Montecito Sanitary District
1042 Monte Cristo Lane
Santa Barbara, CA 93108
A Public Service Agency
Phone: (805) 969-4200
www.montsan.org

BOARD PACKET

For the Special Board Meeting of

Thursday, August 5, 2021

Funding Opportunities for Agencies

Program	Eligible Projects	Deadline
Clean Water State Revolving Fund (Loans)	Wastewater treatment, local sewers, water reclamation	Rolling
Water Recycling Funding Program (Grant)	Construction of recycled water treatment facilities, storage facilities, pumping facilities, groundwater recharge facilities, and recycled water distribution systems (including onsite improvements)	December 31st
CA Department of Water Resources Prop 1 Integrated Regional Water Management Implementation (Grant)	Projects included in an adopted IRWM Plan: restoring surface storage capacity, recycling and reusing local wastewater, augmenting and/or expanding water supply, conserving water supply, increasing sustainable groundwater storage	Late 2021 or Early 2022 (TBD)
Federal Economic Development Administration (Loans & Grants)	Construction, non-construction, technical assistance, and revolving loan fund project	Rolling

Key Milestones Completed to Date

+ Researched potential funding opportunities for current and future capital projects
+ District staff has enrolled in:
    - Financial Assistance Application Submittal Tool (FAAST)
    - SoCal Regional Energy Network
    - GrantsCA.gov and Grants.gov
    - EnergyCA.gov
+ Monitored American Rescue Plan Act and infrastructure spending terms

Future Steps:

+ Meet with SoCal REN, SCE Representatives and other loan program administrators
+ Continue conversations with Project Manager for Recycled Water Funding Program Grant and submit application
+ Research funding opportunity qualifications to identify eligible projects

			Funding Type			
	Potential Funding Program	**Program Owner**	**Loan**	**Grant**	**Rebate**	**Potential District Projects**
Infrastructure Replacement	Clean Water State Revolving Fund Loan	CA State Water Resources Control Board	X			2021 Electrical Rehabilitation Project, Pump and motor replacements at Plant and Lift Stations, large scale infrastructure projects
	Revolving Funds for Financing Water and Wastewater Projects	USDA	X			Wastewater Treatment Projects, short term small capital improvement projects
	Water and Waste Disposal Loan & Grant Program	USDA	X	X		Septic to Sewer Conversion Projects, Sewer Main Extensions
	Prop 1 Small Community Wastewater	CA State Water Resources Control Board	X			Septic to Sewer Conversion Projects, Sewer Main Extensions
Recycled Water	Recycled Water Funding Program	CA State Water Resources Control Board		X		Enhanced Recycled Water Feasibility Study
Energy	On-Bill Financing	SCE	X			Solar, energy efficiency projects
	Technical Assistance Program	SCE	X	X	X	High energy demand
	High Opportunity Projects and Programs (HOPPS)	SCE			X	Energy efficiency projects
	Customized Incentive Programs	SCE			X	Energy efficiency projects
	California Lending for Energy and Environmental Needs (CLEEN) Center	Infrastructure and Economic Development Bank	X			Solar, energy efficiency projects

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MONTECITO SANITARY DISTRICT

STAFF REPORT

DATE: Thursday, August 5, 2021

TO: Board of Directors

FROM: Bradley Rahrer, General Manager

SUBJECT: Enhanced Recycled Water Feasibility Study

RECOMMENDATION:

That The Board of Directors:

1. Authorize the General Manager and District Counsel to work with the Montecito Water District to prepare a contract for the Enhanced Recycled Water Feasibility Study; and
2. Increase the FY21-22 CIP budget allocation for the recycled water fund from $75,000 to $219,930 to fund a contract with Carollo Engineers.

DISCUSSION:

Background – The Montecito Water District (MWD) is working towards further evaluating Montecito's alternatives for the use of recycled water within the community. The currently proposed Enhanced Recycled Water Feasibility Study (Study) scope of work will further refine the analysis of MWD's 2018 Recycled Water Feasibility Plan and expand on potential potable reuse projects, including possible regional partnerships with the City of Santa Barbara or Carpinteria Valley Water District. In order to better understand the wastewater quality and facilities needed to support a reliable recycled water project, the Study includes an evaluation of Montecito Sanitary District treatment facilities.

District staff has worked with MWD staff and Carollo Engineers over the past few months to refine the proposed scope of work and cost estimate. The schedule for the proposed scope of work is estimated to take 9 to 12 months to complete.

Fiscal Impact – The District's approved Fiscal Year 2021-2022 CIP budget includes $75,000 for funding the Study. The proposed cost for the Study's full

scope of work is $439,861 which includes an optional task for Carollo to provide technical support for the Recycled Water Pilot Plant should the District begin operating the pilot plant again. Note that the total cost to the District would decrease significantly if any alternatives were determined to be infeasible in the early stages of the project.

With a total cost of $439,861 and a 50% cost share with MWD, the District's portion of the contract would be $219,930. To fund the Study, staff recommends the Board, increasing the FY21-22 CIP budget allocation for recycled water from $75,000 to $219,930. Currently, the District's Recycled Water Fund has a balance of $1,096,680 as of June 30, 2021.

MWD and MSD are working collaboratively to apply for grant funding from the State Water Resources Control Board to offset the cost of this Study. MSD staff have participated in conversations with state representatives recently about the possibility of funding for the proposed enhanced recycled water feasibility study and it is likely the additional scope, or at least a portion of it, would be considered for additional grant funding by the State's Water Recycling Funding Program. The state planning grants now match up to 50% of a $300,000 study, or up to $150,000.

Previous Related Action – At the July 15, 2021 Strategic Planning Committee Carollo Engineers presented the Enhanced Recycled Water Feasibility Study scope of work. On July 21, 2021, the MWD/MSD Joint Strategic Planning Committee discussed the proposed scope of services and cost sharing between the two districts. The Committee members were supportive of moving forward with a contract with Carollo Engineers and equal cost sharing between MSD and MWD for all elements of the scope of work, including the optional recycled water pilot system support task.

At the regularly scheduled MWD Board Meeting on July 27, 2021, the MWD Board of Directors authorized MWD Staff to prepare and execute a contract with Carollo Engineers and sharing the cost of the Study 50/50 with MSD.

At the MSD Finance Committee meeting of August 3, 2021; staff presented the cost breakdown of the study, and the Committee's analysis was that the District has the funds in the Recycled Water Fund to finance 50% of the contract.

OTHER STAKEHOLDERS INVOLVED: Montecito Water District

ATTACHMENTS:

- Enhanced Recycled Water Feasibility Study Cost Breakdown,
- Revised proposed FY2021-22 CIP Budget for Enhanced Recycled Water Feasibility Study

Enhanced Recycled Water Feasibility Study Cost Breakdown

Task	Cost	MSD Share of Study (50% Cost Share)
Task 1: Document Review and Meetings	$ 26,746.00	$ 13,373.00
Task 2: Wastewater Treatment Plant Alternatives Analysis	$ 190,052.00	$ 95,026.00
Task 3: Infrastructure Alternatives Analysis	$ 102,775.00	$ 51,387.50
Task 4: Decision Making Workshop and Summary Report	$ 55,849.00	$ 27,924.50
Task 5: Project Management	$ 44,690.00	$ 22,345.00
Total Hours (Tasks 1 to 5)	**$ 420,112.00**	**$ 210,056.00**
Optional Task: Membrane Demonstration Support	$ 19,749.00	$ 9,874.50
Total Project Costs with Optional Membrane Support	**$ 439,861.00**	**$ 219,930.50**

Previously budgeted $ 75,000.00

Additional Amount Needed from Recycled Water Fund $ 144,930.50

APPROVED FY 2021-2022 Capital Improvement Project Budget

Update to Recycled Water Estimated FY21-22 Cost for Aug 3, 2021 Finance Committee Mtg

Annual Projects			
No.	**Description**	**Estimated Project Cost**	**Estimated FY21-22 Cost**
1	**Scheduled and Emergency Replacements**	**$ -**	**$ 100,000**
2	**Manhole Raising/ Repair/ Replacement**	**$ -**	**$ 400,000**
	A. Highway 192 Lower and Raise 60 Manholes- Caltrans	$ 150,000	←
	A1. Highway 192 Lower and Raise 60 Manholes- Caltrans: Inspection	$ 30,000	←
	B. N. Jameson Raise 14 Manholes- County	$ 25,200	←
	C. Fernald Point Lower and Raise 2 Manholes- County	$ 5,000	←
	D. Private road manhole raising/repair/replace	$ 30,000	←
3	**Sewer Main Repair / Replacement/ Lining**	**$ -**	**$ 175,000**
	A. Trunk mainline, Manholes, and sewer lining rehab project- design only	$ 50,000	←
	B. Brooktree Road Sewer Main Replacement	$ 28,000	←
		$ 318,200	**$ 675,000**

New Projects FY2021-22			
No.	**Description**	**Estimated Project Cost**	**Estimated FY21-22 Cost**
	Electrical Rehabilitation Project (including: AB blower project, VFD's)	$ 840,000	$ 840,000
	Skimmer troughs need to be replaced	$ 90,000	$ 55,000
	Digester Blowers replacement	$ 33,000	$ 33,000
	Roof for Admin, Operations, and Board room building	$ 65,000	$ 65,000
	Maintenance Gate controller with new keypads	$ 13,500	$ 13,500
	Main Gate replacement with motorized gate and keypads	$ 24,000	$ 24,000
	HVAC system for admin, board room, and maintenance building	$ 40,000	$ 40,000
	Forklift purchase	$ 35,000	$ 35,000
	Channel Drive Lift Station - wet well access hatch and force main replacement design	$ 50,000	$ 50,000
		$ 1,190,500	**$ 1,155,500**

Sewer Main Extension Projects*			
No.	**Description**	**Estimated Project Cost**	**Estimated FY21-22 Cost**
9	Caltrans HOV- Posilipo gravity main and force main relocation- design	$ 177,900	$ 177,900
9	Caltrans HOV- Posilipo gravity main and force main relocation- construction	$ 1,000,000	$ 500,000
9	*Lilac and Oak Grove Sewer Main Extension Construction	$ 2,323,137	$ 2,323,137
9	*Ashley Road Pump Station Design	$ 150,000	$ 150,000
9	*Ashley Road & E. Mountain Pipeline Design Costs	$ 100,000	$ 100,000
9	*Ashley Road and E. Mountain Extension Construction	$ 2,500,000	$ 1,250,000
These projects are not yet Board-approved, and are expected to recoup construction costs from homeowners.		**$ 6,251,037**	**$ 4,501,037**

Recycled Water Fund			
No.	**Description**	**Dedicated Fund**	**Estimated FY21-22 Cost**
	Enhanced Recycled Water Feasibility Study (assume 50-50 share with MWD)	$ 1,096,679	**$ 219,931**
	Net RW Fund Balance after proposed FY21-22 expenditure:	*$*	*876,748.27*

Total for FY 2021-2022 $ 6,551,468

Enhanced Recycled Water Feasibility Analysis

Andrew Salveson, PE
Vice President
Carollo Engineers

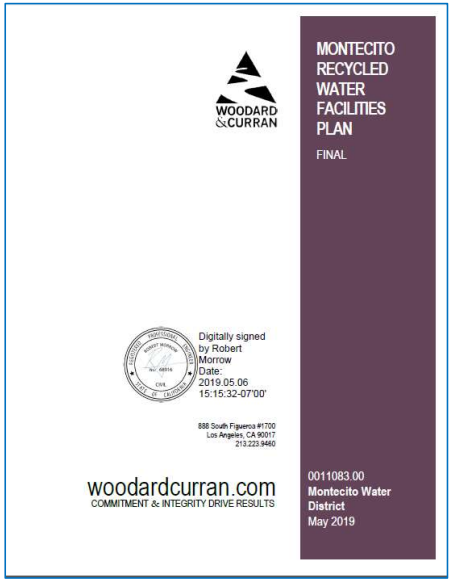
Rob Morrow, PE
Principal
Water Systems Consulting

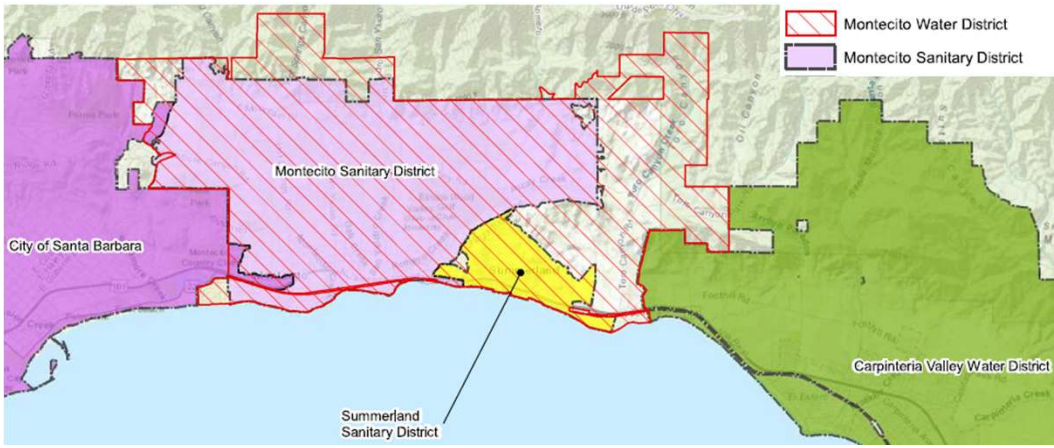
Meeting with MWD // July 21, 2021

Project Overview

Project Goals

- Explore and develop recycled water alternatives for the Montecito Sanitary District (MSD) and Montecito Water District (MWD).
- Build upon and update prior work from the 2018 MWD Recycled Water Facilities Plan (RWFP).
- Develop specific water reuse projects in which reuse of MSD's average dry weather flow (ADWF) is maximized.
- Evaluate the MSD wastewater treatment plant (WWTP), a "mini" master plan.
- Provide a cost-benefit analysis (Level 5) sufficient for the districts to determine appropriate recycled water projects for the community.
- Evaluate potential regional collaboration with Santa Barbara and Carpinteria.





Potential Water Reuse Alternatives

1) Large non-potable water reuse project in Montecito
2) Collaboration with Carpinteria (2 of 3 options to be evaluated)
   a) Raw wastewater
   b) Secondary effluent
   c) Purified Water
3) Potable Reuse in Montecito
   a) "Raw Water Augmentation" to Bella Vista WTP
   b) "Finished Water Augmentation"
4) Collaboration with Santa Barbara
   a) Raw wastewater or secondary effluent to Santa Barbara leading to potable reuse via "Raw Water Augmentation" to Cater WTP…potential project for SB is ~2035.

Note: DPR projects are complex, to plan, to engineer, and to operate. Assume 10 years to implement a project from start to finish

Project Tasks

Task 1: Document Reviews and Meetings

Work Item	Notes
Review of relevant documents	Get up to speed, improved because of partnership with WSC
Review of Direct Potable Reuse regulations	Some uncertainty, regulations are draft
Other water reuse issues?	Future state-wide water recycling mandate in the future (Hertzberg). Future water conservation credits.
Collaboration meetings	Work with Carpinteria and Santa Barbara to find regional solutions
Internal meetings	Maintain cohesive approach

Task 2: Wastewater Treatment Plant Alternatives Analysis

Work Item	Notes
MSD Flow and NPDES permit analysis	Define permit conditions/changes. Understand minimum flows as well as maximum flows.
Carpinteria and Santa Barbara WWTP capacity analysis	Defines ability to handle both dry weather and wet weather flow from Montecito.
Detailed MSD WWTP analysis	Condition assessment, performance, capacity, rehabilitation costs, full upgrade and replacement, O&G treatment, non-potable and potable reuse treatment analysis.

Task 3: Infrastructure Alternatives Analysis

Work Item	Notes
Non-potable reuse customer and infrastructure update	Demand, costs, cost allocation and recovery.
Carpinteria Project	Pumping and piping, impact to Carpinteria WWTP and IPR project (capacity, cost, etc). Limited evaluation of SSD flows. Consideration of water supply delivery options (e.g., transfers).
Montecito Project	Update 2018 RWFP infrastructure analysis and costs. Evaluation of Bella Vista WTP capacity and performance impacts.
Santa Barbara Project	Pumping and piping, impact to Santa Barbara WRP. Update and expansion of prior DPR evaluation in Santa Barbara. Evaluation of Cater WTP capacity and performance impacts.

Task 4: Decision Making Workshop and Executive Summary

Work Item	Notes
Workshops for Decision Making	Staff, Committee, Board, five total workshops. Includes ranking of preferred alternatives.
Alternatives Analysis Executive Summary	Summary of all tasks and recommendations

Optional Task: Membrane Demonstration Support

Work Item	Notes
Evaluation of lower cost reclamation via pilot treatment system	Could result in limited O&G pretreatment. Could minimize WWTP upgrades.
Pilot support	Weekly meetings with operations staff and membrane operations specialist

Discussion

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Meeting with MWD // July 21, 2021

Level of Effort

Task	Level of Effort (Engineering Hours)	Cost
Task 1: Document Review and Meetings	~120	$26,746
Task 2: Wastewater Treatment Plant Alternatives Analysis	~880 (~500 hours for MSD WWTP mini master plan)	$190,052
Task 3: Infrastructure Alternatives Analysis	~430	$102,775
Task 4: Decision Making Workshop and Summary Report	~250	$55,849
Task 5: Project Management	~190	$44,690
Optional Task: Membrane Demonstration Support	~90	$19,749
Total Hours (Tasks 1 to 5)	**~1,870**	**$420,112**

DRAFT Scope of Work

Enhanced Recycled Water Feasibility Analysis (PROJECT)

6/18/2021

The purpose of the following scope of work is to further explore and develop recycled water alternatives for the Montecito Sanitary District (MSD) and the Montecito Water District (MWD). This work will build upon, and update where needed, prior work from the 2018 MWD Recycled Water Facilities Plan (RWFP). The focus is to further develop specific water reuse projects in which recovery of MSD's average dry weather flow (ADWF) as new water is maximized. The PROJECT will include an in-depth cost-benefit analysis sufficient to provide the districts with the information necessary to help determine the appropriate recycled water project for the community.

The project includes detailed evaluations of the MSD Water Reclamation Plant (WRP) as well as limited review of flow and capacity at the City of Santa Barbara's WRP and the Carpinteria Sanitary District's WRP. Early meetings will be held with potential partner agencies, and if fatal flaws are identified, the scope of work and project budget will be reduced accordingly.

The PROJECT will consider the following alternatives for comparison:

1. Large non-potable reuse (NPR) project from 2018 MWD RWFP.
    a. Includes updated demand and cost estimates, as well as project benefits.
    b. The source of supply to be provided by MSD, and the quantity to include current availability and a larger flow considering septic to sewer conversions across MSD's service area.
    c. Considers impact to the MSD NPDES discharge due to the reduced and more concentrated flow to the outfall.
2. Carpinteria Groundwater Basin Indirect Potable Reuse (IPR) project from 2018 MWD RWFP
    a. Includes updated treatment and distribution requirements, and cost estimates.
    b. Considers conveying raw wastewater, secondary treated water or advanced treated water to Carpinteria for treatment and/or injection into the groundwater basin.
    c. The source of supply to be provided by MSD considering one current flow and one future flow (both average dry weather flow (ADWF) and peak wet weather flow (PWWF), with the future flow considering future septic to sewer conversions across MSD's service.
    d. Considers impact to the MSD NPDES discharge due to the reduced and/or more concentrated flow to the outfall.
3. Raw water augmentation at MWD's Bella Vista Water Treatment Plant from 2018 MWD RWFP
    a. Includes updated transmission/treatment requirements, and cost estimates as well as other potential requirements identified in recent State direct potable reuse draft regulations.
    b. The source of supply to be provided by MSD, considering one current flow and one future flow (both ADWF and PWWF), with the future flow considering future septic to sewer conversions across MSD's service.
    c. Considers impact to the MSD NPDES discharge due to the reduced and more concentrated flow to the outfall.
4. Raw water augmentation at Cater Water Treatment Plant in partnership with the City of Santa Barbara.
    a. Considers conveying MSD's raw wastewater or secondary treated water to Santa Barbara, considering one current flow and one future flow (both ADWF and PWWF),

with the future flow considering future septic to sewer conversions across MSD's service.

b. Considers impact to the MSD NPDES discharge due to the reduced flow to the outfall.

Participation and review from the MSD and/or the MWD will be needed to support the PROJECT. Related to all of the deliverables by the CONSULTANT (the TMs and meeting minutes), CONSULTANT assumes that MSD/MWD comments be compiled into one response for each deliverable by MSD/MWD so that the combined input can be efficiently addressed by CONSULTANT.

Task 1: Document Review & Meetings

Task 1.1 – Review of Materials

CONSULTANT shall review the following existing documents to be provided by the Districts:

- 2018 MWD Recycled Water Facilities Plan (RWFP); 2019 MSD Title 22 Engineering Report (which was for the pilot project and non-potable project to the cemetery);
- MSD National Pollutant Discharge Elimination System Permit;
- MSD Pilot Project Data;
- MSD Pilot Project October 2020 Progress Report;
- MSD Plant Data;
- Coastal Development Plan Consolidated Application and Adopted Mitigated Negative Declaration for MSD Development Plan Projects (for the recycled water facilities and serving the cemetery only).
- Review of materials provided by potential partner agencies, including City of Santa Barbara, Carpinteria Sanitation District, Carpinteria Water District and Summerland Sanitary District.
- Additionally, CONSULTANT will review progress and potential for a state-wide requirement for effluent discharge minimization to promote greater recycled water use (e.g., the Hertzberg efforts, most recently SB 332, which if passed would be requiring wastewater treatment facilities to reduce the volume of treated wastewater discharged into the ocean annually by 50% in 2030 and 95% by 2040).

Task 1.2 – Kickoff Meeting

Kick-off Meeting with Staff. CONSULTANT shall attend a meeting with staff from both MWD and MSD (collectively "Districts Staff") to review the scope of work, develop a detailed work plan and schedule, identify initial data needed to begin work and methods to obtain data, and establish schedule for monthly check-in meetings (virtual).

Deliverable: Meeting Minutes

Task 1.3 – Collaboration Meetings

Water reuse options evaluated herein require collaboration with outside agencies in Carpinteria (CVWD and CSD) and the City of Santa Barbara. Accordingly, CONSULTANT will work with MSD and MWD to meet with outside agencies at the onset of the project, during the development of preliminary options, and prior to completion of the project. For purposes of budgeting, up to three meetings (total) will be held via a combination of in person and via the web, with Carpinteria and Santa Barbara. The project may expand to include the Summerland Sanitary District (SSD). In that case, scope and budget may be needed to cover discussions with SSD.

Ahead of each meeting, CONSULTANT will develop an agenda, information requests, and a presentation. Following each meeting, CONSULTANT will develop meeting summaries which also highlight challenges and options for potential project implementation.

MWD/MSD will meet with potential non-potable reuse customers included in the 2018 RWFP to review the project and solicit feedback on cost, governance, and regulation. Feedback will be provided to CONSULTANT.

Deliverable: Meeting Minutes

Task 2: Wastewater Treatment Plant Alternatives Analysis

The CONSULTANT work detailed herein focuses upon the MSD plant and will build upon the 2018 RWFP. The alternatives will all be further developed based upon two new water production targets (current and future, value to be confirmed by MSD/MWD as part of first phase of project), which would be used for non-potable reuse (NPR), indirect potable reuse (IPR), or direct potable reuse (DPR). The level of treatment will vary based upon end use.

Because of high TDS in the MSD water reclamation plant (WRP) effluent, at least partial stream reverse osmosis (RO) is required for NPR applications. Further, RO is required for all IPR and DPR applications. As such, low pressure membrane treatment is necessary to protect the downstream RO membranes. Conventional low-pressure membranes (such as microfiltration (MF) or ultrafiltration (UF)) and RO cannot tolerate more than 1 or 2 mg/L of Oil and Grease (O&G). Because the WRP effluent has variable and often high levels of O&G, the project must develop treatment to robustly remove O&G ahead of membrane treatment.

Work within this section also includes a brief review of CSD and the City of Santa Barbara WRPs, as options within this project consider sending raw wastewater to either facility.

It must also be noted here that the MSD has a UF and RO pilot system (Pilot) on site which is examining membrane performance on the current WRP effluent. Some details on this pilot testing are included in the task discussions below.

2.1 – MSD Flow and NPDES Permit Analysis

CONSULTANT will examine MSD ADWF and PWWF under current flows and loads (2018, 2019, 2020, 2021) and expanded flow conditions based upon potential future septic to sewer conversions in the service area. Added flow and load from septic to sewer conversions will be based upon simple ratios of the domestic flow to the number of homeowners for the current service area, including discussion of the expanded flow estimates with MSD staff. This flow and load analysis will require an understanding of institutional/commercial flows within the MSD sewershed to allow for accurate future flow and load estimations. The flow evaluation will result in selection of one current ADWF and one future ADWF for water reuse options, as well as providing important information on flow relevant to other aspects of this project.

CONSULTANT will perform a preliminary evaluation of the minimum flows necessary to maintain constant discharge in the existing outfall will be completed. That analysis will consider the flushing velocity (and frequency) needed as well as the minimum flow (pressure) needed to keep the duckbill valves open. Note that an outfall model is not part of this scope.

CONSULTANT will examine the MSD NPDES permit, existing water quality data, supplemental data from other sites where appropriate, and document which parameters (if any) represent a potential NPDES permit challenge based upon the use of RO based advanced treatment on the MSD effluent. In

particular, the treatment of the ADWF with RO will result in a concentration of pollutants in the ocean outfall. An outfall dilution model, which is not in this scope, would be a follow-on task, if needed.

Examining the available and future flow, the flow constraints related to the duckbill valve and ocean outfall, and potential NPDES concerns will result in conclusions of an appropriate advanced treated water flow for both current and future conditions.

Deliverable: Flow and NPDES Technical Memorandum (TM)

2.2 – CSD and Santa Barbara WRP Capacity

CONSULTANT shall collect CSD and Santa Barbara WRP capacity information and examine if and how much additional raw wastewater flow could be sent from MSD to the respective WWTPs, ranging from MSD ADWF to MSD peak wet weather flow (PWWF). No evaluation of WWTP upgrades at CSD or the City of Santa Barbara is considered in this task. Further, no evaluation of ocean outfall impacts associated with the purification of MSD flows to CSD or Santa Barbara is included. Should one or both of these options appear promising, a more detailed analysis of the incremental impact of purification of MSD flow to either CSD or Santa Barbara NPDES permit compliance would be needed.

CSD and Santa Barbara staff will be asked for an estimate of the annual cost to provide contract wastewater treatment to MSD both now and in the future.

Work on Task 2.2 will be done after the first Collaboration Meeting (Task 1.3) with CSD and Santa Barbara and written clearance from MSD/MWD to proceed on this task.

Deliverable: CSD and Santa Barbara WRP Capacity TM

2.3 – Evaluation of Existing MSD WWTP

MSD does not have a current Master Plan or long-range CIP developed that considers the life of existing assets or costs to replace and run the MSD facilities over the next 30 years. To fairly compare costs and options, the cost to rehabilitate the existing MSD facility must be evaluated.

2.3.1 – Condition Assessment

CONSULTANT will conduct an onsite assessment of the WWTP to determine the current condition of the facilities structures, process mechanical equipment, electrical equipment and ancillary assets. Prior to the site visit, CONSULTANT will review the existing as-built drawings (including evaluation of seismic considerations) and then work with MSD to develop a protocol and asset scoring matrix. CONSULTANT will conduct one day of physical condition assessment of the structures and equipment using a team of engineers to conduct the assessments including electrical, structural, and mechanical engineers. Input from operations, maintenance, and/or management staff during the assessment will be critical to understand and document issues that are not evident from the visual inspections and the criticality of each asset.

Given the concern about the condition of the concrete in the Aeration Basins, prior to the condition assessment site visit, if MSD empties and cleans out a basin, the structural engineers will be able to see the insides of the basin. If concrete testing appears to be warranted, then structural engineers will recommend type of testing to be performed separately under a different contract. If the basins are not empty, the structural engineer will make suggestions based on what can be seen above the water line and the outsides of the tanks and will provide recommendations for further evaluation. The results and findings of the condition assessments will be summarized in a technical memorandum.

Deliverable: MSD Condition Assessment TM

2.3.2 – Evaluation of WWTP Performance and Capacity

CONSULTANT will review process data to evaluate historical performance and capacity of existing facilities. CONSULTANT will review last five (5) years of historical WRF operation and performance data and compare to original design criteria and typical industry values. Review performance, hydraulic, and solids loadings for major unit process areas and associated reliability criteria. Review and summarize effluent and biosolids quality data.

CONSULTANT will perform a process capacity analysis to determine the current capacity of existing facilities. Each process will be assigned an equivalent flow or load capacity based on recommended operating and reliability criteria. Developing a capacity rating for the headworks, primary clarifiers, and chlorine contact basin will be straight-forward and will generally be based on hydraulic constraints, overflow rates, or detention times. Historical performance and process modeling will be used to determine the capacity for the secondary and solids handling processes.

Deliverable: MSD Performance and Capacity TM

2.3.3 – Costs for Rehabilitation and Operation of MSD WWTP over next 30 years.

Using the results of the condition assessment and WWTP performance/capacity evaluation, CONSULTANT will identify replacement, rehabilitation, and capacity needs for the WWTP over the next 30 years. A list of CIP projects will be developed based on any deficiencies identified or anticipated replacements required based on end of useful life during the 30 year period. Future facilities needs will be based on assumption of in-kind or like replacement. There will not be an evaluation of different treatment alternatives, with the exception of the MBR which is evaluated in the subsequent task. Development of future facility needs will include preparing simple process schematics and establishing design criteria and preliminary sizing, conceptual site plans, an AACE Class 5 (order of magnitude) capital cost estimate, and operation and maintenance costs.

Deliverable: MSD Future Facilities Needs and Costs TM

2.3.4 – MBR

CONSULTANT will utilize raw wastewater data (flow and quality) to estimate the cost of a membrane bioreactor (MBR). MBR will be preceded by appropriate pretreatment (e.g., screens) to protect the MBR membranes. Flow values will focus upon existing flow as well as with the addition of septic to sewer conversions. The MBR will treat the entire process flow, not a side stream. A raw wastewater data request will be submitted to the MSD at the kickoff of the project. Development of the MBR option will include preparing simple process schematics and establishing design criteria and preliminary sizing, conceptual site plans, an AACE Class 5 (order of magnitude) capital cost estimate, and operation and maintenance costs.

Deliverable: MSD MBR TM

2.4 – O&G Treatment at MSD

The MSD is now developing a robust database of O&G concentrations at the WRP, including in the raw wastewater, in the WRP effluent (after disinfection), in the feed to the WRP's Pilot, and at different locations within the Pilot. Additionally, MSD may expand testing of O&G in the collection system.

The existing data shows good O&G removal across the WRP, but there remains periodically high O&G levels in the WRP effluent that raise concerns about membrane operation and performance.

Accordingly, a robust O&G removal step is required ahead of membrane treatment. Three approaches to O&G reduction will be evaluated below. AACE Class 5 (order of magnitude) construction cost estimates as well as O&M cost estimates will be developed for each alternative.

No bench-scale or pilot scale testing will be done in support of this cost estimate. Should the MSD/MWD move ahead with a preferred project, bench or pilot testing for O&G reduction will be essential.

Deliverable: MSD WRP O&G Treatment TM

2.4.1 – Primary Dissolved Air Floatation (DAF)

CONSULTANT will utilize the O&G data gathered by MSD to estimate the cost of a Primary DAF that treats 100% of the WRP influent flow.

2.4.2 – Secondary DAF

CONSULTANT will utilize the O&G data gathered by MSD to estimate the cost of a Secondary DAF that treats a portion of WRP effluent flow (current and future) for reuse.

2.4.3 – MBR

MBR can address the O&G concerns, with the MBR analysis included in a prior task.

2.5 – Recycled Water Treatment Options at MSD

CONSULTANT will develop recycled water treatment trains for NPR, IPR, and DPR projects. For projects that utilize DAF (either primary or secondary), all recycled water treatment trains will require low pressure membrane filtration (e.g., MF or UF) followed by RO. For projects that utilize MBR, low pressure membranes after MBR are not necessary and MBR is simply followed by RO. Development of recycled water options will include preparing simple process schematics and establishing design criteria and preliminary sizing, conceptual site plans, an AACE Class 5 (order of magnitude) capital cost estimate, and operation and maintenance costs.

Deliverable: Recycled Water Treatment TM

2.5.1 – Non-Potable Water Reuse

CONSULTANT will develop two NPR treatment trains at the MSD WRP.

- Option 1 – Following MBR, treatment will include a partial stream RO for TDS reduction (capacity TBD) and UV disinfection for the ADWF (value TBD).
- Option 2 – Using WRP effluent that has either Primary DAF or secondary DAF, treatment will include a full stream UF at the ADWF (values TBD) followed by partial stream RO for TDS reduction (capacity TBD) and UV disinfection for the full flow.

Infrastructure (piping, pumping) for this option is detailed in a subsequent task.

2.5.2 – Indirect Potable Reuse

CONSULTANT will develop two IPR treatment trains at MSD WRP:

- Option 1 – Following MBR, treatment will include a full stream RO and UV advanced oxidation process (AOP) at the ADWF (values TBD).
- Option 2 – Using WRP effluent that has either Primary DAF or secondary DAF, treatment will include a full stream UF, RO, and UV AOP at the ADWF (values TBD).

Engineering analysis for both options will include stabilization of the purified water, where necessary.

Infrastructure (piping, pumping) for this option is detailed in a subsequent task.

2.5.3 – Direct Potable Reuse

CONSULTANT will develop two DPR treatment trains at MSD WRP, both serve to purify water ahead of addition to MWD's Bella Vista Water Treatment Plant, which is designated as Raw Water Augmentation:

- Option 1 – Following MBR, treatment will include a full stream RO and UV AOP at the ADWF (values TBD) followed by additional chemical and pathogen removal steps necessary to meet the draft DDW regulations for DPR. Additional monitoring systems and engineered storage may be included in this analysis.
- Option 2 – Using WRP effluent that has either Primary DAF or secondary DAF, treatment will include a full stream Ozone, BAC, UF, RO, and UV AOP at the ADWF (values TBD). Additional monitoring systems and engineered storage may be included in this analysis.

Engineering analysis for both options will include stabilization of the purified water. Infrastructure (piping, pumping) for this option is detailed in a subsequent task. Direct potable reuse with the City of Santa Barbara, which would require Santa Barbara to do the treatment and purification, is included in a subsequent task.

Task 3: Infrastructure Alternatives Analysis

The work detailed herein will build upon the 2018 RWFP. The alternatives will examine how new water will be used and the infrastructure (pumping, piping, wells, etc.) needed to implement a project.

3.1 – Non-Potable Reuse

The 2018 RWFP customer and infrastructure analysis will be updated for NPR alternatives. Customer demands will be updated. Costs will be updated to today's dollars and flow assumptions will be updated. To support alternatives comparison, CONSULTANT will discuss potential cost allocation and recovery (recycled water fees) scenarios to characterize alternative revenues.

3.2 – IPR in Carpinteria

Work on Task 3.2 will be initiated after the first Collaboration Meeting (Task 1.3) with CSD and written clearance from MSD/MWD to proceed on this task.

CONSULTANT will build on the alternative characterized in the 2018 RWFP and evaluate two alternatives to be defined based on the meetings in Task 1.3. The alternatives may include conveying (1) raw wastewater to the CSD WRP and advanced treatment plant, (2) secondary treated water to an advanced treatment plant located at the CSD WRP and (3) conveying advanced treated water directly for groundwater injection. The raw wastewater option includes sending all flow, which includes PWWF to the CSD WRP. The addition of SSD flows will be considered at a high level as part of a sensitivity analysis.

CONSULTANT will examine potential infrastructure alignments for constructability and cost. Consideration of CalTrans permitting challenges will be provided.
CONSULTANT will work with Carpinteria Valley Water District (CVWD) to determine potentially acceptable recharge volumes and extraction needs. CONSULTANT will work with the CVWD to assign a cost for purification associated with the portion of flow originating from MSD. Groundwater modeling is not part of this scope of work.

CONSULTANT will work with CVWD and MWD to define potential water supply delivery options (e.g. water transfers) and obligations associated with a joint groundwater recharge project. This discussion would include drought impacts (reduced or zero Cachuma and SWP allocations) and new water reliability. This work is a review only, and does not include a MOU between the agencies.

Evaluation of interagency agreements is not part of this scope of work.

3.3 – DPR in Montecito

CONSULTANT will build on the alternative characterized in the 2018 RWFP and evaluate conveying advanced treated water to Bella Vista WTP. CONSULTANT will identify potential connections to the MWD water system. Potential alignments will be evaluated for constructability and cost.

CONSULTANT will evaluate the treatment processes and capacity at the Bella Vista WTP, including any potential operational impacts associated with blending purified water with the existing feed water supply. The costs of expanding the Bella Vista WTP is not included in this scope. No meeting with operational staff is included in this effort.

3.4 – DPR in Santa Barbara

Work on Task 3.4 will be initiated after the first Collaboration Meeting (Task 1.3) with Santa Barbara and written clearance from MSD/MWD to proceed on this task.

CONSULTANT will evaluate conveyance of either (1) raw wastewater or (2) secondary treated water from MSD WWTP to Santa Barbara WRP. Raw wastewater option will consider both ADWF and PWWF as well as impacts to the Santa Barbara WRP. CONSULTANT will rely on infrastructure information, based upon past work, provided by Santa Barbara on infrastructure needed to move water from the Santa Barbara WWTP to the Cater WTP in Santa Barbara. Costs from past studies will be updated to current date.

CONSULTANT will update prior DPR cost analysis for Santa Barbara to 2021 dollars, including an expansion of produced water based upon MSD ADWF. CONSULTANT will work with the Santa Barbara to assign a cost for purification associated with the portion of flow originating from MSD.

CONSULTANT will evaluate the treatment processes and capacity at the Cater WTP, including any potential operational impacts associated with blending purified water with the existing feed water supply. No meeting with operational staff is included in this effort.

Evaluation of cost sharing and interagency agreements is not part of this scope of work.

3.5 – Infrastructure Analysis TM

Development of infrastructure options will include preparing simple maps/schematics and establishing design criteria and preliminary sizing, an AACE Class 5 (order of magnitude) capital cost estimate, and operation and maintenance costs. CONSULTANT will summarize results of Tasks 3.1-3.4 in a Technical Memorandum.

Deliverable: Recycled Water Infrastructure TM

Task 4: Decision Making Workshop and Executive Summary

CONSULTANT develop an agenda, presentation materials, and host several workshops to review the information above, discuss the advantages and disadvantages of each option, and gain consensus upon preferred alternatives. Workshops are envisioned for

(a) staff
(b) Joint MSD/MWD committee (2)
(c) Joint MSD/MWD Board meeting

The workshop with staff would include a ranking effort to document preferred alternatives. Up to five workshops or presentations to decision makers are assumed for budget purposes.

CONSULTANT will document the results of the workshops along with the information generated in all tasks above into a single Alternatives Analysis Executive Summary, with both Draft and Final versions.

Deliverable: Alternatives Analysis TM

Task 6: Project Management

The CONSULTANT will provide project management services, including project team assignment, meeting preparation and attendance, maintenance and monitoring of the budget and schedule, and quality assurance and quality control of deliverables. The PROJECT duration is assumed to be 12 months. With focused effort, the schedule may be able to be reduced, potentially to 9 months.

CONSULTANT will issue monthly invoices to the Districts details work conducted during the billing period.

CONSULTANT will conduct monthly progress meetings.

Optional Task: Membrane Demonstration Support

The ongoing UF and RO pilot facility presents an opportunity for a lower cost water reclamation project, one that *potentially* would not require O&G pretreatment by either Primary DAF, tertiary DAF, or MBR. The ongoing pilot work is evaluating:

1. UF operational performance, including flux, permeability, and fouling;
2. O&G reduction across bag filtration, including a pH reduction step;
3. RO operational performance, including flux, permeability, and fouling.

CONSULTANT shall review pilot testing results (1 hour a week) and attend 1-hour meetings on a weekly basis for the duration of testing, estimated here as a 6-month period. CONSULTANT will provide written recommendations of potential modifications to system operation and testing. No formal test protocol is part of this scope.

Deliverable: Pilot Summary Report

Project Assumptions:

- *Standard of Care*. The Consultant shall perform the services required hereunder in accordance with the prevailing standard of care by exercising the skill and ability ordinarily required of consultants performing the same or similar services, under the same or similar circumstances, in the State of California.

- *District-Provided Information and Services*. The Districts shall furnish the Consultant available studies, reports and other data pertinent to the Consultant's services; obtain or authorize the Consultant to obtain or provide additional reports and data as required; furnish to the Consultant services of others required for the performance of the Consultant's services hereunder, and the Consultant shall be entitled to use and reasonably rely upon all such information and services provided by the Districts or others in performing the Consultant's services hereunder.

- *Estimates and Projections*. In providing opinions of cost, financial analyses, economic feasibility projections, and schedules for potential projects, the Consultant has no control over cost or price of labor and material; unknown or latent conditions of existing equipment or structures that may affect operation and maintenance costs; competitive bidding procedures and market conditions; time or quality of performance of third parties; quality, type, management, or direction of operating

personnel; and other economic and operational factors that may materially affect the ultimate project cost or schedule. Therefore, the Consultant makes no warranty that the District's actual project costs, financial aspects, economic feasibility, or schedules will not vary from the Consultant's opinions, analyses, projections, or estimates.

- *Third Parties*. The services to be performed by the Consultant are intended solely for the benefit of the District. No person or entity not a signatory hereto shall be entitled to rely on the Consultant's performance of its services hereunder, and no right to assert a claim against the Consultant by assignment of indemnity rights or otherwise shall accrue to a third party as a result of the performance of the Consultant's services hereunder."

Fee Estimate

The project fee, based upon the scope of work detailed herein, is $420,112. The breakdown of this cost based upon the various tasks is presented in the table below.

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Engineers...Working Wonders With Water®

Montecito Water District and Montecito Sanitary District
Enhanced Recycled Water Feasibility Analysis
Fee Estimate

Task Description	ESTIMATED ENGINEERING LABOR HOURS									SUBCONSULTANT	TOTAL COSTS			
	Senior Professional	Lead Project Professional	Project Professional	Professional	Assistant Professional	Senior Technician (CAD/Estimating)	Technician (CAD)	Document Processing	Total Hours (incl sub hours)	Water Systems Consulting	Labor Cost	Project Equipment Communication Expense	Other Direct Costs	Total Costs
Employee Hourly Rate	$281	$258	$239	$203	$161	$177	$136	$115				$13.00		
Task 1 - Document Review & Meetings														
1.1 Review Materials	4	2	8	0	20	0	0	0	34	$5,550	$6,777	$442	$0	$13,324
1.2 Kick Off Meeting with Districts Staff	4	2	4	0	8	0	0	0	18	$900	$3,886	$234	$0	$5,110
No Task - Joint Committee Meeting	0	0	0	0	0	0	0	0	0	$0	$0	$0	$0	$0
1.3 Collaboration Meetings (3)	6	6	0	0	15	0	0	0	27	$2,100	$5,651	$351	$0	$8,312
Sub-total - Task 1	**14**	**10**	**12**	**0**	**43**	**0**	**0**	**0**	**79**	**$8,550**	**$16,314**	**$1,027**	**$0**	**$26,746**
Task 2 - Wastewater Treatment Plant Alternatives Analysis														
2.1 MSD Flow and NPDES Permit Analysis & TM	16	8	12	0	40	0	8	4	88	$500	$17,424	$1,144	$0	$19,118
2.2 CSD and Santa Barbara WRP Capacity & TM	8	0	12	0	20	0	8	4	52	$500	$9,889	$676	$0	$11,115
2.3 Evaluation of Existing MSD WWTP														
2.3.1 Condition Assessment & TM	24	20	40	40	0	8	8	4	144	$500	$32,584	$1,872	$800	$35,806
2.3.2 Evaluation of Performance and Capacity & TM	8	24	16	0	48	16	8	4	124	$0	$24,394	$1,612	$0	$26,006
2.3.3 Cost for Rehabilitation and 30-Year Operations & TM	8	12	24	0	48	12	8	4	116	$0	$22,500	$1,508	$0	$24,008
2.3.4 Cost for MBR Construction and 30-Year Operations & TM	8	18	20	0	48	8	8	4	114	$0	$22,383	$1,482	$0	$23,865
2.4 O&G Treatment at MSD & TM	12	16	8	24	40	0	8	4	112	$0	$22,291	$1,456	$0	$23,747
2.5 Recycled Water Treatment Options at MSD & TM	12	16	8	24	40	0	8	4	112	$2,400	$22,291	$1,456	$0	$26,387
Sub-total - Task 2	**96**	**114**	**140**	**88**	**284**	**44**	**64**	**32**	**862**	**$3,900**	**$173,756**	**$11,206**	**$800**	**$190,052**
Task 3 - Infrastructure Alternatives Analysis														
3.1 Non-Potable Reuse	4	0	0	0	6	0	0	0	10	$9,200	$2,090	$130	$0	$12,340
3.2 IPR in Carpinteria	4	0	0	0	6	0	0	0	10	$15,300	$2,090	$130	$0	$19,050
3.3 DPR in Montecito	4	6	0	0	10	0	0	0	20	$8,450	$4,284	$260	$0	$13,839
3.4 DPR in Santa Barbara	8	16	0	0	20	0	0	0	44	$19,800	$9,601	$572	$0	$31,953
3.5 Infrastructure Analysis TM	12	12	0	0	12	0	2	8	46	$14,000	$9,594	$598	$1	$25,593
Sub-total - Task 3	**32**	**34**	**0**	**0**	**54**	**0**	**2**	**8**	**130**	**$66,750**	**$27,659**	**$1,690**	**$1**	**$102,775**
Task 4 - Decision Making Workshop and Summary Report														
4.1 Workshop	15	15	0	0	40	0	10	10	90	$7,300	$17,041	$1,170	$0	$26,241
4.2 Executive Summary	16	16	24	0	40	0	5	5	106	$5,600	$22,070	$1,378	$0	$29,608
Sub-total - Task 4	**31**	**31**	**24**	**0**	**80**	**0**	**15**	**15**	**196**	**$12,900**	**$39,111**	**$2,548**	**$0**	**$55,849**
Task 5 - Project Management														
5.1 Monthly Progress Reports	12	0	0	0	12	0	12	0	36	$6,595	$6,935	$468	$0	$14,657
5.2 Quality Assurance and Quality Control Management	2	12	12	0	0	0	0	0	26	$1,900	$6,534	$338	$0	$8,962
5.3 Monthly Progress Meetings/Calls	24	16	0	0	24	0	0	0	64	$5,000	$14,738	$832	$0	$21,070
Sub-total - Task 5	**38**	**28**	**12**	**0**	**36**	**0**	**12**	**0**	**126**	**$13,495**	**$28,207**	**$1,638**	**$0**	**$44,690**
TOTAL	**211**	**217**	**188**	**88**	**497**	**44**	**93**	**55**	**1,393**	**$105,595**	**$285,047**	**$18,109**	**$801**	**$420,112**
Optional Task - Membrane Demonstration Support														
	24	16	0	0	48	0	0	0	88	$0	$18,605	$1,144	$0	$19,749
Sub-total - Task 4	**24**	**16**	**0**	**0**	**48**	**0**	**0**	**0**	**88**	**$0**	**$18,605**	**$1,144**	**$0**	**$19,749**

Carollo Project Schedule