construction costs were developed using cost indexes, quotes from suppliers, recent bids for similar projects, recent engineering estimates, and known industry planning-level unit costs. Quantities were estimated using geographic information system based maps of alignments. A percentage of the construction costs is dedicated for contingency to cover as-yet-unknown aspects of the project, in accordance with ACE International recommendations. Soft costs are also estimated as a percentage of the construction costs based on typical percentages of total project costs for similar projects. Project costs were annualized and combined with reoccurring O&M costs to come up with a total annual cost. The annual cost was used to estimate the unit cost based on the annual water delivery (i.e., acre-feet per year [AFY]) for each alternative. A summary of construction, soft cost and escalation assumptions for distributed infrastructure is provided in TM 9.
- Total project capital costs:** The total project capital costs include both reuse treatment and distributed infrastructure costs.
- Additional O&M costs:** For some project concepts there are additional O&M costs included in the estimates. In the case of Santa Barbara DPR where Montecito sends secondary effluent to the El Estero WRP, there is an assumed cost of wastewater retreatment of \$3,000/acre-foot (AF) based on information provided by Santa Barbara. For all Santa Barbara DPR options, there is also treatment at the Cater WTP, with an assumed cost of \$600/AF based on information provided by Santa Barbara.

ES.5.2 Water Supply Cost Perspective

It is prudent to consider the costs of other water supplies when comparing to the high cost of potable water reuse. Our understanding is that Montecito currently pays \$3.500/AF for their desalination water. This represents the current price of desalinated water, not the future price of additional desalinated water supply. A thorough evaluation of the cost to expand desalination in Santa Barbara for additional supplies to Montecito would need to be conducted to have confidence in the unit cost.

Table ES.1 Montecito Water Reuse Project Costs Summary

Reuse Type	Wastewater Treatment	Additional Treatment for Reuse	Infrastructure Components	Total Project Size (AFY)	Annual Water Supply Benefit for Montecito (AFY)	Total Project Capital Cost (\$ million)	Montecito Capital Cost	Montecito Capital Cost Components (\$M)		Total Annual O&M Cost (\$ million)	Montecito Annual O&M Cost (\$ million) ⁽²⁾	Montecito Cost of Water (\$/AF) ⁽¹⁾ Estimate (-30 to +50 percent)	Notes
								Treatment ⁽¹⁾	Distributed Infrastructure				
Non-Potable	CAS + DAF (at Montecito)	Cloth filter + UV (at Montecito)	EQ of secondary effluent, tertiary recycled water treatment, pipelines to non-potable customers.	128	128	\$20.6	\$20.6	\$5.8	\$14.8	\$0.5	\$0.5	\$12,400 (\$8,700 - \$18,600)	Other NPR trains evaluated in TM 8 include ones with MBR instead of CAS and side-stream RO for salt reduction. Maintaining the existing CAS is more cost effective than replacing with a new MBR, which would have higher \$/AF costs. Adding sidestream RO is not necessary to allow for NPR options, though some users may prefer the desalted water. Adding RO adds cost to the \$/AF shown.
Carpinteria IPR	CAS + DAF (at Montecito)	RO – UV/AOP (at Montecito)	EQ of secondary effluent, addition of DAF for O&G removal, advanced treatment, pipeline to Carpinteria, groundwater injection well.	560	504	\$50.4	\$50.4	\$18.3	\$32.1	\$2.5	\$2.5	\$10,400 (\$6,700 - \$15,600)	MBR instead of CAS is a possible change to this treatment system, but it would increase the cost of purified recycled water production. Montecito supply benefit is reduced by 10 percent “leave behind” in the Carpinteria groundwater basin.
	CAS + DAF (at Montecito)	UF – RO – UV/AOP (at Carpinteria)	EQ of secondary effluent, addition of DAF for O&G removal, pipeline to Carpinteria, advanced treatment, groundwater injection well.	1,792	504	\$104.2	\$54.3	\$21.0	\$33.3	\$2.9	\$1.2	\$8,300 (\$5,700 - \$12,300)	MBR at MSD is not a good option for this potential project, as the MBR effluent would blend with CAS effluent a Carpinteria and thus require UF before processing with RO (redundant processing). Montecito supply benefit is reduced by 10 percent “leave behind” in the Carpinteria groundwater basin. The concept of sending raw MSD wastewater to Carpinteria was not evaluated due to anticipated challenges with CSD capacity and cost.

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Reuse Type	Wastewater Treatment	Additional Treatment for Reuse	Infrastructure Components	Total Project Size (AFY)	Annual Water Supply Benefit for Montecito (AFY)	Total Project Capital Cost (\$ million)	Montecito Capital Cost	Montecito Capital Cost Components (\$ million)		Total Annual O&M Cost (\$ million)	Montecito Annual O&M Cost (\$ million) ⁽²⁾	Montecito Cost of Water (\$/AF) ⁽¹⁾ Estimate (-30 to +50 percent)	Notes
								Treatment ⁽¹⁾	Distributed Infrastructure				
DPR in Montecito	CAS + DAF (at Montecito)	Ozone/BAC – UF – RO – UV/AOP (at Montecito)	EQ of secondary effluent, addition of DAF for O&G removal, advanced treatment, pipeline to Bella Vista WTP.	560	560	\$47.6	\$47.6	\$26.8	\$20.8	\$4.9	\$4.9	\$13,300 (\$9,300 – 19,900)	Purified recycled water in this option would be delivered either ahead of the Bella Vista WTP or after the WTP, resulting in a blend of purified water to most customers. Options for TWA via addition of purified water into the nearest water main near the MSD was examined in TM 9 but not evaluated here.
DPR at Santa Barbara	CAS (at Montecito and again at Santa Barbara)	Ozone/BAC – UF – RO – UV/AOP (at Santa Barbara)	EQ of secondary effluent, pipeline connection to Santa Barbara sewer system, secondary treatment at El Estero WRP, advanced treatment, pipeline to the forebay of the Cater WTP.	4,145	560	\$94.4	\$23.0	\$10.3	\$12.7	\$8.1	\$2.9	\$7,400 (\$5,200 - \$11,100)	This concept keeps the MSD WWTP operational but does result in retreatment of MSD effluent at El Estero WRP. Options exist for significantly larger EQ of raw wastewater at MSD, eliminating the “retreatment” aspect of this option but increasing costs due to EQ. Another option could involve transport of the secondary effluent direct to El Estero WRP without blending with other raw wastewaters, resulting in increased pipeline costs but no “retreatment” costs.
	CAS at Santa Barbara	Ozone/BAC – UF – RO – UV/AOP (at Santa Barbara)	Unequalized raw wastewater from MSD to Santa Barbara via a pipeline connection to El Estero WRP, secondary treatment at El Estero WRP, advanced treatment, pipeline to the forebay of the Cater WTP.	4,145	560	\$105.6	\$34.1	\$10.3	\$23.8	\$6.5	\$1.3	\$5,700 (\$4,000 - \$8,600)	The cost assumes no EQ but this option could add EQ of MSD raw wastewater to reduce the size of the transport pipeline to El Estero WRP.

Notes:

Abbreviations: AOP - advanced oxidation process; BAC - biologically active carbon, RO - reverse osmosis.

(1) Cost of water was calculated based on total annual cost. The capital costs were annualized assuming a discount rate of 3.5 percent over a 30-year period. Annual capital and O&M costs were added together to obtain the total annual cost.

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Table ES.2 Summary of Costs Specific to Montecito for Each Project in \$/AF

Project Element	Montecito NPR	Carpinteria IPR - Groundwater Storage	Carpinteria IPR - Purification in Carpinteria	Montecito DPR	Santa Barbara DPR - Secondary Effluent	Santa Barbara DPR - Raw Wastewater
Reuse Treatment at MSD	\$2,500	\$2,000	\$0	\$2,600	\$0	\$0
Reuse Treatment at Carpinteria	\$0	\$0	\$2,300 ⁽¹⁾	\$0	\$0	\$0
Reuse Treatment at Santa Barbara	\$0	\$0	\$0	\$0	\$1,000 ⁽²⁾	\$1,000 ⁽²⁾
Conveyance to NPR Customers	\$6,300	\$0	\$0	\$0	\$0	\$0
Conveyance to Carpinteria Injection Wells	\$0	\$3,500 ⁽³⁾	\$0	\$0	\$0	\$0
Conveyance to Carpinteria AWWP	\$0	\$0	\$3,600	\$0	\$0	\$0
Conveyance to Bella Vista	\$0	\$0	\$0	\$2,000	\$0	\$0
Conveyance Secondary Effluent to El Estero WRP	\$0	\$0	\$0	\$0	\$1,100	\$0
Conveyance Raw Wastewater to El Estero WRP	\$0	\$0	\$0	\$0	\$0	\$2,200
Conveyance El Estero to Cater WTP	\$0	\$0	\$0	\$0	\$100 ⁽²⁾	\$100 ⁽²⁾
O&M – Retreatment at El Estero WRP	\$0	\$0	\$0	\$0	\$3,000	\$0
O&M – Treatment at Cater WTP	\$0	\$0	\$0	\$0	\$600	\$600
O&M – Treatment at Bella Vista	\$0	\$0	\$0	\$1,000	\$0	\$0
O&M – Reuse Treatment at MSD	\$3,600	\$4,500	\$500	\$7,500	\$0	\$0
O&M – Reuse Treatment at Carpinteria	\$0	\$0	\$1,400 ⁽²⁾	\$0	\$0	\$0
O&M - Reuse Treatment in Santa Barbara	\$0	\$0	\$0	\$0	\$1,400 ⁽²⁾	\$1,400 ⁽²⁾
O&M - Distributed Infrastructure	\$0	\$500	\$500	\$100	\$200	\$300
Total (\$/AF)	\$12,400	\$10,400	\$8,300	\$12,300	\$7,400	\$5,700

Notes:

- (1) Reuse treatment for purification in Carpinteria also includes the cost for injection and monitoring wells.
- (2) These items represent the Montecito portion of a shared regional cost. The costs for Montecito are proportional to the share of water received by Montecito relative to the total project size. Costs allocated to Montecito in a regional project may be higher than what was assumed here and would depend on the outcome of negotiations with partner agencies.
- (3) Conveyance cost for groundwater storage option also includes the cost for injection and monitoring wells.

ES.6 Project Concept Summaries

The following sections include summaries of the five main project concepts. Each summary includes the treatment trains considered, an overview of the layouts of new infrastructure, maps of alignments for new pipelines, and a summary of project benefits and risks.

ES.6.1 Project Concept 1 - NPR in Montecito

This concept is for a local project producing water meeting Title 22 tertiary quality requirements for irrigation of large landscapes in Montecito. Some of the key information developed for this project concept is summarized here.

- Three treatment train options were evaluated, as shown in Figure ES.2. Option 1A includes sidestream RO to reduce salinity, while Options 1B and 1C are cheaper, non-RO based systems. The use of sidestream RO increases the treatment cost, but may result in more customers using non-potable water. Treatment train 1C was used as the basis for the cost estimates provided in the previous section.
- The arrangement of infrastructure at the existing MSD WWTP is shown in Figure ES.3. As shown, there is space for a new reuse facility to house reuse treatment equipment on the west portion of the site. This facility would house the UF, RO, and ultraviolet (UV) for Option 1A, and the cloth disc filter and UV in Option 1C. Option 1B would not need a separate reuse facility because it would use the MBR and chlorine contact basin as shown in the site layout.
- The alignment for a pipeline to serve non-potable water to several customers is shown in Figure ES.4. The alignment shown is the preferred alternative because it has a preferred US 101 crossing and allows more customers to be served without additional laterals. Alternative alignments are presented in TM 9.
- A summary of the benefits and challenges for a NPR project in Montecito is shown in Table ES.3.

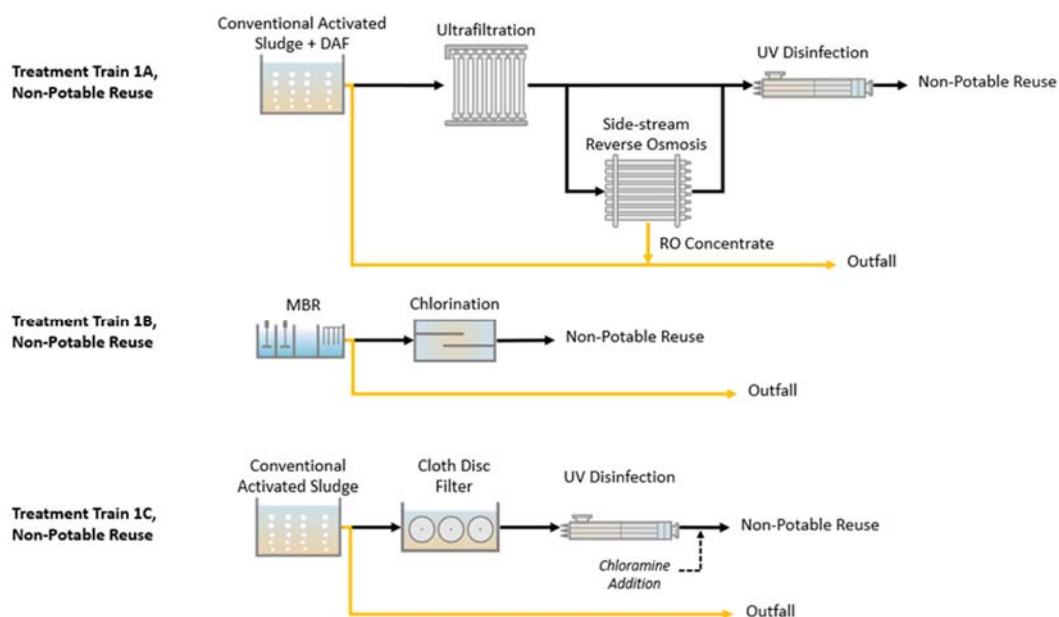


Figure ES.2 Treatment Trains Evaluated for NPR at Montecito



Note: MBR infrastructure assumes the retrofit alternative.

Figure ES.3 Layout of Potential Infrastructure Needed for NPR in Montecito

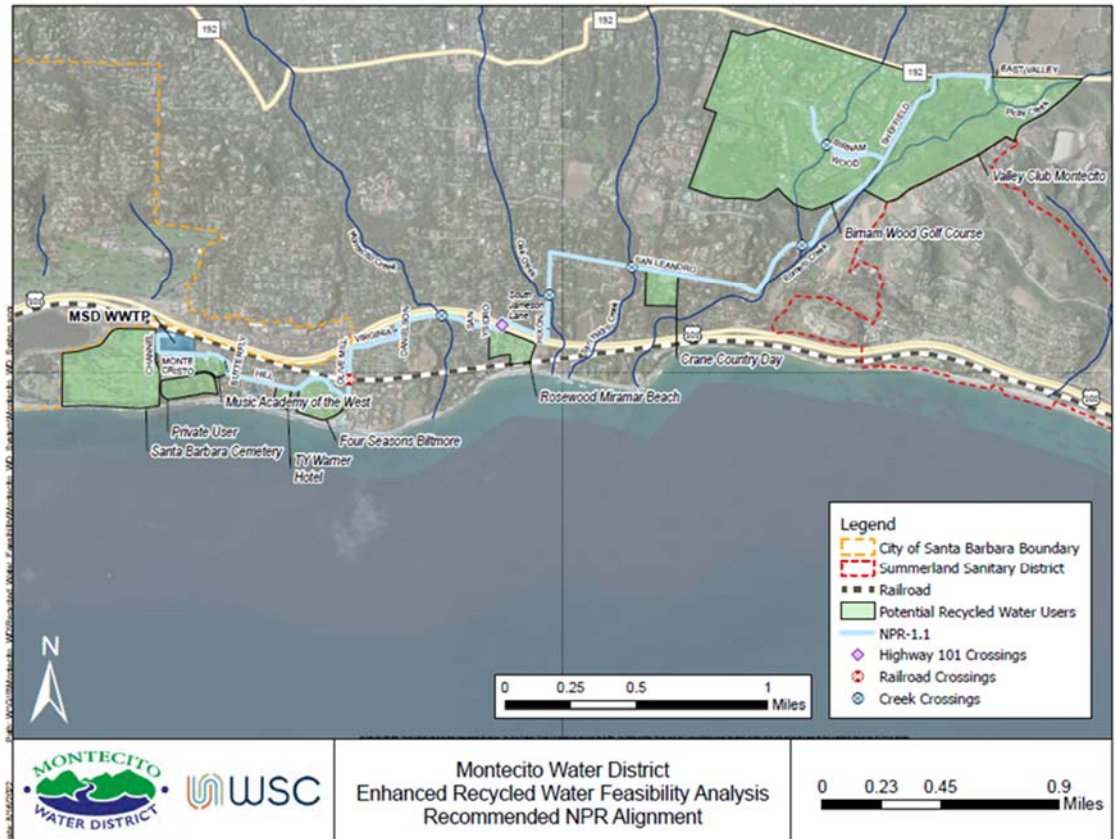


Figure ES.4 Recommended Alignment for Serving Non-Potable Customers From an NPR Project in Montecito

Table ES.3 Summary of Benefits and Challenges for an NPR Project in Montecito

Project Benefits	Challenges and Risks
<ul style="list-style-type: none"> Agency controlled, drought-resistant water supply Lower capital cost than potable reuse alternatives Operationally less complex than potable reuse Near term implementation Some distributed infrastructure could be repurposed for a future Montecito DPR project 	<ul style="list-style-type: none"> 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

ES.6.2 Project Concept 2 - IPR in Carpinteria: Groundwater Storage in Carpinteria

This project concept is a regional project in which Montecito produces purified wastewater and sends it to Carpinteria for injection into the Carpinteria groundwater basin. This project entails a partnership with neighboring special district(s). Some key elements that were evaluated for this project are summarized below.

- Two potential treatment trains were evaluated, as shown in Figure ES.5. The main difference between the two trains is whether or not an MBR is used, or the existing CAS process with a new secondary DAF.
- The arrangement of infrastructure at the existing MSD WWTP is shown in Figure ES.6. Like in the NPR concept, there is space for a new reuse facility to house reuse treatment equipment on the west portion of the site. This facility would house the UF (if needed), RO, and UV/AOP.
- The proposed alignment for a pipeline to send purified water for injection in Carpinteria is shown in Figure ES.7. Note that the distributed infrastructure did not include a pipeline to return water from Carpinteria to Montecito, because it was assumed that the primary mechanism for Montecito to obtain the water supply benefit would be through a water exchange via the South Coast Conduit. However, further definition of this project may result in the addition of a return pipeline, which would increase the distributed infrastructure cost.
- A summary of the benefits and challenges for a groundwater storage IPR project in Carpinteria is shown in Table ES.4.

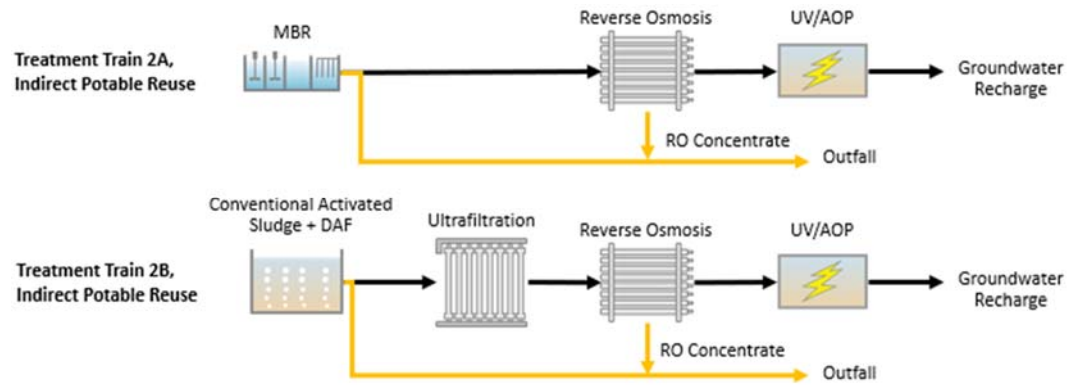
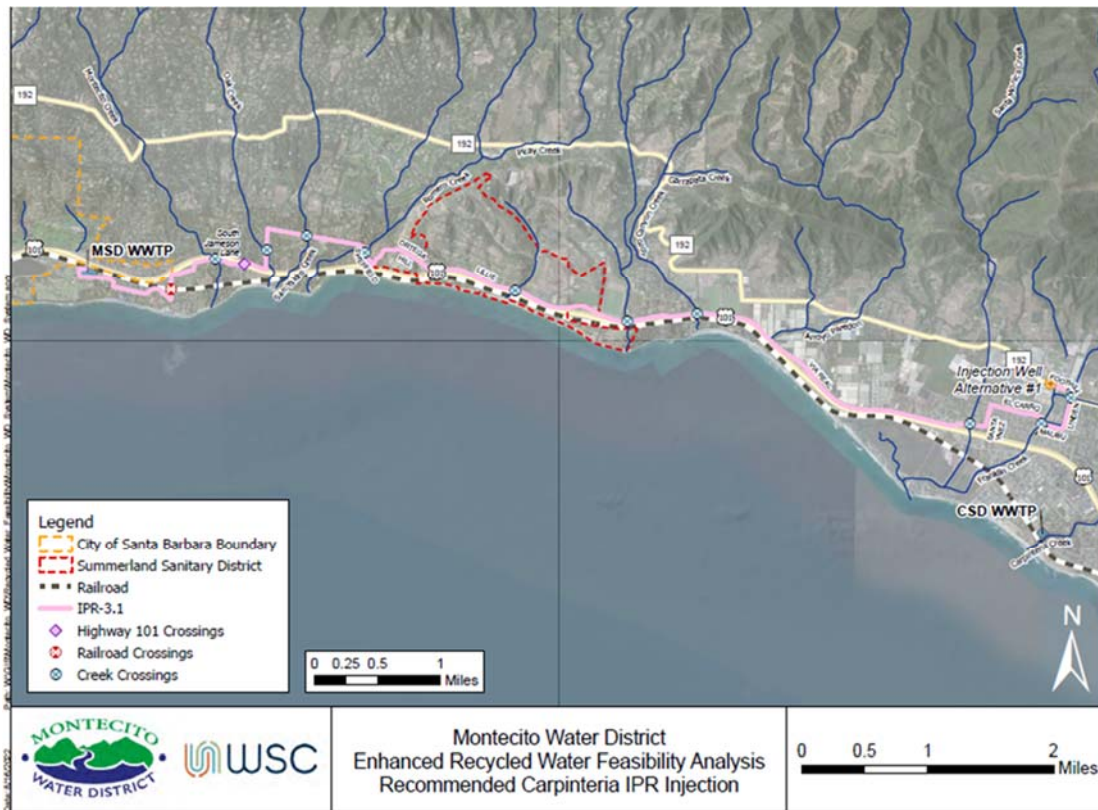


Figure ES.5 Treatment Trains Evaluated for IPR in Carpinteria Where Advanced Treatment Takes Place in Montecito and Purified Water is Sent to Carpinteria for Injection in Their Groundwater Basin



Note: MBR infrastructure assumes the retrofit alternative.

Figure ES.6 Layout of Potential Infrastructure Needed for IPR With Carpinteria When Advanced Treatment Takes Place in Montecito



Note: Injection well location shown is estimated; ultimate location would be determined during future project definition.

Figure ES.7 Recommended Alignment for Sending Purified Water to Injection Wells in Carpinteria

Table ES.4 Summary of Benefits and Challenges for IPR in Carpinteria Where Purified Water is Sent by Montecito for Injection in Carpinteria’s Groundwater Basin

Project Benefits	Challenges and Risks
<ul style="list-style-type: none"> • 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⁽¹⁾; potential for longer term shortage • Storage avoids potential loss due to an inability to use water in real time during low demand periods (as with DPR) • Potential low-cost water recovery option through water exchange 	<ul style="list-style-type: none"> • Requires interagency coordination with CVWD and groundwater sustainability agency (GSA) • Requires significant transmission infrastructure • Requires further groundwater modeling to confirm storage capability in confined and unconfined zones • Involves more complex operations of an AWPf • Basin injection could be infeasible during future wet periods due to lack of storage capacity • Compensation for use of Carpinteria Basin assumed to be 10 percent leave behind; negotiations required

Notes:

(1) Potentially provides seasonal storage, but may be an annual “put and take” operation depending on future groundwater modeling results.

ES.6.3 Project Concept 3 - IPR in Carpinteria: Purification in Carpinteria

This project concept is a regional project in which Montecito sends secondary effluent to Carpinteria for treatment at a new advanced water purification facility and injection into the Carpinteria groundwater basin. This project builds on the existing Carpinteria IPR project, which is currently in design, to create a larger regional project.

- The treatment train evaluated is shown in Figure ES.8. The only change required in Montecito is the addition of secondary DAF for O&G removal to protect downstream membranes. No additional reuse treatment would be needed in Montecito. Alternatively, the use of an MBR could also replace the existing wastewater treatment; this alternative was not specifically evaluated.
- No site layout is provided here because the only additional infrastructure needed is the new secondary DAF.
- The proposed alignment for a pipeline to send purified water for injection in Carpinteria is shown in Figure ES.7.
- A summary of the benefits and challenges for a groundwater storage IPR project in Carpinteria is shown in Table ES.5.

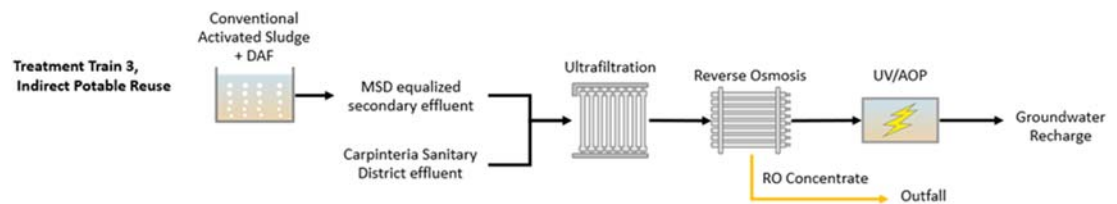


Figure ES.8 Treatment Train Evaluated for IPR in Carpinteria Where Montecito Sends Secondary Effluent to Carpinteria for Treatment at Their AWWP

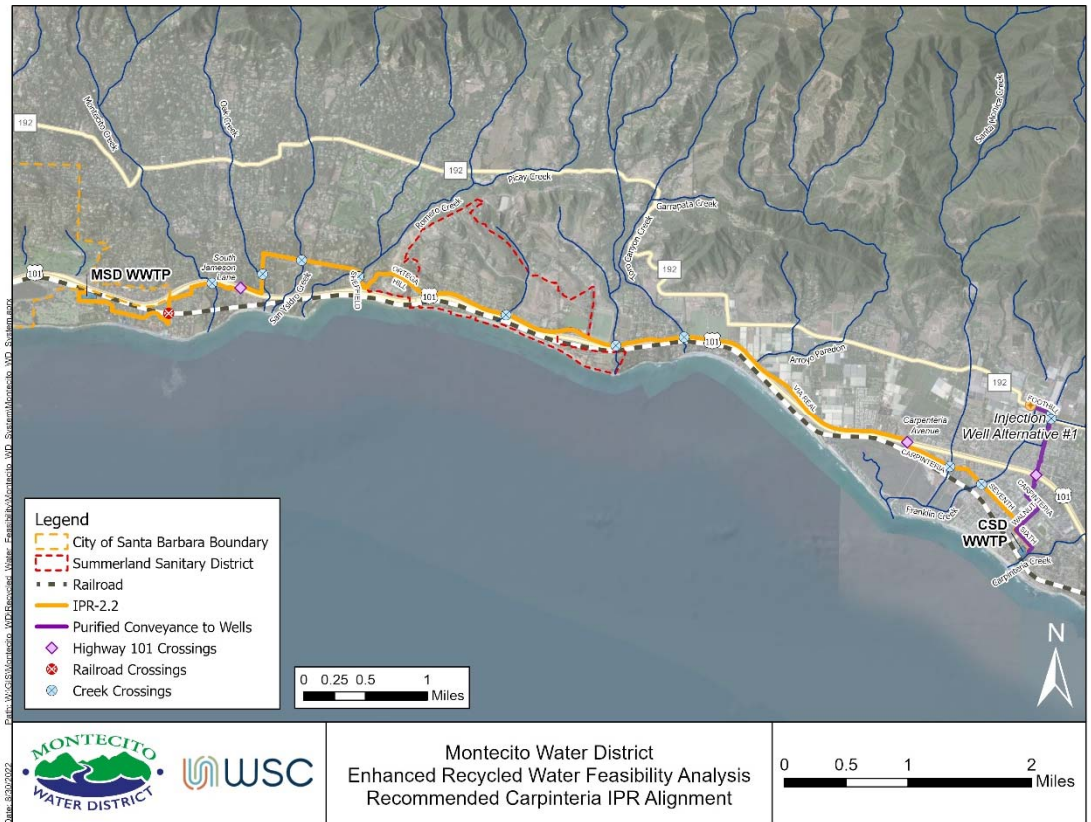


Figure ES.9 Recommended Alignment to Send Secondary Effluent to Carpinteria for Treatment at the CSD AWPF and Alignment for Sending Purified Water to Injection Wells in Carpinteria Groundwater Basin

Table ES.5 Summary of Benefits and Challenges for an IPR Project With Purification in Carpinteria

Project Benefits	Challenges and Risks
<ul style="list-style-type: none"> • Achieves some economy of scale • Does not impact CSD WRP capacity • Removes responsibility for AWPf operations from MSD • Maximizes reuse of available MSD wastewater • Minimizes ocean discharge • Utilizes the potable distribution system for delivery • Provides drought-resistant supply of drinking water • Storage avoids potential loss due to an inability to use water in real time during low demand periods (as with DPR) • Provides seasonal storage; potential for longer term shortage 	<ul style="list-style-type: none"> • Likely resistance to the Carpinteria Advanced Purification Project (CAPP project) delay to allow for incorporation of Montecito • Requires interagency coordination with CVWD and GSA • Requires significant transmission infrastructure • Potential public concern with Montecito’s wastewater going to Carpinteria (via ROC) • Potential public concern over Montecito’s use of Carpinteria groundwater basin • Basin injection could be infeasible during future wet periods due to lack of storage capacity • Requires further groundwater modeling to confirm storage capability in confined and unconfined zones • Cost uncertainty; negotiations likely result in a cost benefit to Carpinteria for Montecito’s participation, above proportional participation in capital and O&M costs

ES.6.4 Project Concept 4 - DPR in Montecito

This project concept is a local project in Montecito producing purified water and utilizing either RWA or TWA for use within the existing distribution system in Montecito. Some of the key elements evaluated for this project concept are as follows:

- The treatment trains evaluated are shown in Figure ES.10. Extensive advanced treatment is required for DPR – ozone and biologically activated carbon have been added to the treatment trains per the state of California’s draft DPR regulations. The use of the Bella Vista WTP is necessary in treatment train 4B in order to achieve the required pathogen log removal targets. For treatment train 4A, the targets can be met without the use of a WTP, and purified water from the AWPf could be placed directly into the distribution system.
- A site layout of potential infrastructure needed for DPR in Montecito is shown in Figure ES.11.
- Potential alignments for DPR in Montecito are shown in Figure ES.12. There is not a preferred alignment identified because the alignments shown represent different approaches to DPR. Alignment 4.3 would involve sending the water to Bella Vista reservoir for additional treatment at the WTP, while the other alignments would involve sending purified water directly to the distribution system for TWA.
- A summary of the benefits and challenges for a DPR project in Montecito is provided in Table E.S6.

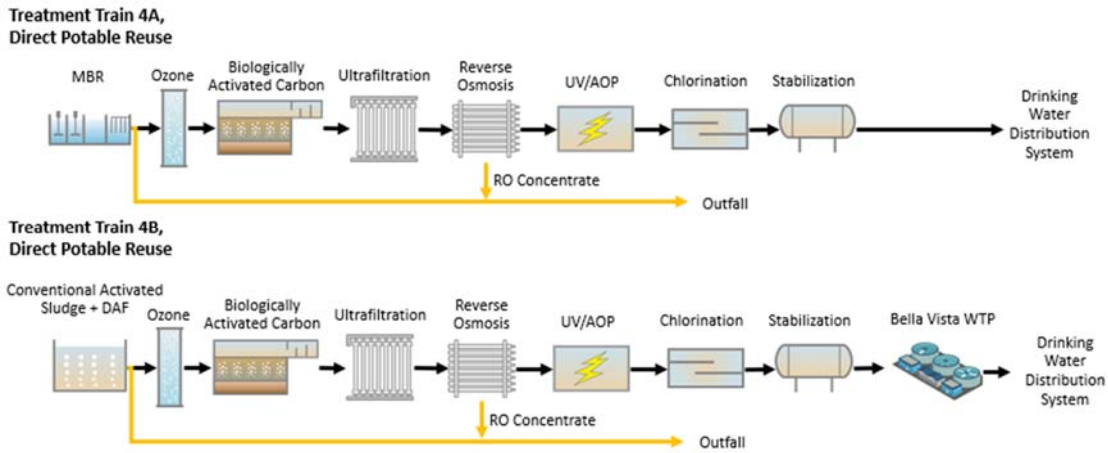


Figure ES.10 Treatment Trains Evaluated for Direct Potable Reuse in Montecito



Figure ES.11 Site Layout of Infrastructure Needed for DPR in Montecito

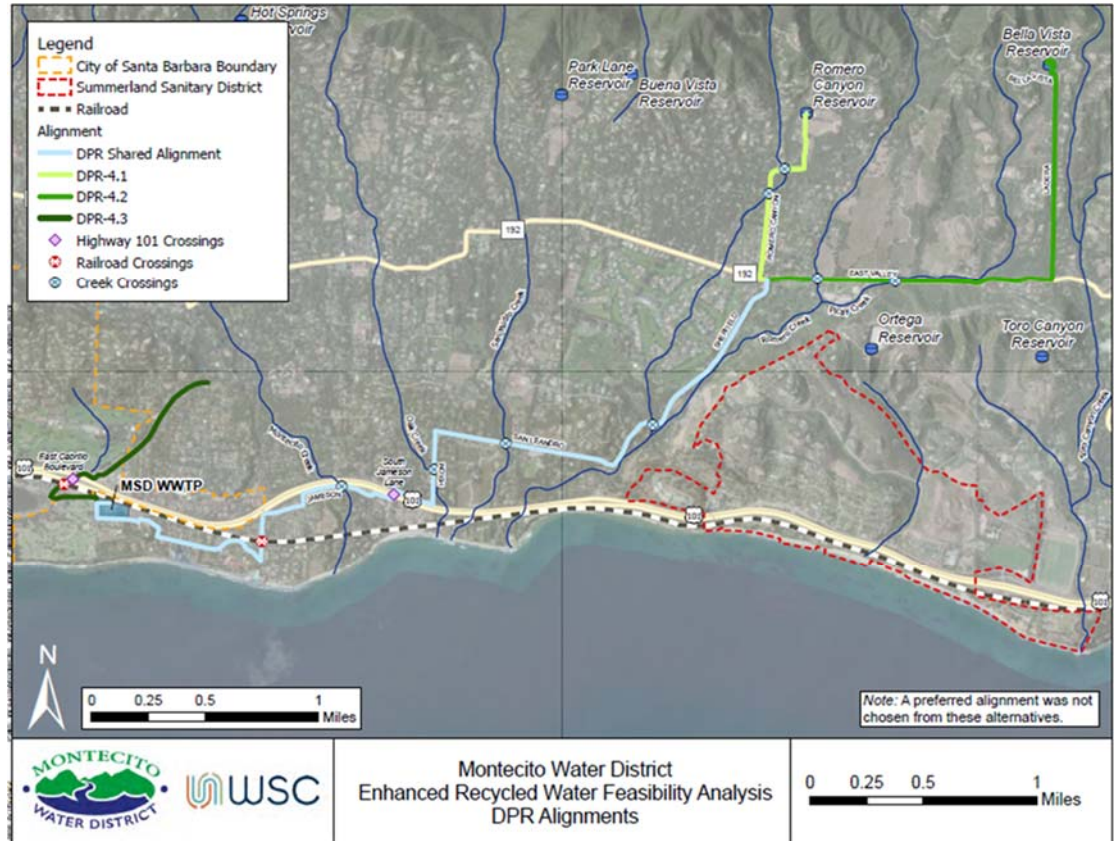


Figure ES.12 Potential Alignments for Purified Water Distribution in Montecito

Table ES.6 Summary of Benefits and Challenges for DPR in Montecito

Project Benefits	Challenges and Risks
<ul style="list-style-type: none"> • Provides agency controlled, drought-resistant supply of drinking water • Regional cooperation and collaboration with neighboring agencies are not required • Maximizes reuse of available MSD wastewater • Minimizes ocean discharge • Utilizes the potable distribution system for delivery 	<ul style="list-style-type: none"> • 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 • DPR regulations have not been finalized so there is uncertainty about final requirements

ES.6.5 Project Concept 5 - DPR in Santa Barbara

This project concept is a regional project in which Montecito sends either raw or secondary effluent to Santa Barbara for treatment at the El Estero WRP and subsequently a new AWPF. Purified water would then be used for RWA at the Cater WTP. Some of the key elements evaluated for this project concept are as follows:

- The treatment train evaluated is shown in Figure ES.13. The treatment train is the same as shown above for DPR in Montecito, although in this case the advanced water purification facility would be located in Santa Barbara, not in Montecito.
- A site layout for a new AWPF in Santa Barbara is shown in Figure ES.14. For this alternative, new infrastructure is not needed at Montecito's wastewater treatment plant.
- Potential alignments for DPR in Santa Barbara are shown in Figure ES.15. There is not a preferred alignment identified because the alignments shown represent different approaches to DPR. Alignments 5.1 and 5.2 would convey dry weather secondary effluent flows from Montecito to Santa Barbara, while Alignment 5.3 would convey PWWFs⁶. Alignment 5.1 would leverage the existing Santa Barbara collection system, with upsizing required for some segments. The other two alignments involve construction of new gravity sewers.
- A summary of the benefits and challenges for a DPR project in Santa Barbara is provided in Table ES.7.

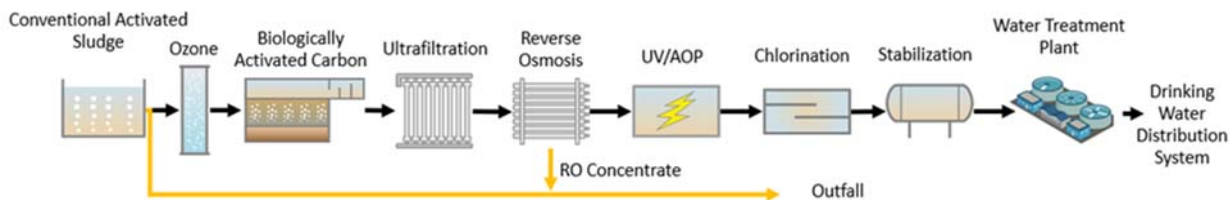


Figure ES.13 Treatment train Evaluation for DPR in Santa Barbara

⁶ Alignment 5.2 was used for the cost estimate for a project sending secondary effluent to Santa Barbara for DPR; Alignment 5.3 was used for the project sending raw wastewater to Santa Barbara.



Figure ES.14 Potential Layout for New Advanced Water Purification Facility in Santa Barbara



Note: Figure also shows the location of a potential new advanced water purification facility.

Figure ES.15 Potential Alignments for Sending Raw Wastewater or Secondary Effluent to Santa Barbara's Wastewater Treatment Plant

Table ES.7 Summary of Benefits and Challenges for a DPR Project in Santa Barbara

Project Benefits	Challenges and Risks
<ul style="list-style-type: none"> Provides drought-resistant supply of drinking water Maximizes reuse of available MSD wastewater Minimizes ocean discharge Removes responsibility for AWP 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 at MSD 	<ul style="list-style-type: none"> Requires interagency collaboration with Santa Barbara Not anticipated to provide new water supply until at least 2035 Public engagement and acceptance Final DPR regulation not known Uncertain costs and project timing 10 to 15 years in the future Future changes in City Council and staff could impact Santa Barbara's long term plans for reuse. Santa Barbara's control over multiple water supplies for Montecito. Requires real time use Potential water loss during periods when desalination and DPR combined flow exceed demand

ES.7 Project Evaluation and Scoring

ES.7.1 Project Evaluation Criteria

The following evaluation criteria were developed to capture the priorities and interests of MSD and MWD, and to aid in the selection of a preferred project concept.

- **Cost of Water** – All in cost-per-unit of water based on capital cost for reuse treatment systems, infrastructure needed to move water and/or wastewater, annual O&M costs, and retreatment (if required).
- **Annual Water Supply Benefit** - Total amount of water produced by a project and made available annually to MWD.
- **Implementation Timeline** - Timing of when recycled water would become available for use.
- **Political Support** - Likelihood of support from elected officials; considering political impacts and challenges associated with projects (e.g., local vs. regional).
- **Public and Non-Governmental Organization (NGO) Support** - Likelihood of support from public and NGOs; considering factors like sustainability, customer benefits, rate impacts, and challenges like ocean discharge.
- **Technical and Managerial Capacity** - Complexity of staffing (particularly O&M, and laboratory); this increases significantly going from NPR to IPR to DPR.
- **Grant Funding Potential** - Likelihood to receive grant funding, which may be higher for regional projects and for potable reuse projects as compared with non-potable projects.
- **Local Control** - Ownership of project within Montecito. Projects in Montecito minimize challenges and effort related to interagency cooperation and collaboration.
- **Permitting Complexity** - Anticipated complexity of permitting process, including the number of agencies involved, and RWQCB, DDW, CEQA, and Caltrans permitting.

ES.7.2 Pairwise Comparison for Criteria Ranking

A pairwise comparison is a process of comparing criteria in pairs to determine a relative preference for each criterion. The process is illustrated in Figure ES.16 in an example with four criteria: A, B, C, and D.

In the first step, the criteria are compared in pairs and in each pair a preferred criterion is identified. In the second step, the relative preference for each criterion is calculated based on the number of times each one was favored. Criterion A was favored 2 times out of 6; therefore its relative preference is 33 percent.

The relative preference for each criterion, also called the weighting factor, is used later in the project scoring process to develop a total project score that reflects MSD and MWD priorities.

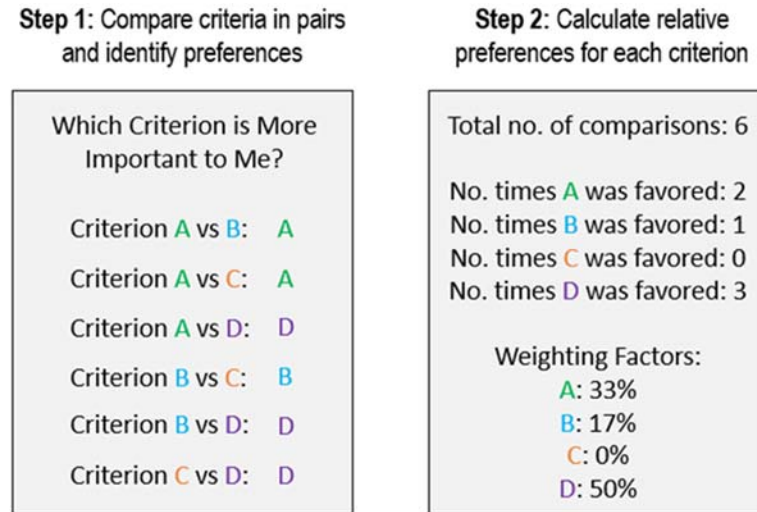


Figure ES.16 Example Illustrating the Process of Pairwise Comparison

ES.7.3 Evaluation Criteria Ranking Results

Staff from MSD and MWD were guided through the process of pairwise comparison for the 10 project evaluation criteria for water reuse projects. The results of the relative preferences for each criterion are summarized in Figure ES.17. Note that all criteria are important, even criteria with low or no relative ranking.

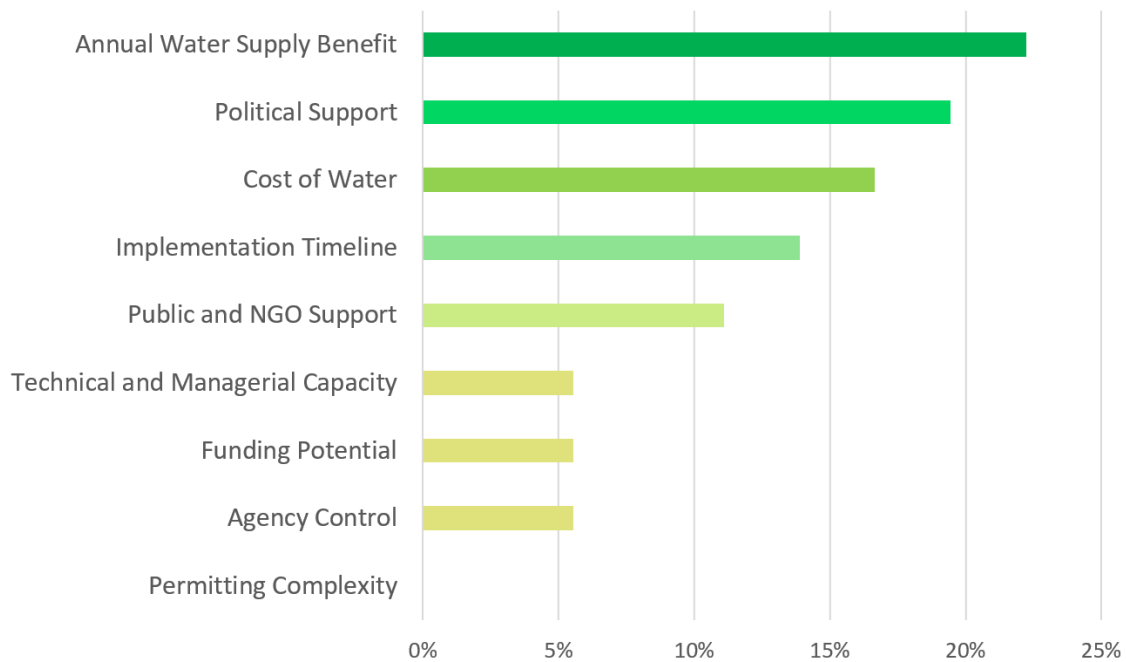


Figure ES.17 Weighting of Project Evaluation Criteria as a Result of Pairwise Comparison

ES.7.4 Project Scoring Results

Projects were scored in a collaborative process incorporating feedback from MWD and MSD representatives. Some of the key points underpinning the project scoring are as follows:

- For the quantitative categories of annual water supply benefit and cost of water, the project scores are normalized to the 'best' project – i.e., more water and lowest cost per unit. The best projects were scored as a 5.
- Political support: this criterion is intended to capture the likely future support of the MWD and MSD boards, as well as other elected officials. The highest score for DPR in Montecito reflects the support for agency control and maximizing the water supply benefit. The lower score for an NPR project reflects the general preference for potable reuse projects, while the lower score for IPR in Carpinteria via purification in Carpinteria reflects potential anticipated challenges related to the cost and schedule impacts of expanding the existing Carpinteria "CAPP" project. The delivery of purified water from Montecito to Carpinteria scores higher because it will not impact the CAPP project implementation.
- Implementation timeline: NPR in Montecito would be the least complex project to implement and therefore could likely be implemented within a few years. IPR projects could be implemented sooner than DPR projects and thus are scored higher. Santa Barbara has indicated that they will not pursue DPR before 2035, which is why that is the lowest scoring project in this category.

- Public and NGO support: several factors play into this category, including public confidence in water quality and safety of new supplies, trust in utility staff, and protection of the environment. There was an acknowledgement that DPR projects can be more challenging for the public to accept, therefore these projects were scored lower. In addition, a project in which Montecito's secondary effluent is sent to Carpinteria was also scored lower based on potential concerns about Montecito's waste going to Carpinteria for treatment and discharge into the ocean.
- Grant funding potential: factors that were assumed to increase the likelihood of receiving grant funding include larger project size, inclusion of regional partners, and implementing potable reuse (as opposed to NPR).
- Agency control: projects under the complete control of Montecito agencies were scored higher in this category. Project 2, IPR in Carpinteria via groundwater storage, also scored higher because Montecito would be in full control of the advanced water treatment portion of the project.
- Technical and managerial capacity: this category applies to the capacity needed in Montecito specifically (not for the project overall). The more advanced treatment Montecito is responsible for, the lower a project scored in this metric. If Montecito is operating an AWPf, there would be significant new needs regarding operational capacity (e.g., new AWTOs, additional lab staff), reporting, and other technical aspects.
- Permitting complexity: the score for this metric is highest for NPR, which is anticipated to be the easiest project to permit, and low for DPR, which is significantly more difficult to permit given the novelty of these types of projects.

As shown in Table ES.8, the project that received the highest score from the scoring process is IPR in Carpinteria via groundwater storage, followed by DPR in Santa Barbara. Both of these projects benefit from having regional partners while providing the highest water supply benefits for Montecito.

Table ES.8 Summary of Project Scoring

Criterion	Weight ⁽¹⁾	Project 1: NPR in Montecito	Project 2: IPR in Carpinteria (Groundwater Storage)	Project 3: IPR in Carpinteria (Purification in Carpinteria)	Project 4: DPR in Montecito	Project 5: DPR in Santa Barbara
Annual Water Supply Benefit	22%	2	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%	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%	5	3	3	2	1.5
WEIGHTED SCORE		3.0	3.6	3.2	3.3	3.5

Notes:

(1) Weighted scores were rounded for this table.

ES.8 Project "Loose Ends"

Throughout the documentation of this work, suggestions from internal stakeholders were captured and in some cases incorporated into the overall effort, such as the change to NPR treatment that does not include salt removal or the parallel examination of greenfield and retrofit MBR options. Other suggestions were not incorporated, either due to having a perceived fatal flaw or due to being outside the scope of work for this project. Such suggestions are chronicled below, allowing for them to be re-evaluated at a future date. These suggestions are categorized based upon the end use of the recycled water and the project partners for that end use.

- **NPR in Montecito:**
 - Salt removal:
 - As documented in TM 9 and illustrated previously, the expectation for NPR in Montecito is 128 AFY, of which about 100 AFY would go to larger customers that can blend with groundwater and thus reduce TDS levels in the tertiary recycled water.
 - For the remaining smaller potential users and the 28 AFY, more detailed discussions are needed to gain support, with a focus on salt tolerant landscaping.
 - Should salt removal be perceived as a necessity for some of the NPR customers, the addition of sidestream RO can be implemented, though at high cost, or decentralized at the point of use and customer's responsibility.
 - Santa Barbara Collaboration:
 - Santa Barbara recently completed an updated recycled water master plan, evaluating non-potable and potable water reuse (September 2022).
 - Within Santa Barbara's analysis is the potential for sending tertiary recycled water to the Montecito cemetery (30 AFY) and the Ty Warner Estate (5 AFY), at an approximate cost of \$3,400/AF.
- **IPR in Carpinteria:**
 - Secondary Treated Water in Carpinteria:
 - Having Carpinteria treat a combined MSD and CSD flow for purification means increased reverse osmosis concentrate (ROC) into the CSD outfall.
 - While analysis across California indicates that ROC discharge can be managed to minimize (or avoid) NPDES impacts, detailed analysis would be required prior to proceeding with this option.
 - Raw Wastewater to Carpinteria:
 - As documented in TM 8, two concepts for potable reuse involving Carpinteria were evaluated and costed, one sending secondary effluent to Carpinteria for purification as part of the CAPP project, and then groundwater injection and a second sending of purified water to Carpinteria for groundwater injection.
 - The concept of transferring raw wastewater to Carpinteria for treatment at the CSD WRP was discussed. Incorporation of all MSD flows at CSD may be feasible, but will significantly impact available capacity at CSD while also coming at a high cost to "buy in" to the CSD facility at about 30 percent of total capacity.

- Further discussions could be had on this concept, which would require a detailed CSD capacity review, potential analysis for expansion, and cost sharing agreements.
- For this work, the concept of sending raw wastewater to CSD from MSD was not included in the final evaluations.
- Secondary Effluent to Carpinteria Via Alternative Transport:
 - Within TM 9, pipeline infrastructure alignment and costs to transport equalized secondary effluent from MSD to Carpinteria for purification and later groundwater injection.
 - Project stakeholders suggested that the project team consider ways to transport secondary effluent from MSD to Carpinteria via a pipeline in the ocean, under the assumption that costs would be reduced compared to land-based construction.
 - The project team discussed the challenges of a pipeline in the ocean to transport secondary effluent from Montecito to Carpinteria, and concluded that it was not feasible from a cost or regulatory perspective. Example challenges include:
 - ◀ High construction cost via barge that requires significant anchoring to resist tidal energy.
 - ◀ Sensitive ocean habitats that would prohibit pipelines in TBD areas.
 - ◀ Robust engineering to address fault lines.
 - ◀ Leakage into the pipeline which would add salt to the feed water to purification.
 - ◀ Permitting requirements with RWQCB, Coastal Commission, Coast Guard, State Lands Commission, NOAA, National Marine Fisheries, US Fish and Wildlife, Army Corps of Engineers, CEQA.
 - ◀ Navigation impacts.
 - ◀ Public concern.
- Groundwater Modeling in the Carpinteria Basin
 - Prior to implementing a regional partnership with Carpinteria, new groundwater modeling is needed.
 - ◀ Modeling would determine (a) where additional injection of purified water could occur, (b) how much water can be injected, and (c) how long can water be stored.
 - ◀ New modeling should consider the inland confined and unconfined groundwater basins as well as a seawater intrusion barrier located closer to the coast.
 - ◀ Modeling would inform the need, or lack thereof, for additional injection wells, extraction wells, and monitoring wells.
 - Negotiations, coupled with the groundwater modeling, would also be required to determine several items:
 - ◀ The necessity of “put and take” into the groundwater basin, where the volume of purified water injected into the basin would need to be extracted within a short timeframe to avoid raising the pressure in the basin. If a put and take operational mode is required, it would limit the benefit of storage provided by the groundwater basin. However, even a put and take

- operation could provide benefit to Montecito by allowing for storage of water during low demand periods.
- ◀ Water transfer agreements, such as the injected water would be kept and used in Carpinteria and the equivalent volume would be recovered by Montecito through transfers from the South Coast Conduit. Interagency agreements would be needed to define these terms.
 - Regional Partnership with SSD:
 - SSD could become a third partner in a collaboration between Montecito and Carpinteria, providing their raw wastewater or secondary effluent for treatment and purification.
 - In one example, SSD could send equalized raw wastewater to MSD for secondary treatment, adding new supply to subsequent purification and groundwater recharge in the region.
 - Distributed Infrastructure
 - A more favorable alignment may exist within Caltrans right-of-way. Attempts were made to reach out to Caltrans but further engagement will be required during preliminary design. The more favorable alignment would bypass the Ortega Hill Road area through a bike path parallel to Highway 101. The alternative alignment would reduce pipeline lengths, pump sizing and operating costs, and reduce risk of conflicts in the utility dense area of Ortega Hill Road.
 - **Direct Potable Reuse in Montecito:**
 - TM 8 and TM 9 evaluated methods to implement DPR in Montecito.
 - The evaluated option highlighted in this document utilizes a pipeline to the head of the Bella Vista WTP, which provides important pathogen credits while also mixing the purified recycled water with other water to Montecito customers.
 - Implementation of this option should also consider the capacity of the Bella Vista WTP and any need for future expansion due to the added flow of purified water.
 - Testing would also be required to determine if there were any significant impact to WTP operation based upon the change in feed water quality.
 - Other options for DPR exist in Montecito without the use of Bella Vista, with specific benefits and challenges.
 - Benefits:
 - ◀ Reduced pipeline length to connect directly into the potable water distribution system.
 - ◀ No impact to Bella Vista capacity or operations.
 - Challenges:
 - ◀ Reduced pathogen credits, potentially requiring additional treatment prior to use.
 - ◀ Uneven distribution of purified recycled water within Montecito.

- **Direct Potable Reuse in Santa Barbara:**
 - TM 9 evaluated different options for moving MSD wastewater to Santa Barbara, including:
 - Equalized secondary effluent using new gravity sewers to connect into the Santa Barbara wastewater collection system.
 - Unequalized raw wastewater using new gravity sewers to connect directly to the El Estero WRP.
 - Other options not investigated for sending wastewater to Santa Barbara could include:
 - Installation of a force main to transfer either secondary effluent or raw wastewater.
 - Full EQ of raw wastewater at Montecito followed by connection to the existing Santa Barbara wastewater collection system.
 - Transfer of MSD secondary effluent directly to the effluent of the El Estero WRP.
 - Impacts of climate change, such as sea level rise and permitting concerns, were not included in Carollo’s scope of work. The alternatives for DPR in Santa Barbara pose the most risk based on conveyance path and topographic issues in terms of sea level rise, and, therefore, future analyses during the design phase would need to incorporate potential California Coastal Commission and Regional Water Quality Control Board input.

ES.9 Preferred Project and Next Steps

For Montecito to move forward with a reuse project, the next step is to identify the preferred project. The analysis above showed the highest ranking for Project 2 - IPR in Carpinteria (Groundwater Storage), which at this time is the preferred project.

For each of the project options, some high-level next steps have been identified and are presented in Table ES.9.

Moving ahead with Project 2, then, dictates pursuit of grant funding, predesign and 30 percent design, and initiating the CEQA process. Moving through predesign and 30 percent design provides much more accurate cost estimates, which, coupled with grant funding, will refine the economic viability of Project 2. Once completed, Montecito can revisit all project options to determine whether the preferred project should continue moving forward. It is possible that further analysis and other future unknown considerations may lead to the desire to pivot to a different project option.

Table ES.9 Potential Next Steps for Each Reuse Project Alternative

Next Steps	
Project 1: NPR in Montecito	<ul style="list-style-type: none"> • Confirm recycled water customers and verify water quality expectations to determine whether RO is needed • Secure access to freeway undercrossing(s) • Initiate CEQA and predesign/30 percent design
Project 2: IPR in Carpinteria (Groundwater Storage)	<ul style="list-style-type: none"> • Develop a memorandum of understanding or other documentation that defines terms of partnership between participating agencies • Coordinate with CVWD on additional groundwater basin modeling to confirm capacity • Secure access to freeway undercrossing • Pilot test secondary DAF if MBR is not the selected wastewater treatment process • Initiate CEQA and predesign/30 percent design • Position for and submit for grant funding
Project 3: IPR in Carpinteria (Purification in Carpinteria)	<ul style="list-style-type: none"> • Develop a memorandum of understanding or other documentation that defines terms of partnership between participating agencies • Coordinate with CVWD on additional groundwater basin modeling to confirm capacity • Pilot test secondary DAF if MBR is not the selected wastewater treatment process • Initiate CEQA, predesign/30 percent design, and design to minimize schedule impact to the CAPP project • Position for and submit for grant funding
Project 4: DPR in Montecito	<ul style="list-style-type: none"> • Move forward with design and implementation of a demonstration facility • Begin developing public outreach plan • Monitor DPR regulations due by end of 2023
Project 5: DPR in Santa Barbara	<ul style="list-style-type: none"> • Develop a memorandum of understanding or other documentation that defines terms of partnership between participating agencies • Based on project timing and selected alternative, determine what investments are needed at MSD WWTP if plant will be decommissioned in the 15-year horizon



State Water Resources Control Board

November 30, 2022

Montecito Sanitary District
Attn: Bradley Rahrer - General Manager
1042 Monte Cristo Lane
Montecito, CA 93108

Agreement Number: SWRCB0000000000D2205004
Project Number: C-06-8630-110

Please review, and if appropriate, electronically sign the signature page of the Agreement via Adobe Sign. Once electronically signed, the Agreement will be routed automatically to the next signer. You will automatically receive a copy of the fully executed Agreement via Adobe Sign once the final signer has signed. This Agreement cannot be considered binding by either party until executed by the State Water Resources Control Board (State Water Board).

For the Funding Agreement to be executed by the State Water Board, the signature page **must be signed and returned electronically**:

If you have questions about the General Counsel Opinion Letter, Bond Counsel Letter, and Closing Resolution should be directed by your legal counsel to Berna Kamyar, at (916) 327-8558 or email at berna.kamyar@waterboards.ca.gov.

Be aware that all projects receiving funding must comply with all applicable implementing guidelines and regulations adopted by the California Department of Industrial Relations (DIR), regarding state prevailing wage requirements. You must contact DIR for guidance on how to comply. Information can be found at: <http://www.dir.ca.gov/lcp.asp>.

We strive to provide superior service to our recipients and would appreciate your feedback on the application process. Please assist us in completing a 5-minute Customer Satisfaction Survey at <https://www.surveymonkey.com/s/DWSRFsatisfaction> so we can continue to improve on our service and process. Your comments are valuable to the success of the DWSRF Program. Thank you for your time and we look forward to continuing to work with you.

Mr. Brian Morris may be contacted at (916) 322-3603 or brian.morris@waterboards.ca.gov.

Enclosures

E. JOAQUIN ESQUIVEL, CHAIR | EILEEN SOBECK, EXECUTIVE DIRECTOR

1001 I Street, Sacramento, CA 95814 | Mailing Address: P.O. Box 100, Sacramento, CA 95812-0100 | www.waterboards.ca.gov



**WATER RECYCLING FUNDING PROGRAM
PLANNING GRANT**

**AGREEMENT No. D2205004
by and between
MONTECITO SANITARY DISTRICT ("Recipient")
AND
CALIFORNIA STATE WATER RESOURCES CONTROL BOARD ("State Water Board")**

for the purpose of the

**MAXIMIZING WASTEWATER REUSE IN MONTECITO
C-06-8630-110 ("Project")**

- **Section 79143 of the Water Code, and Resolution No. 2019-0058.**
- **Section 80147 of the Public Resources Code and Resolution No. 2019-0058.**

**PROJECT FUNDING AMOUNT: \$219,930
GRANT COMPONENT: \$219,930
ESTIMATED REASONABLE PROJECT COST: \$439,861**

**ELIGIBLE WORK START DATE: OCTOBER 7, 2021
WORK COMPLETION DATE: JANUARY 31, 2025
FINAL REIMBURSEMENT REQUEST DATE: JULY 7, 2025
RECORDS RETENTION END DATE: JANUARY 31, 2061**

1. The State Water Board and the Recipient mutually promise, covenant, and agree to the terms, provisions, and conditions of this Agreement, including the following Exhibits, which are attached hereto or are incorporated by reference:
 - EXHIBIT A – SCOPE OF WORK AND SCHEDULE
 - EXHIBIT B – SPECIFIC FUNDING PROVISIONS
 - EXHIBIT C – GENERAL TERMS AND CONDITIONS 2019-NOV
 - EXHIBIT D – SPECIAL CONDITIONS

2. The following documents are also incorporated by reference, as well as any documents incorporated by reference in Exhibit D:
 - the Waste Discharge Requirement Order No. R3-2012-0016 and National Pollutant Discharge Elimination System Permit No. NPDES CA0047899

3. Party Contacts during the term of this Agreement are:

State Water Board		Montecito Sanitary District	
Section:	Division of Financial Assistance		
Name:	Travis Thrasher, Project Manager	Name:	Bradley Rahrer, General Manager
Address:	1001 I Street, 16 th Floor	Address:	1042 Monte Cristo Lane
City, State, Zip:	Sacramento, CA 95814	City, State, Zip:	Montecito, CA 93108
Phone:	(916) 341 - 5476	Phone:	(805) 969 - 4200
Fax:		Fax:	
Email:	Travis.thrasher@waterboards.ca.gov	Email:	brahrer@montsan.org

Each party may change its contact upon written notice to the other party. While Party Contacts are contacts for day-to-day communications regarding Project work, the Recipient must provide official communications and notices to the Division's Deputy Director.

4. Conditions precedent to this Agreement are set forth as follows:
 - (a) The Recipient must deliver to the Division a resolution authorizing this Agreement and identifying its authorized representative by title.

5. The Recipient represents, warrants, and commits to the following as of the Eligible Work Start Date and continuing thereafter for the term of this Agreement, which shall be at least until the Records Retention End Date:
 - (a) The Recipient agrees to comply with all terms, provisions, conditions, and commitments of this Agreement, including all incorporated documents.
 - (b) The execution and delivery of this Agreement, including all incorporated documents, has been duly authorized by the Recipient. Upon execution by both parties, this Agreement constitutes a valid and binding obligation of the Recipient, enforceable in accordance with its terms, except as such enforcement may be limited by law.
 - (c) None of the transactions contemplated by this Agreement will be or have been made with an actual intent to hinder, delay, or defraud any present or future creditors of Recipient. The Recipient is solvent and will not be rendered insolvent by the transactions contemplated by this Agreement. The Recipient is able to pay its debts as they become due. The Recipient

maintains sufficient insurance coverage considering the scope of this Agreement, including, for example but not necessarily limited to, general liability, automobile liability, workers compensation and employer liability, professional liability.

- (d) The Recipient is in compliance with all State Water Board funding agreements to which it is a party.
- 6. This Agreement, and any amendments hereto, may be executed and delivered in any number of counterparts, each of which when delivered shall be deemed to be an original, but such counterparts shall together constitute one document. The parties may sign this Agreement, and any amendments hereto, either by an electronic signature using a method approved by the State Water Board or by a physical, handwritten signature. The parties mutually agree that an electronic signature using a method approved by the State Water Board is the same as a physical, handwritten signature for the purposes of validity, enforceability, and admissibility.

IN WITNESS WHEREOF, this Agreement has been executed by the parties hereto.

MONTECITO SANITARY DISTRICT:

STATE WATER RESOURCES CONTROL BOARD:

By: _____

Name: Bradley Rahrer
Title: General Manager

Date: _____

By: _____

Name: Joe Karkoski
Title: Deputy Director
Division of Financial Assistance

Date: _____

EXHIBIT A – SCOPE OF WORK AND SCHEDULE

A.1 PROJECT PURPOSE AND DESCRIPTION.

The Project is for the benefit of the Recipient. The funding under this Agreement shall be used to further investigate, validate, and develop four water reuse project alternatives for the Montecito Sanitary District (District) and the Montecito Water District (MWD), building upon prior work from the 2018 MWD Recycled Water Facilities Plan (RWFP). The project seeks to identify the best method of maximizing wastewater reuse capabilities thus producing a new local drought proof water supply for the community and reducing the discharge of treated wastewater to the ocean.

A.2 SCOPE OF WORK.

The Recipient agrees to produce a draft and final Facilities Planning Report in accordance with the following major tasks:

ITEM	DESCRIPTION
1.	Wastewater Treatment Plant Alternatives Analysis:
	1.1 Evaluate the existing Montecito Sanitary District WWTP processes and facilities to develop baseline costs and a rehabilitation plan. 1.2 Address additional water quality challenges and evaluate their impact on treatment processes. 1.3 Evaluate the impact of the 2021 SWRCB Addendum to the Framework for regulating DPR in California on future treatment processes and estimated costs. 1.4 Consider current treatment processes and capacities at the City of Santa Barbara and Carpinteria Sanitary District (CSD) WWTP's and required modifications for a potential regional project. 1.5 Perform a preliminary evaluation of the minimum flows necessary to maintain constant discharge in the existing Montecito Sanitary District outfall.
2.	Infrastructure Alternatives Analysis:
	2.1 Analyze the operational impacts and the necessary infrastructure to support each type of project including: Non-Potable Reuse (NPR), Indirect Potable Reuse (IPR) in Carpinteria, Direct Potable Reuse (DPR) in Montecito, and DPR in Santa Barbara. 2.2 Address additional challenges not included in the previous Recycled Water Facilities Plan including permitting in the coastal zone, highway and railroad crossings, creek crossings, easements and right of way access and agreements.
3.	Decision Matrix of Alternatives:
	3.1 Analyze and rank the four proposed alternatives: (1) NPR in Montecito (2) IPR partnering with Carpinteria Valley Water District and/or Carpinteria Sanitary District (3) DPR in Montecito (4) DPR partnering with the City of Santa Barbara.
4.	Report:
	4.1 Organize the culmination of the stakeholder engagement, wastewater treatment capacity and condition assessments, and the cost-benefit analysis into technical memos/reports with the objective of providing the districts with the information necessary to help determine the most appropriate recycled water project for the community.

A.3 SCHEDULE.

Failure to provide items by the due dates indicated in the table below may constitute a material violation of this Agreement. The Project Manager may adjust the dates in the "Estimated Due Date" column of this table, but Critical Due Date adjustments will require an amendment to this Agreement. The Recipient must complete and submit all work in time to be approved by the Division prior to the Work Completion Date. As applicable for specific submittals, the Recipient must plan adequate time to solicit, receive, and address comments prior to submitting the final submittal. The Recipient must submit the final Reimbursement Request prior to the Final Reimbursement Request Date set forth on the Cover Page.

ITEM	MILESTONES	CRITICAL DUE DATE	ESTIMATED DUE DATE
	Draft Project Report submittal		01/31/2023
	Mid-course Meeting		03/31/2023
	Final Project Report submittal		01/31/2024
	Work Completion Date	01/31/2025	
	Final Reimbursement Request/End of Draw	07/07/2025	

The Recipient must deliver any request for extension of the Work Completion Date no less than 90 days prior to the Work Completion Date.

The Division may require corrective work to be performed prior to Project Completion. Any work occurring after the Work Completion Date will not be reimbursed under this Agreement.

A.4 PROJECT REPORTS.

(a) The Recipient must submit a draft Project Report consistent with the Scope of Work above to the Division with a copy to the appropriate Regional Water Board on or before the due date established by the Division and the Recipient. If the Recipient fails to submit a timely draft Final Project Report, the State Water Board may stop processing pending or future applications for new financial assistance, withhold reimbursements under this Agreement or other agreements, and begin administrative proceedings.

(b) The Recipient must submit a Final Project Report consistent with the Scope of Work above to the Division with a copy to the appropriate Regional Water Board on or before the due date established by the Division and the Recipient in advance of the Final Reimbursement Request Date. If the Recipient fails to submit a timely Final Project Report, the State Water Board may stop processing pending or future applications for new financial assistance, withhold reimbursements under this Agreement or other agreements, and begin administrative proceedings.

EXHIBIT B – FUNDING AMOUNTS

B.1 ESTIMATED REASONABLE COST AND PROJECT FUNDS.

The estimated reasonable cost of the total Project is set forth on the Cover Page of this Agreement, and is greater than or equal to the funding anticipated to be provided by the State Water Board under this Agreement. Subject to the terms of this Agreement, the State Water Board agrees to provide Project Funds not to exceed the amount of the Project Funding Amount set forth on the Cover Page of this Agreement.

B.2 RECIPIENT CONTRIBUTIONS.

The Recipient must pay any and all costs connected with the Project including, without limitation, any and all Project Costs. If the Project Funds are not sufficient to pay the Project Costs in full, the Recipient must nonetheless complete the Project and pay that portion of the Project Costs in excess of available Project Funds, and shall not be entitled to any reimbursement therefor from the State Water Board.

B.3 VERIFIABLE DATA.

Upon request by the Division, the Recipient must submit verifiable data to support deliverables specified in the Scope of Work. The Recipient's failure to comply with this requirement may be construed as a material breach of this Agreement.

B.4 BUDGET COSTS.

The Division's Form 260 and Form 261 will document a more detailed budget of eligible Project Costs and Project funding amounts.

Project Costs incurred prior to the Eligible Work Start Date on the cover page of this Agreement are not eligible for reimbursement.

Budget costs are contained in the Summary Project Cost Table below:

LINE ITEM	PROJECT FUNDING AMOUNT
Draft Project Report	\$109,965
Final Project Report	\$109,965
TOTAL	\$219,930

Indirect Costs are ineligible for funding under this Agreement.

The Recipient is prohibited from requesting disbursement amounts that represent Recipient's mark-ups to costs invoiced or otherwise requested by consultants or contractors.

B.5 LINE ITEM ADJUSTMENTS.

Adjustments may be made between line items, as approved by the Project Manager, at the time of Recipient's submittal of its final Reimbursement Request. The sum of adjusted line items must not exceed the Project Funding Amount.

Exhibit B

B.6 REIMBURSEMENT PROCEDURE.

a. Project Funds will be provided in two reimbursements:

1. Reimbursement of approved costs of up to 50 percent of the total Project Funding Amount will occur after Division staff have approved the draft Project Report. Approval of the draft report will not occur until after the Mid-Course meeting, at the earliest.
2. Reimbursement of the remaining approved Project Costs will occur after Division staff have approved the final Project Report or have authorized suspension of work under this Agreement due to a determination of lack of feasibility.

b. The Recipient must not request reimbursement for any Project Cost until such cost has been incurred and is currently due and payable by the Recipient, although the actual payment of such cost by the Recipient is not required as a condition of reimbursement. Supporting documentation (e.g., receipts) must be submitted with each Reimbursement Request. The amount requested for Recipient's administration costs must include a calculation formula (i.e., hours or days worked times the hourly or daily rate = total amount claimed). Reimbursement of Project Funds will be made only after receipt of a complete, adequately supported, properly documented, and accurately addressed Reimbursement Request.

c. The Recipient must spend Project Funds within 30 days of receipt. If the Recipient earns interest earned on Project Funds, it must report that interest immediately to the State Water Board. The State Water Board may deduct earned interest from future reimbursements.

d. The Recipient must not request a reimbursement unless that Project Cost is allowable, reasonable, and allocable.

e. Notwithstanding any other provision of this Agreement, no reimbursement shall be required at any time or in any manner which is in violation of or in conflict with federal or state laws, policies, or regulations.

Notwithstanding any other provision of this Agreement, the Recipient agrees that the State Water Board may retain an amount equal to ten percent (10%) of the Project Funding Amount until Project Completion. Any retained amounts due to the Recipient will be promptly disbursed to the Recipient, without interest, upon Project Completion.

B.7 REVERTING FUNDS AND DISENCUMBRANCE.

In the event the Recipient does not submit Reimbursement Requests for all funds encumbered under this Agreement timely, any remaining funds revert to the State. The State Water Board may notify the Recipient that the project file is closed, and any remaining balance will be disencumbered and unavailable for further use under the Agreement.

Exhibit B

EXHIBIT C – GENERAL TERMS AND CONDITIONS 2019-NOV

GENERAL TERMS AND CONDITIONS 2019-NOV is incorporated by reference and is posted at https://www.waterboards.ca.gov/water_issues/programs/grants_loans/general_terms.html

Exhibit C

EXHIBIT D – SPECIAL CONDITIONS

D.1 DEFINITIONS.

Each capitalized term used in this Agreement has the following meaning:

- “Authorized Representative” means the duly appointed representative of the Recipient as set forth in the certified original of the Recipient’s authorizing resolution that designates the authorized representative by title.
- “Eligible Work Start Date” means the date set forth on the Cover Page of this Agreement, establishing the date on or after which any costs may be incurred and eligible for reimbursement hereunder.
- “Enterprise Fund” means the enterprise fund of the Recipient in which Revenues are deposited.
- “Event of Default” means, in addition to the meanings set forth in Exhibit C, the occurrence of any of the following events:
 - a) A material adverse change in the condition of the Recipient, which the Division reasonably determines would materially impair the Recipient’s ability to satisfy its obligations under this Agreement.
- “Guidelines” means the State Water Board’s “Water Recycling Funding Program Guidelines” in effect as of the execution date of this Agreement.
- “Indirect Costs” means those costs that are incurred for a common or joint purpose benefiting more than one cost objective and are not readily assignable to the Project (i.e., costs that are not directly related to the Project). Examples of Indirect Costs include, but are not limited to: central service costs; general administration of the Recipient; non-project-specific accounting and personnel services performed within the Recipient organization; depreciation or use allowances on buildings and equipment; the costs of operating and maintaining non-project-specific facilities; tuition and conference fees; generic overhead or markup; and taxes.
- “Revenues” means, for each Fiscal Year, all gross income and revenue received or receivable by the Recipient from the ownership or operation of the System, determined in accordance with GAAP, including all rates, fees, and charges (including connection fees and charges) as received by the Recipient for the services of the System, and all other income and revenue howsoever derived by the Recipient from the ownership or operation of the System or arising from the System, including all income from the deposit or investment of any money in the Enterprise Fund or any rate stabilization fund of the Recipient or held on the Recipient’s behalf, and any refundable deposits made to establish credit, and advances or contributions in aid of construction.
- “System” means all wastewater, water recycling, and/or potable water collection, pumping, transport, treatment, storage, and/or disposal facilities, including land and easements thereof, owned by the Recipient, including the Project, and all other properties, structures or works hereafter acquired and constructed by the Recipient and determined to be a part of the System, together with all additions, betterments, extensions or improvements to such facilities, properties, structures, or works, or any part thereof hereafter acquired and constructed.

D.2 ADDITIONAL REPRESENTATIONS AND WARRANTIES.

The Recipient has not made any untrue statement of a material fact in its application for this financial assistance or omitted to state in its application a material fact that makes the statements in its application not misleading.

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The Recipient agrees to fulfill all assurances, declarations, representations, and commitments in its application, accompanying documents, and communications filed in support of its request for funding under this Agreement.

The execution, delivery, and performance by Recipient of this Agreement, including all incorporated documents, do not violate any provision of any law or regulation in effect as of the date of execution of this Agreement by the Recipient, or result in any breach or default under any contract, obligation, indenture, or other instrument to which Recipient is a party or by which Recipient is bound as of the date of execution of this Agreement by the Recipient.

Except as set forth in this paragraph, there are, as of the date of execution of this Agreement by the Recipient, no pending or, to Recipient's knowledge, threatened actions, claims, investigations, suits, or proceedings before any governmental authority, court, or administrative agency which materially affect the financial condition or operations of the Recipient and/or the Project.

There are no proceedings, actions, or offers by a public entity to acquire by purchase or the power of eminent domain any of the real or personal property related to or necessary for the Project.

The Recipient is duly organized and existing and in good standing under the laws of the State of California. Recipient must at all times maintain its current legal existence and preserve and keep in full force and effect its legal rights and authority. Within the preceding ten years, the Recipient has not failed to demonstrate compliance with state or federal audit disallowances.

Any financial statements or other financial documentation of Recipient previously delivered to the State Water Board as of the date(s) set forth in such financial statements or other financial documentation: (a) are materially complete and correct; (b) present fairly the financial condition of the Recipient; and (c) have been prepared in accordance with GAAP. Since the date(s) of such financial statements or other financial documentation, there has been no material adverse change in the financial condition of the Recipient, nor have any assets or properties reflected on such financial statements or other financial documentation been sold, transferred, assigned, mortgaged, pledged or encumbered, except as previously disclosed in writing by Recipient and approved in writing by the State Water Board.

The Recipient is current in its continuing disclosure obligations associated with its material debt, if any.

The Recipient has no conflicting or material obligations, except as set forth in this paragraph.

The Recipient and its principals, contractors, and subcontractors, to the best of the Recipient's knowledge and belief, are not presently debarred, suspended, proposed for debarment, declared ineligible, or otherwise excluded from participation in any work overseen, directed, funded, or administered by the State Water Board program for which this funding is authorized; nor have they engaged or permitted the performance of services covered by this Agreement from parties that are debarred or suspended or otherwise excluded from or ineligible for participation in any work overseen, directed, funded, or administered by the State Water Board program for which this funding is authorized.

D.3 ACKNOWLEDGEMENTS.

The Recipient must include the following acknowledgement in any document, written report, or brochure to be shared with the general public prepared in whole or in part pursuant to this Agreement:

"Funding for this project has been provided in full or in part under Proposition 13 – the Water Quality, Supply, and Infrastructure Improvement Act of 2014, and Proposition 68 through an agreement with the State Water Resources Control Board. The contents of this document do not necessarily reflect the views and policies of the foregoing, nor does mention of trade names or commercial products constitute endorsement or recommendation for use."

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D.4 RESERVED.

D.5 RETURN OF FUNDS.

Notwithstanding any other provision of this Agreement, if the Division determines that an Event of Default has occurred, the Recipient may be required, upon demand, to immediately return to the State Water Board any grant or principal forgiveness amounts received pursuant to this Agreement and pay interest at the highest legal rate on all of the foregoing.

D.6 DAMAGES FOR BREACH OF TAX-EXEMPT STATUS.

In the event that any breach of any of the provisions of this Agreement by the Recipient results in the loss of tax-exempt status for any bonds of the State or any subdivision or agency thereof, or if such breach results in an obligation on the part of the State or any subdivision or agency thereof to reimburse the federal government by reason of any arbitrage profits, the Recipient must immediately reimburse the State or any subdivision or agency thereof in an amount equal to any damages paid by or loss incurred by the State or any subdivision or agency thereof due to such breach.

D.7 NOTICE.

Upon the occurrence of any of the following events, the Recipient must notify the Division's Deputy Director and Party Contacts by phone and email within the time specified below:

- (a) The Recipient must notify the Division and Party Contacts promptly of the occurrence of any of the following events:
- i. Bankruptcy, insolvency, receivership or similar event of the Recipient, or actions taken in anticipation of any of the foregoing;
 - ii. Change of ownership of the Project (no change of ownership may occur without written consent of the Division);
 - iii. Loss, theft, damage, or impairment to Project;
 - iv. Events of Default, except as otherwise set forth in this section;
 - v. A proceeding or action by a public entity to acquire the Project by power of eminent domain.
 - vi. Any litigation pending or threatened with respect to the Project or the Recipient's technical, managerial or financial capacity or the Recipient's continued existence;
 - vii. Consideration of dissolution, or disincorporation;
 - viii. Enforcement actions by or brought on behalf of the State Water Board or Regional Water Board.
 - ix. The discovery of a false statement of fact or representation made in this Agreement or in the application to the Division for this funding, or in any certification, report, or request for reimbursement made pursuant to this Agreement, by the Recipient, its employees, agents, or contractors;

Exhibit D

- x. Any substantial change in scope of the Project. The Recipient must undertake no substantial change in the scope of the Project until prompt written notice of the proposed change has been provided to the Division and the Division has given written approval for the change;
- xi. Any circumstance, combination of circumstances, or condition, which is expected to or does delay Work Completion for a period of ninety (90) days or more;
- xii. Any Project monitoring, demonstration, or other implementation activities required in this Agreement;
- xiii. Any public or media event publicizing the accomplishments and/or results of this Agreement and provide the opportunity for attendance and participation by state representatives with at least ten (10) working days' notice to the Division;
- xiv. Any event requiring notice to the Division pursuant to any other provision of this Agreement; and
- xv. Work Completion, and Project Completion.

D.8 FRAUD, WASTE, AND ABUSE.

The Recipient shall prevent fraud, waste, and the abuse of Project Funds, and shall cooperate in any investigation of such activities that are suspected in connection with this Agreement. The Recipient understands that discovery of any evidence of misrepresentation or fraud related to Reimbursement Requests, invoices, proof of payment of invoices, or other supporting information, including but not limited to double or multiple billing for time, services, or any other eligible cost, may result in an administrative action by the State Water Board and/or referral to the Attorney General's Office or the applicable District Attorney's Office for appropriate action. The Recipient further understands that any suspected occurrences of false claims, misrepresentation, fraud, forgery, theft or any other misuse of Project Funds may result in withholding of reimbursements and/or the termination of this Agreement requiring the immediate repayment of all funds disbursed hereunder. A person who knowingly makes or causes to be made any false statement, material misrepresentation, or false certification in any submittal may be subject to a civil penalty, criminal fine, or imprisonment. (Wat. Code, § 13490 et seq.)

D.9 DISPUTES.

The Recipient must continue with the responsibilities under this Agreement during any dispute. The Recipient may, in writing, appeal a staff decision within 30 days to the Deputy Director of the Division or designee, for a final Division decision. The Recipient may appeal a final Division decision to the State Water Board within 30 days. The Office of the Chief Counsel of the State Water Board will prepare a summary of the dispute and make recommendations relative to its final resolution, which will be provided to the State Water Board's Executive Director and each State Water Board Member. Upon the motion of any State Water Board Member, the State Water Board will review and resolve the dispute in the manner determined by the State Water Board. Should the State Water Board determine not to review the final Division decision, this decision will represent a final agency action on the dispute. This provision does not preclude consideration of legal questions, provided that nothing herein shall be construed to make final the decision of the State Water Board, or any official or representative thereof, on any question of law. This section relating to disputes does not establish an exclusive procedure for resolving claims within the meaning of Government Code sections 930 and 930.4.

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D.10 EXECUTIVE ORDER N-6-22 — RUSSIAN SANCTIONS.

On March 4, 2022, Governor Gavin Newsom issued Executive Order N-6-22 (the EO) regarding Economic Sanctions against Russia and Russian entities and individuals. "Economic Sanctions" refers to sanctions imposed by the U.S. government in response to Russia's actions in Ukraine, as well as any sanctions imposed under state law. The EO directs state agencies to terminate contracts with, and to refrain from entering any new contracts with, individuals or entities that are determined to be a target of Economic Sanctions. Accordingly, should the State Water Board determine Recipient is a target of Economic Sanctions or is conducting prohibited transactions with sanctioned individuals or entities, that shall be grounds for termination of this Agreement. The State Water Board shall provide Recipient advance written notice of such termination, allowing Recipient at least 30 calendar days to provide a written response. Termination shall be at the sole discretion of the State Water Board.

The Recipient represents that the Recipient is not a target of economic sanctions imposed in response to Russia's actions in Ukraine imposed by the United States government or the State of California. The Recipient is required to comply with the economic sanctions imposed in response to Russia's actions in Ukraine, including with respect to, but not limited to, the federal executive orders identified in California Executive Order N-6-22, located at <https://www.gov.ca.gov/wp-content/uploads/2022/03/3.4.22-Russia-Ukraine-Executive-Order.pdf> and the sanctions identified on the United States Department of the Treasury website (<https://home.treasury.gov/policy-issues/financial-sanctions/sanctions-programs-and-country-information/ukraine-russia-related-sanctions>). The Recipient is required to comply with all applicable reporting requirements regarding compliance with the economic sanctions, including, but not limited to, those reporting requirements set forth in California Executive Order N-6-22 for all Recipients with one or more agreements with the State of California with an aggregated value of Five Million Dollars (\$5,000,000) or more. Notwithstanding any other provision in this Agreement, failure to comply with the economic sanctions and all applicable reporting requirements may result in termination of this Agreement.

For Recipients with an aggregated agreement value of Five Million Dollars (\$5,000,000) or more with the State of California, reporting requirements include, but are not limited to, information related to steps taken in response to Russia's actions in Ukraine, including but not limited to:

1. Desisting from making any new investments or engaging in financial transactions with Russian institutions or companies that are headquartered or have their principal place of business in Russia;
2. Not transferring technology to Russia or companies that are headquartered or have their principal place of business in Russia; and
3. Direct support to the government and people of Ukraine.

D.11 STATE CROSS-CUTTERS.

Recipient represents that, as applicable, it complies and covenants to maintain compliance with the following for the term of the Agreement:

- The California Environmental Quality Act (CEQA), as set forth in Public Resources Code 21000 et seq. and in the CEQA Guidelines at Title 14, Division 6, Chapter 3, Section 15000 et seq.
- Water Conservation requirements, including regulations in Division 3 of Title 23 of the California Code of Regulations.
- Monthly Water Diversion Reporting requirements, including requirements set forth in Water Code section 5103.

Exhibit D

- Public Works Contractor Registration with Department of Industrial Relations requirements, including requirements set forth in Sections 1725.5 and 1771.1 of the Labor Code.
- Volumetric Pricing & Water Meters requirements, including the requirements of Water Code sections 526 and 527.
- Urban Water Management Plan requirements, including the Urban Water Management Planning Act (Water Code, § 10610 et seq.).
- Urban Water Demand Management requirements, including the requirements of Section 10608.56 of the Water Code.
- Delta Plan Consistency Findings requirements, including the requirements of Water Code section 85225 and California Code of Regulations, title 23, section 5002.
- Agricultural Water Management Plan Consistency requirements, including the requirements of Water Code section 10852.
- Charter City Project Labor Requirements, including the requirements of Labor Code section 1782 and Public Contract Code section 2503.
- The Recipient agrees that it will, at all times, comply with and require its contractors and subcontractors to comply with directives or orders issued pursuant to Division 7 of the Water Code.

Exhibit D

California Environmental Quality Act (CEQA) Determination

Montecito Sanitary District (Applicant)
Maximizing Wastewater Reuse in Montecito (Project)
Project Number: 8630-110

As the Deputy Director for the State Water Resources Control Board (State Water Board), Division of Financial Assistance, I have been delegated the authority to approve and execute the financing agreement for projects that are routine and non-controversial. The execution of the financing agreement is an action that is subject to CEQA. The authority to make this CEQA determination necessarily accompanies the delegation to approve and execute the financing agreement for this Project. I hereby find the following:

1. The Applicant is the CEQA Lead Agency and the State Water Board is a Responsible Agency under CEQA.
2. This Project is exempt from CEQA, as the Project scope involves planning and feasibility studies (CEQA Guidelines, California Code of Regulations, title 14, division 6, chapter 3, article 18, section 15262), and/or data collection, research, experimental management and resource evaluation activities (CEQA Guidelines, California Code of Regulations, title 14, division 6, chapter 3, article 19, section 15306), which will not result in any significant adverse water quality impacts.

Joe Karkoski Digitally signed by Joe Karkoski
Date: 2022.11.28 16:09:35
-08'00'
Water Boards

11/28/2022

Joe Karkoski, Deputy Director
Division of Financial Assistance

Date