Hazen and Sawyer
7700 Irvine Center Drive, Suite 200
Irvine, CA 92618 • 949.557.8553

FY2025 ENCINA COMPREHENSIVE ASSET MANAGEMENT PLAN (E-CAMP)

Final Report
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List of Acronyms

AACE	Association for the Advancement of Cost Engineering
AB	Aeration Basin
AFRF	Alternative Fuels Receiving Facility
APCD	Air Pollution Control District
BMS	Building Management System
BOE	Basis of Estimate
CCBE	Chlorine Contact Basin Effluent
CCI	Construction Cost Index
CCT	Chlorine Contact Tanks
CCTV	Closed Caption Television
CDFW	California Department of Fish and Wildlife
CEPT	Chemically Enhanced Primary Treatment
CGCM	Combined Generator Control Modules
CIP	Capital Improvement Projects
CMMS	Computerized Maintenance Management System
CMU	Concrete Masonry Unit
CO	Carbon Monoxide
CPS	Combined Pump Station
CWRF	Carlsbad Water Recycling Facility
DAFT	Dissolved Air Flotation Thickeners
DB	Design-Build
DBB	Design-Bid-Build
DBO	Design-Build-Operate
DBOO	Design-Build-Own-Operate
DPR	Direct Potable Reuse
E-CAMP	Encina Comprehensive Asset Management Plan
EI&C	Electrical, Instrumentation and Control
EMH	Electrical Manholes
ENR	Engineering News Record
EPS	Effluent Pump Station
EWA	Encina Wastewater Authority
EWPCF	Encina Water Pollution Control Facility
FCC	Flood Control Channel
FOG	Fats, Oils and Grease
FRP	Fiberglass Reinforced Plastic
FY	Fiscal Year
H2S	Hydrogen Sulfide
HH	Handholes
HVAC	Heating, Ventilation and Air-Conditioning
IP	Internet Protocol
IT	Information Technology
IPR	Indirect Potable Reuse
LFRS	Lateral Force-Resisting System
MAD	Mesophilic Anaerobic Digestion
MCC	Motor Control Center
MCP	Master Control Panel

List of Acronyms (Continued)

MGD/mgd	Million Gallons per Day
NOx	Nitrogen Oxides
O&M	Operations & Maintenance
OM	Operations Manual
ORF	Odor Reduction Facility
OSA	Outside Air Systems
OT	Operational Technology
PE	Primary Effluent
PLC	Programmable Logic Controller
PSB	Primary Sedimentation Basins
PVC	Polyvinyl Chloride
RAS	Return Activated Sludge
R-CAMP	Remote Comprehensive Asset Management Plan
RCP	Reinforced Concrete Pipe
R&D	Research and Development
RDT	Rotary Drum Thickeners
ROV	Remotely Operated Vehicle
R&R	Rehabilitation and Replacement
RSC	Reduced Sulfur Compound
RWQCB	Regional Water Quality Control Board
SAN	Storage Area Network
SCADA	Supervisory Control and Data Acquisition
SDCWA	San Diego County Water Authority
SE	Secondary Effluent
SEEPS	Secondary Effluent Equalization Pump Station
SDPS	Storm Drainage Pump Station
SLC	State Lands Commission
SRT	Solids Retention Time
TWAS	Thickened Waste Activated Sludge
USACOE	US Army Corps of Engineers
UV	Ultraviolet
VAV	Variable Air Volume
VFD	Variable Frequency Drive
VOC	Volatile Organic Compounds
VRF	Variable Refrigerant Flow
WAS	Waste Activated Sludge

Executive Summary

ES.1 Introduction

Encina Wastewater Authority (EWA) is a public joint powers authority located in Carlsbad, California that provides wastewater treatment services to over 400,000 North San Diego County residents and industrial customers. EWA is owned by six member agencies consisting of the: City of Carlsbad, City of Vista, City of Encinitas, Buena Sanitation District, Leucadia Wastewater District, and Vallecitos Water District.

The Encina Water Pollution Control Facility (EWPCF) was initially constructed in 1963 to treat wastewater from the cities of Carlsbad and Vista. Since its original design and construction, the EWPCF has undergone five major expansion phases with the latest (Phase V) completed in 2009. Current average dry weather flow capacity of the EWPCF is 40.5 million gallons per day (mgd) of liquid treatment and 43.3 mgd of solids treatment. Several rehabilitation projects have been completed since the Phase V expansion, but no increase in the capacities noted above was provided.

EWA strives to conduct sound planning to maintain reliable and cost-effective service, as well as to invest appropriately to fully fund the cost of service, including capital improvements. The Encina Comprehensive Asset Management Plan (E-CAMP) was established in 1993 and serves as a planning tool used to cost effectively manage assets by planning and prioritizing condition assessments and asset rehabilitation and replacement (R&R) for the EWPCF. The focus of most projects identified for the EWPCF in the E-CAMP are safety, regulatory compliance, reliability, public and EWA impacts, energy or organizational related.

The E-CAMP identifies future expenditures for capital improvement projects (CIP) while functioning as a communication tool for the proposed improvements to the member agencies, their representatives, and EWA staff. This E-CAMP update includes recommendations for fiscal year (FY) 2025 through FY2029. Capital assets related to projects for EWA's remote facilities are identified in the Remote Comprehensive Asset Management Plan (R-CAMP) and are not evaluated in this E-CAMP.

While the E-CAMP for the EWPCF is periodically updated independent of the budgeting process, the information is leveraged in the budgeting process to provide direction for EWA staff.

ES.2 E-CAMP Process

The E-CAMP process includes five task elements: project identification and grouping; project evaluation; project cost estimating; project prioritization; and implementation schedule. A flow diagram of the EWA CIP development, including the E-CAMP process, is provided as Figure ES-1 with the E-CAMP task elements shown in blue.

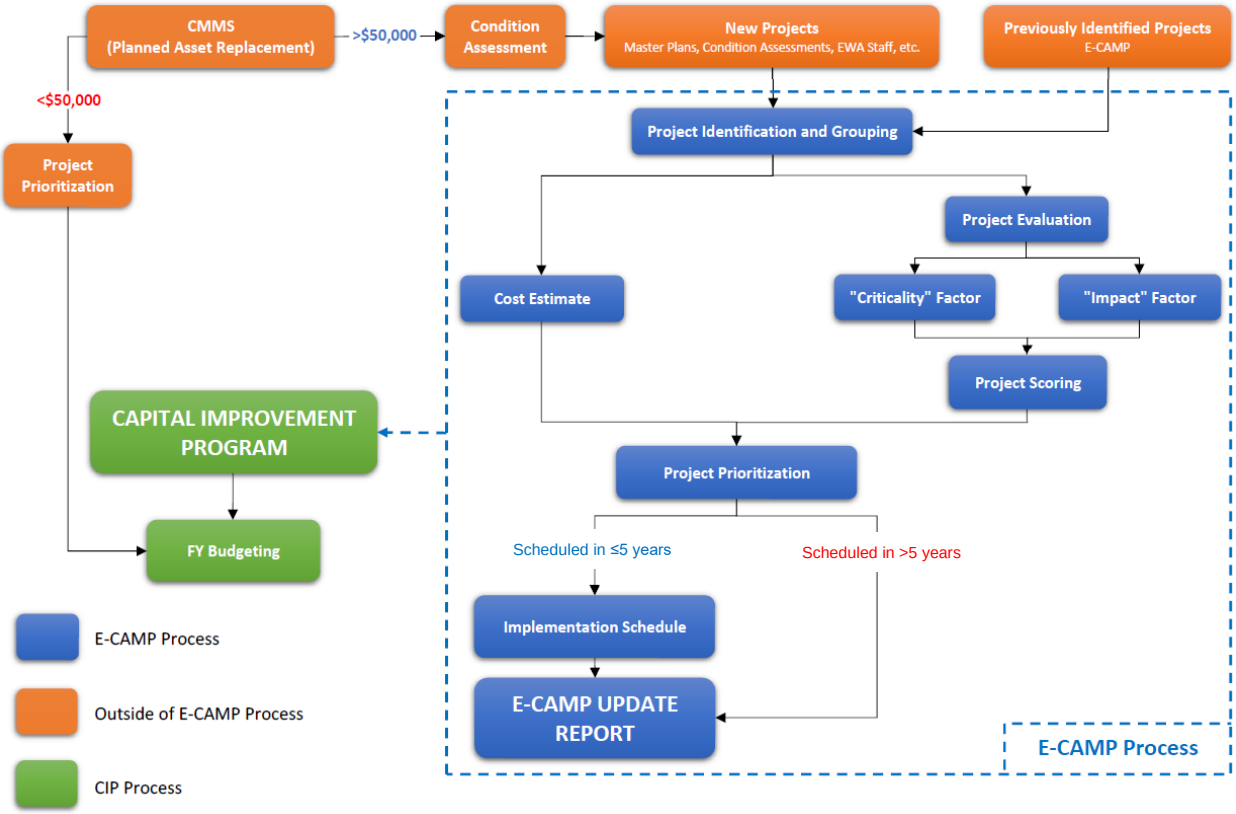

Figure ES-1: EWA CIP Development

Projects that are included in the E-CAMP are identified through a number of means including EWA's Computerized Maintenance Management System (CMMS), condition assessments, the previous E-CAMP update, EWA staff, studies and reports, and other engineering services performed for EWA. Projects may be grouped based on proximity, type of work, or priority to increase efficiency and reduce costs.

After the final list of E-CAMP projects is established, each project is evaluated using a set of six evaluation criteria: safety; regulatory compliance; reliability; impacts to the public and EWA; energy efficiency; and organizational efficiency. These evaluation criteria are assigned a criticality factor that represents the level of importance of each across all the projects. Each project is scored across each of the evaluation criteria and the sum of the six criteria scores is the evaluation score for each project.

Project cost estimates are developed for the full list of projects included in the E-CAMP. The project cost estimates include construction, condition assessment, study, design, engineering during construction, and construction management costs. Additionally, allowances for electrical, instrumentation and control (EI&C) during design and construction are included in the cost estimates.

All projects identified in the E-CAMP are prioritized by considering the evaluation scoring results and estimated costs. The project prioritization process provides EWA with informed condition and cost data to select which projects to schedule for implementation over the next five fiscal years (through FY2029). A recommended implementation schedule is prepared and provides direction for upcoming capital

improvements to be included in the budgeting process. Projects that are not selected for implementation over the next five fiscal years are not scheduled in the E-CAMP but are included for future reference.

ES.3 Condition Assessment Summary

Condition assessments are a key component of a robust asset management program. Condition assessments are regularly conducted by EWA to reduce risks of disrupted service and provide sound budget allocations based on up-to-date facilities evaluations. Condition assessments are also triggered when an asset is within five years of its nominal service life or by staff observations of condition. When a condition assessment is completed, either the assessed service life is extended, or a project is identified to replace or rehabilitate the asset. If identified for replacement or rehabilitation, the proposed work is incorporated into a project.

ES.4 Studies and Professional Services

Studies are completed to provide planning information for maintaining EWA facilities. Additional professional services include engineering services, research, and development (R&D) services, air permitting, and other services. A more detailed description of the identified studies and professional services can be found in Section 4 of this report.

ES.5 Identification of E-CAMP Projects

As described in the E-CAMP process, the first step is to identify projects for consideration of implementation. Over 75 projects, and related studies, were identified through this process and more detailed information regarding these projects, including background, description, justification/consequences, and project delivery method can be found in Sections 4 and 5 of this report. Projects are categorized into the following seven different categories related to the EWPCF:

1. Liquid Process
2. Outfall
3. Solids Process
4. Energy Management
5. General
6. Technology
7. Reserved
8. Professional Services

ES.6 Project Evaluation

Projects in the E-CAMP are evaluated using a set of six evaluation criteria. These evaluation criteria are assigned a criticality factor from 1 to 6, with 1 representing the lowest level of importance and 6 representing the highest. Table ES-1 provides the six evaluation criteria and their assigned criticality factors.

Table ES-1: Evaluation Criteria

Evaluation Criteria	Criticality Factor
Safety	6
Regulatory Compliance	5
Reliability	4
Public and EWA Impacts	3
Energy Efficiency	2
Organizational Efficiency	1

Each project is assigned an impact factor across each of the six defined evaluation criteria from 0 to 5, with 0 representing the lowest impact and 5 representing the highest impact. The impact factors assigned to a project for each evaluation criteria are then multiplied by the criticality factor of the evaluation criteria to calculate criteria scores. The six criteria scores are then summed to determine the evaluation score for each project.

ES.7 Project Prioritization

Projects identified in the E-CAMP include those recommended for implementation in the next five fiscal years and potential future projects. Projects, studies, and professional services recommended for implementation over the next five fiscal years are identified in Table ES-2 along with a brief project description for each. A consequence of deferment for each project and study is also provided in the table which represents the area of impact, across the evaluation criteria, where not implementing the project, study, or professional service would have a negative effect. For projects and studies that were scored, an impact factor of 3 or more for an evaluation criterion results in a noted consequence of deferment.

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Table ES-2: Overview of Projects Recommended for Implementation for (FY2025 – FY2029)

	Project Numbers and Titles	Project Description	Consequence of Deferment						Total Score	FY2025	FY2026	FY2027	FY2028	FY2029	Total (FY25 - FY29)
			Safety	Regulatory Compliance	Reliability	Public and EWA Impacts	Energy Efficiency	Organizational Efficiency							
Liquid Process (1.X)										$ 3,630,000	$ 5,480,000	$ 2,700,000	$ 2,030,000	$ 310,000	$ 14,130,000
P-1.2.002	Primary Sludge Pumping Upgrades	This project will upgrade the controls, meters, and electrical equipment for the primary sludge pumps.						X	17	$ -	$ -	$ -	$ 397,000	$ -	$ 397,000
P-1.2.009	PSB Structural and Mechanical Rehab	This project will include structural and mechanical rehabilitation and replacement of sludge collectors, scum skimmers, weirs, launders, and rotating mechanisms on the helical skimmers for Primary Sedimentation							NS-In Progress	$ 2,618,000	$ 4,318,000	$ 2,167,000	$ 1,198,000	$ -	$ 10,301,000
P-1.2.010	Primary Sedimentation Basins Scum Pipeline Replacement	This project will replace sections of the primary scum and centrate pipelines that are dipping.						X	12	$ -	$ -	$ -	$ -	$ 308,000	$ 308,000
P-1.2.015	Primary Sludge Pumping Second Header Pipe	This project will construct a redundant secondary sludge header pipe.						X	17	$ -	$ -	$ 523,050	$ 427,950	$ -	$ 951,000
P-1.3.008	SC 7 - Conversion from EQ to Clarifier	This project will install the necessary equipment to prepare Secondary Clarifier No. 7 for use, including a new RAS pump, piping, meters, associated controls, clarifier mechanism, weirs, gates, etc.							6	$ -	$ -	$ -	$ -	$ -	$ -
P-1.3.018	AB Anaerobic Selector Zones	This project will install baffles, aerobic mixers, and meters in each active aeration basin.							15	$ -	$ -	$ -	$ -	$ -	$ -
S/P-1.3.019	Control Strategy Improvements	This is currently a study to identify the feasibility of implementing the desired automation of SCADA programming in control strategies throughout the plant.					X	X	9	$ 100,000	$ -	$ -	$ -	$ -	$ 100,000
P-1.3.023	Aeration Diffuser Replacement	This project will replace the aeration diffusers of Aeration Basins 1 to 3 that have not been replaced since 2015.							NS-In Progress	$ -	$ -	$ -	$ -	$ -	$ -
P-1.3.024	RAS Box, RAS Channel and IJS Rehabilitation	This project will rehab the concrete, demolish abandoned piping, install a new baffling system, recoat the effluent pipeline, and replace various mechanical components across the RAS box, RAS channel, and influent junction structure.			X	X		X	29	$ 642,620	$ 754,380	$ -	$ -	$ -	$ 1,397,000
P-1.4.006	Effluent Pump Station Discharge Piping Valves Improvement	This project will rehabilitate the mechanical equipment supporting the effluent pump station discharge piping.			X				27	$ 267,200	$ 400,800	$ -	$ -	$ -	$ 668,000
Outfall (2.X)										$ 530,000	$ -	$ 770,000	$ -	$ 130,000	$ 1,420,000
P-2.1.002	Ocean Outfall Maintenance and Inspection - External	This routine project will provide general overview inspection of the pipe exterior including ballast condition and assess the cathodic protection system. This project will also complete the recommendations provided in the inspection report which may include minor repair or debris removal.							NS-Recurring	$ 130,000	$ -	$ 130,000	$ -	$ 130,000	$ 390,000
P-2.1.005	Ocean Outfall Bathymetric Survey - External	This routine project would complete a bathymetric survey of the exterior of the Ocean Outfall, which would provide an exact location of the outfall, and documentation of the pipeline and ballast material, and a bathymetric chart of the surrounding area.							NS-Recurring	$ -	$ -	$ 142,000	$ -	$ -	$ 142,000
P-2.1.006	Ocean Outfall - Integrity Assessment	This routine project includes performing core sampling of the land outfall and sample analysis for an assessment of the structural integrity.							NS-Recurring	$ -	$ -	$ 281,000	$ -	$ -	$ 281,000
P-2.1.007	84-inch Outfall Inspection - Internal	This routine project will inspect/assess the concrete of the 84-inch reinforced concrete pipe (RCP) portion of the outfall.							NS-Recurring	$ -	$ -	$ 212,000	$ -	$ -	$ 212,000
S/P-2.1.009	Land Outfall Rehabilitation	This project will replace the Effluent Junction Structure Manhole. This project will also include a study to identify the most appropriate bypass approach.	X		X			X	56	$ 393,000	$ -	$ -	$ -	$ -	$ 393,000
Solids Process (3.X)										$ 11,430,000	$ 9,710,000	$ 10,290,000	$ 13,930,000	$ 15,550,000	$ 60,900,000
P-3.1.005	Primary Sludge Thickening	This project will modify the primary sedimentation basins sludge collection system, install higher capacity primary sludge pumps, and install primary sludge RDTs.							11	$ -	$ -	$ -	$ -	$ -	$ -
P-3.1.006	DAFT Repairs	This project will repair the DAFTs to extend their useful life until they are replaced through the Solids Thickening Project.							NS-In Progress	$ 1,100,000	$ -	$ -	$ -	$ -	$ 1,100,000
P-3.1.010	Solids Thickening Facilities Rehabilitation	This project will execute rehabilitation measure to improve the solids thickening facilities, including: structural and mechanical repairs to the existing DAFT basins (elements not completed under the DAFT Repairs project), replace TWAS piping and rewire the IOC controls, replace the existing DAFT polymer blending units, pumps, and piping, demolish abandoned piping, replace WAS yard piping, replace MCCs H and J, and SCADA control integration.			X		X	X	58	$ 1,849,500	$ 7,582,950	$ 8,322,750	$ 739,800	$ -	$ 18,495,000
P-3.2.004	Biosolids Screening Facility	This project will install strainpress equipment, a debris collection room, and associated pumps, piping, and electrical equipment.						X	11	$ -	$ -	$ -	$ -	$ -	$ -
P-3.2.013	Digester Improvements	This project will perform structural repairs/reinforcement, coating, and mixing system improvements to Digesters 4, 5, and 6. The heat exchangers for each digester will be replaced or rehabbed. This project will also add a second waste gas flare, extend piping from existing AFRF to Digester No. 4. and improve site lighting.							NS-In Progress	$ 4,938,000	$ -	$ -	$ -	$ -	$ 4,938,000

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	Project Numbers and Titles	Project Description	Consequence of Deferment						Total Score	FY2025	FY2026	FY2027	FY2028	FY2029	Total (FY25 - FY29)
			Safety	Regulatory Compliance	Reliability	Public and EWA Impacts	Energy Efficiency	Organizational Efficiency							
P-3.2.018	Digester Cleaning Cycle	This project will include cleaning and assessing the condition of one digester biennially, beginning in FY2028 with Digester 6 and continuing with							NS-Recurring	$ -	$ -	$ -	$ 1,000,000	$ 1,000,000	$ 2,000,000
P-3.2.019	Digester Dome Replacement	This project will replace the dome over Digesters No. 4, 5, and 6, pending the recommendations of the future condition assessments performed as part of P-3.2.018							11	$ -	$ -	$ -	$ -	$ -	$ -
P-3.2.020	Digester 1, 2, and 3 Improvements	This project will rehabilitate Digesters No. 1, 2, and 3 and implementation of the preferred alternative for biosolids processing per the recommendations of recent condition assessments and the 2020 Biosolids Management Plan Update.		X		X	X	X	41	$ -	$ 1,179,480	$ 1,965,800	$ 12,187,960	$ 14,546,920	$ 29,880,160
P-3.3.030	Existing Dryer Major Rehabilitation	This project will rehabilitate the existing dryer by "re-skinning" and/or replacement of the rotary drum. It is anticipated that one re-skinning could be acceptable prior to the full replacement of the rotary drum.							NS-In Progress	$ 3,539,990	$ 941,010	$ -	$ -	$ -	$ 4,481,000
Energy Management (4.X)										**$ 4,720,000**	**$ 2,810,000**	**$ 6,010,000**	**$ 6,340,000**	**$ 1,930,000**	**$ 21,790,000**
P-4.1.005	Cogen Engine Top-End Overhaul	This routine project will provide top-end overhaul services of the Cogen engines.							NS-Recurring	$ 428,000	$ -	$ -	$ 428,000	$ 428,000	$ 1,284,000
P-4.1.006	Cogen Engine In-Frame Overhaul	This routine project will provide in-frame overhaul services of the Cogen engines.							NS-Recurring	$ -	$ 1,090,000	$ 1,090,000	$ -	$ -	$ 2,180,000
P-4.1.007	Cogen Engine Full Overhaul	This routine project will provide full overhaul services of the Cogen engines.							NS-Recurring	$ -	$ -	$ -	$ -	$ -	$ -
P-4.1.015	Cogen Engine Catalyst System and Gas Conditioning Facilities	This project will include installation of the Cogen engine catalyst system for four engines and construction of an integrated gas conditioning system. It alos includes repair of broken conduits from the biogas stream, replacement of existing Eclipse systems and installation of a redundant chiller.							NS-In Progress	$ 736,740	$ 1,719,060	$ 4,911,600	$ 4,911,600	$ -	$ 12,279,000
P-4.1.022	Turbo Blower Upgrades	This project will replace the existing blowers with turbo blowers.			X		X	X	26	$ -	$ -	$ -	$ 995,760	$ 1,493,640	$ 2,489,400
P-4.1.023	Alternative Fuels Receiving Facility Biosolids Digestion	This project will install new screening to reduce trash sent to the digesters and protect pumps and repair the lining of the fuel receiving tanks.							NS-In Progress	$ 1,679,000	$ -	$ -	$ -	$ -	$ 1,679,000
P-4.1.025	Combined Generator Control Module Replacement	This project will replace the existing Combined Generator Control Models as the existing modules are no longer supported.							NS-In Progress	$ 1,872,000	$ -	$ -	$ -	$ -	$ 1,872,000
General (5.X)										**$ 5,920,000**	**$ 8,610,000**	**$ 2,490,000**	**$ 1,540,000**	**$ 1,540,000**	**$ 20,080,000**
P-5.1.001	Odor and Corrosion Control Improvements	This project will implement short-term improvements to odor reduction facility (ORF) units I, II and III. It also includes a new ORF IA Treatment System.			X	X		X	34	$ 3,692,570	$ 6,239,170	$ 2,037,280	$ -	$ -	$ 11,969,020
P-5.1.002	ORF Carbon Media Replacement	This routine project will replace the activated carbon in ORF I and/or III as part of on-going maintenance.							NS-Recurring	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 750,000
S/P-5.2.006	Plant Water Functional Improvements	This is currently a study to perform a condition assessment on the effluent pipes and valving to prioritize improvements to the Plant Water System.						X	21	$ -	$ -	$ -	$ 1,137,500	$ 1,137,500	$ 2,275,000
P-5.2.012	Site Security Facilities - Tier 1	This project will develop a set of applicable security policies, procedures, and protocols; replace perimeter fencing; and repair and improve lighting systems.							NS-In Progress	$ 404,000	$ -	$ -	$ -	$ -	$ 404,000
P-5.2.034	New Potable Water System	This project will install a dedicated potable water connection to the Administration and Technical Services buildings.		X	X	X			50	$ 31,970	$ 107,030	$ -	$ -	$ -	$ 139,000
P-5.2.038	Secondary Effluent Equalization Pump Station (SEEPS) Mechanical Improvements	This project will address mechanical improvements needed at the SEEPS to address sand buildup in the solids handling and equalization tanks. This project is on hold until the secondary clarifier conversion is completed.							19	$ -	$ -	$ -	$ -	$ -	$ -
P-5.2.040	2W System and Sand Filter Replacement	This project will implement the recommended improvement for the 2W system based on the 2016 Process Master Plan and establish a sampling program for the sand filter, replace the media, and recoat the piping and appurtenances.			X			X	15	$ -	$ 1,705,000	$ -	$ -	$ -	$ 1,705,000
P-5.2.042	E&I Manhole Monitoring	This project will assess the feasibility of installing equipment in the 19 manholes located at EWPCF to monitor water intrusion and temperature and execute the installation if feasible.							6	$ -	$ -	$ -	$ -	$ -	$ -

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			Safety	Regulatory Compliance	Reliability	Public and EWA Impacts	Energy Efficiency	Organizational Efficiency							
P-5.2.044	Flood Control Channel Restoration	This study will analyze removal of sediment buildup at the rip rap dissipation apron and will develop a plan for project implementation and permitting.			X			X	31	$ 100,000	$ -	$ -	$ -	$ -	$ 100,000
P-5.2.047	Site Security Facilities - Tier 2-4	This project will deploy new cameras, install a video surveillance system, expand the access control system, and add monitoring devices around the perimeter fencing and doors.							NS-In Progress	$ 249,200	$ 249,200	$ 249,200	$ 249,200	$ 249,200	$ 1,246,000
S/P-5.2.048	Secondary Effluent Equalization Pump Station (SEEPS) Sedimentation Evaluation	This is currently a study to perform a geotechnical investigation, conduct a thorough survey of the structures, and develop strategies to mitigate further settlement of the pump station structure.							NS-Study	$ -	$ 27,000	$ 48,000	$ -	$ -	$ 75,000
P-5.3.013	Building Roof Replacement	This project will replace the existing Headworks Building Roof with new and replacement of the foul air-ducting system.							NS-In Progress	$ 513,000	$ -	$ -	$ -	$ -	$ 513,000
P-5.3.015	Cogen and Dewatering Building Repairs	This project will implement structural, architectural and electrical improvement to Cogen and Dewatering Buildings to be able to accommodate the new RDT system.							NS-In Progress	$ 775,000	$ -	$ -	$ -	$ -	$ 775,000
P-5.4.004	Vallecitos Sample Vault Installation	This project will provide a sampling station along the 24-inch Vallecitos line and address condition issues associated with the vault structure.			X				30	$ -	$ 125,000	$ -	$ -	$ -	$ 125,000
Technology (6.X)										**$ 5,270,000**	**$ 6,150,000**	**$ 4,120,000**	**$ 650,000**	**$ 150,000**	**$ 16,340,000**
P-6.1.206	Secondaries Electrical and Controls Improvements	This project will replace MCCs in the secondaries building and implement SCADA system modifications and additions.							NS-In Progress	$ 3,500,000	$ 6,000,000	$ 3,500,000	$ -	$ -	$ 13,000,000
P-6.1.207	Cogen Electrical and Controls Improvements	Perform SCADA and electrical upgrades required to complete the SCADA migration.							NS-In Progress	$ 645,000	$ -	$ -	$ -	$ -	$ 645,000
P-6.1.209	Blower Controls Improvements	This project will implement SCADA system modifications and additions.							NS-In Progress	$ -	$ -	$ -	$ -	$ -	$ -
P-6.1.210	Heat Dryer, Centrifuge, and Ancillary Systems Controls Improvements	This project will implement SCADA system modifications and additions.	X		X	X			61	$ 413,000	$ -	$ -	$ -	$ -	$ 413,000
P-6.1.213	Control Room Upgrades	This project will improve the control room workspace with ergonomic workstations, an improved video wall, a break area, upgraded floor, and file storage. This project is currently pending, and the scope will further be defined in the next E-CAMP update cycle after completion of controls improvements.					X	X	9	$ -	$ -	$ -	$ -	$ -	$ -
P-6.2.705	Host Server Replacement - IT	This routine project will replace the IT host servers.							NS-Recurring	$ 437,000	$ -	$ -	$ 500,000	$ -	$ 937,000
P-6.2.706	Host Server Replacement - OT	This routine project will replace the OT host servers.							NS-Recurring	$ -	$ -	$ 462,000	$ -	$ -	$ 462,000
P-6.2.707	Backup Host Servers	This routine project will replace the backup host servers.							NS-Recurring	$ 124,000	$ -	$ -	$ -	$ -	$ 124,000
P-6.2.709	Cyber Security and Business Management Services	This routine project will provide on-call business network services to implement recommendations from the IT Strategic Plan.							NS-Recurring	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 750,000
Professional Services (8.X)										**$ 2,120,000**	**$ 2,320,000**	**$ 1,830,000**	**$ 1,640,000**	**$ 1,220,000**	**$ 9,100,000**
S-8.2.015	Potable Reuse Study	This study is to evaluate the most practical approach for implementation of a potable reuse program as regulations have developed and opportunities for collaboration with regional stakeholders are better understood.							NS-Study	$ 500,000	$ 300,000	$ 300,000	$ 300,000	$ -	$ 1,400,000
S-8.2.023	Climate Change Action Plan Update	This routine study will update the Climate Change Action Plan based on applicable federal and state regulations.							NS-Study	$ -	$ -	$ 100,000	$ -	$ -	$ 100,000
S-8.2.024	Source Control Program Evaluation	This routine study will evaluate the source control program based on the terms and conditions of the EWPCF NPDES permit.							NS-Study	$ -	$ -	$ 85,000	$ -	$ -	$ 85,000
S-8.2.025	OT Plan Update	This study updates the current Operational Technology Plan, establishing two primary goals: (1) Complete foundational electrical and controls improvements, and (2) meet the 5-year timeline to transition to the new SCADA system while staying within the budget constraints.							NS-Study	$ 50,000	$ 50,000	$ -	$ -	$ -	$ 100,000

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	Project Numbers and Titles	Project Description	Consequence of Deferment						Total Score	FY2025	FY2026	FY2027	FY2028	FY2029	Total (FY25 - FY29)
			Safety	Regulatory Compliance	Reliability	Public and EWA Impacts	Energy Efficiency	Organizational Efficiency							
S-8.2.027	Facilities Master Plan	This scope of this study continues to evolve; however, it will be a comprehensive plan to include previously identified studies: Peak Flow, 2040 Loading, Biosolids Management Plan Update, Second Dryer and Centrifuge Replacement, and the Energy Resiliency Assessment. The Facilities Master Plan will also provide an evaluation of liquid process improvements to support a 10-year (and beyond) implementation window, which may include nutrient removal and a consideration for potable reuse.							NS-Study	$ -	$ 400,000	$ -	$ -	$ -	$ 400,000
S-8.2.028	Heat Dryer HAZOP	This routine study will develop a hazard and operability study to examine potential heat dryer hazard and operability issues.							NS-Study	$ 75,000	$ -	$ -	$ -	$ -	$ 75,000
S-8.2.029	Technology Master Plan Update	This study will evaluate and recommend updates and upgrades to the EWPCF's technology, such as wireless infrastructure, wireless devices, fiber, and cloud storage per current security and standards.							NS-Study	$ -	$ 125,000	$ 125,000	$ -	$ -	$ 250,000
ES-8.3.001	E-CAMP Update	The E-CAMP provides a recommended project implementation schedule for the EWPCF for EWA to use in planning capital project improvements.							NS-ES	$ 150,000	$ 275,000	$ 150,000	$ 275,000	$ 150,000	$ 1,000,000
ES-8.4.001	Extension of Staff Engineering Services	This routine project provides engineering services for needs that develop on an ongoing basis.							NS-ES	$ 550,000	$ 550,000	$ 550,000	$ 550,000	$ 550,000	$ 2,750,000
ES-8.4.002	Research and Development Projects Services	This routine project provides research and development (R&D) services associated with potential energy or resource recovery related facilities.							NS-ES	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 500,000
ES-8.4.008	Electronic Operations Manual and Document Management Updates	This routine project provides updates to the Operations Manual with the upgrades made to the EWPCF and to format the material into an electronic format.							NS-ES	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 100,000
ES-8.4.012	Air Permitting Assistance	This routine project provides air permitting services for needs that develop on an ongoing basis.							NS-ES	$ 200,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 300,000
ES-8.4.019	CMMS Asset Database Improvements	This study will evaluate how best to consider adding components not currently documented as assets historically maintained within the CMMS asset database. The improvements will also support a criticality model to enable EWA to implement predictive maintenance processes.							NS-ES	$ 150,000	$ 150,000	$ 50,000	$ 50,000	$ 50,000	$ 450,000
CA-8.1.016	Condition Assessment Services	This effort will identify in more detail the areas, sub-areas and asset classes that are anticipated to be scheduled for assessment in FY2025 through FY2029							NS-CA	$ 318,000	$ 318,000	$ 318,000	$ 318,000	$ 318,000	$ 1,590,000
Remote Facility Major Plant Rehabilitation: General Improvements (refer to the R-CAMP)															$ -
	Totals									$ 33,620,000	$ 35,080,000	$ 28,210,000	$ 26,130,000	$ 20,830,000	$ 143,760,000
	Subtotal - Projects Assumed under Contract by July 2024														

1. Summary costs are rounded to the nearest hundred thousand dollars.
2. Costs shown in December 2023 dollars.
3. The E-CAMP is a living, dynamic document that is updated every two years and this table is updated as part of that process.
4. Blue cells are design phase, green cells are construction phase.

ES.8 Recommended Project Implementation Schedule and Cost Summary

The recommended project implementation schedule is based upon the project evaluation process and prioritized projects presented in this E-CAMP. The capital improvement budgets for projects planned for execution over the next five years, FY2025 through FY2029, are summarized in Table ES-3 by category related to the EWPCF. This information is then leveraged in the budgeting process by EWA staff.

Table ES-3: Overview of Recommended Implementation Schedule for Prioritized Projects (FY2025 - FY2029)

Project Category	FY2025	FY2026	FY2027	FY2028	FY2029	Total FY2025-FY2029
Liquid Process	$3,630,000	$5,480,000	$2,700,000	$2,030,000	$310,000	**$14,130,000**
Outfall	$530,000	-	$770,000	-	$130,000	**$1,420,000**
Solids Process	$11,430,000	$9,710,000	$10,290,000	$13,930,000	$15,550,000	**$60,900,000**
Energy Management	$4,720,000	$2,810,000	$6,010,000	$6,340,000	$1,930,000	**$21,790,000**
General	$5,920,000	$8,610,000	$2,490,000	$1,540,000	$1,540,000	**$20,080,000**
Technology	$5,270,000	$6,150,000	$4,120,000	$650,000	$150,000	**$16,340,000**
Professional Services	$2,120,000	$2,320,000	$1,830,000	$1,640,000	$1,220,000	**$9,100,000**
Total	**$33,620,000**	**$35,080,000**	**$28,210,000**	**$26,130,000**	**$20,830,000**	**$143,760,000**

In addition, subsequent E-CAMPs will monitor and re-evaluate projects in and beyond the five-year implementation schedule provided in this E-CAMP. Common themes of these projects that should continue to be evaluated and considered include:

- Rehabilitation and replacement of aging infrastructure
- Solids process improvements
- Foundational electrical and controls improvements
- Future regulatory and industry trends (such as water reuse and pending air quality regulations)
- Improvements to impacts to the public and EWA (such as odor, sound, appearance, and traffic)

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