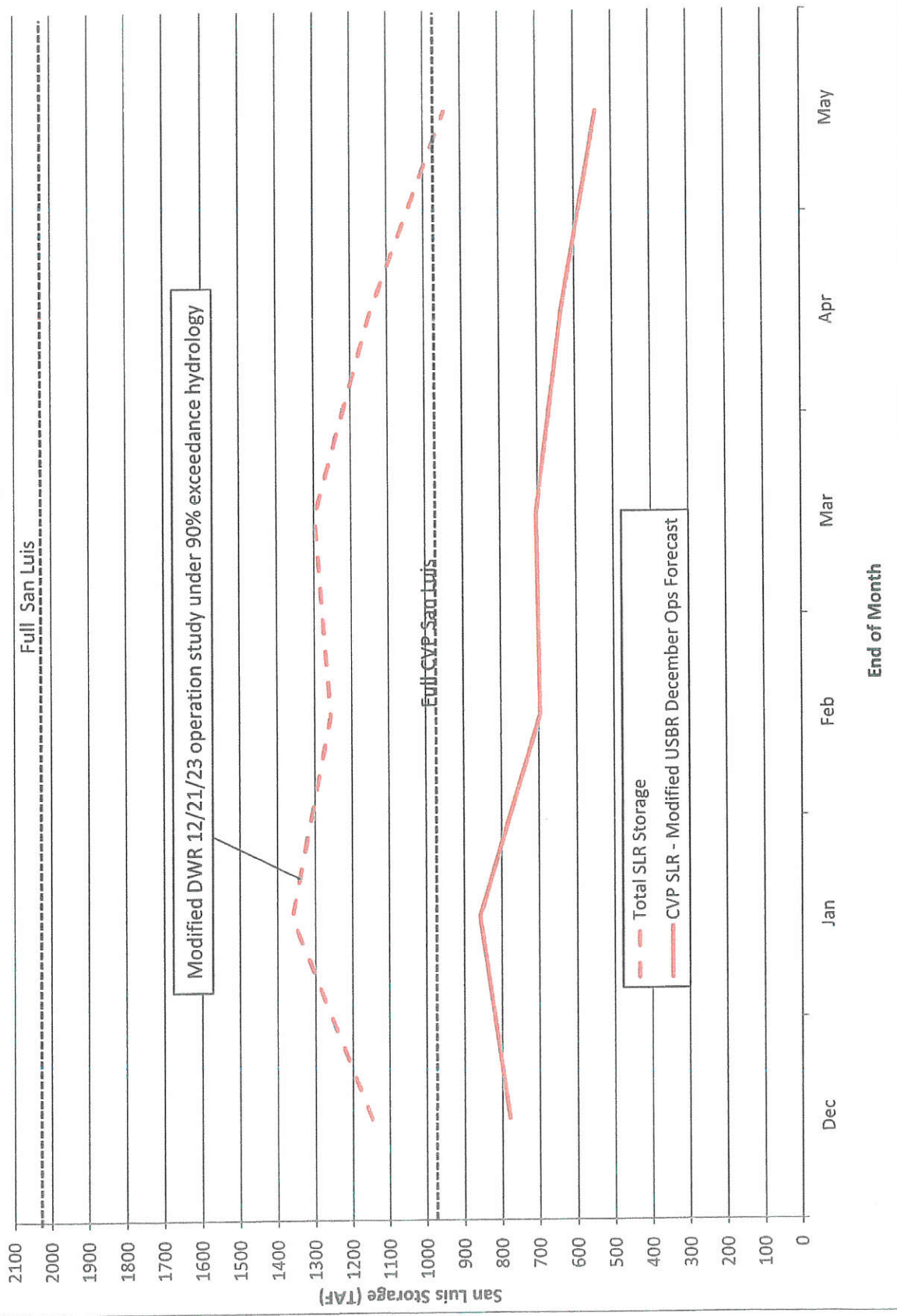


VII. A.

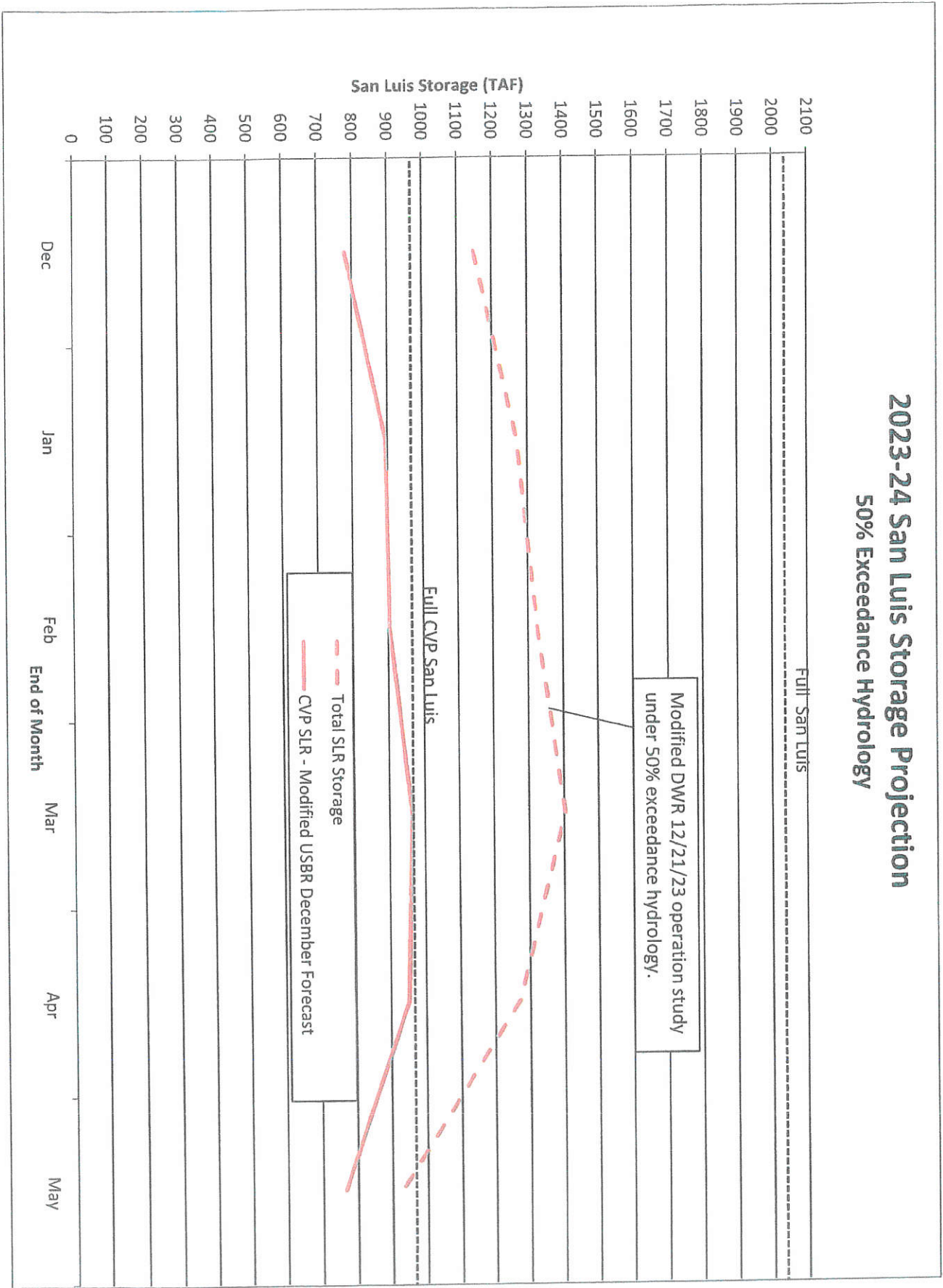
2023-24 San Luis Storage Projection 90% Exceedance Hydrology



25

2023-24 San Luis Storage Projection

50% Exceedance Hydrology



LS

VII.B.

DEL PUERTO WATER DISTRICT 2023-24 SUPPLY/USE/COMPLETED TRANSACTIONS SUMMARY
as of December 31, 2023

Supply Type	2023-24
2022-23 Rescheduled Warren Act Supply (Pump-Ins)	1,575
2022-23 Rescheduled Warren Act Supply (Mapes)	1,863
2022-23 Rescheduled NVRWWP Supply	13,236
2022-23 Rescheduled YCWA Supply	83
2022-23 CVPIA Refuge Level 2 Supply	78
Less: Monthly 1% Storage Loss Est.	(296)
Sub-Total: Rescheduled Supplies	16,539
2023 CVP Allocation (100%)	140,210
2023 NVRWWP	8,694
Sub-Total: Current Year Customer Supplies	148,904
2023 SJRECWA	1,895
2023 SLCC	1,982
Subtotal: Outside Purchases	3,877
Total Gross Projected Supply Available	169,320

December 2023 Quantity	Completed to Date
------------------------	-------------------

0	8694
---	------

0	1895
14	1982

2023-23 IN DISTRICT USE		2023-24 IN DISTRICT USE	2023-24 OCRPP USE	2023-24 TRANSFERS OUT	2023-24 MONTHLY USE
1,824	MAR	135	456		591
3,064	APR	4,057	516	500	5,073
5,529	MAY	7,900	465		8,365
6,387	JUN	11,855	146		12,001
7,133	JUL	14,380		1,603	15,983
4,361	AUG	11,283		1,000	12,283
2,596	SEP	6,662		2,744	9,406
1,769	OCT	4,429		7,593	12,022
294	NOV	1,518	23	4,060	5,601
41	DEC	930			930
10	JAN				0
80	FEB				0
33,088		63,149	1,606	17,500	
TOTAL USED & TRANSFERRED OUT					82,255
TOTAL SCHEDULED					3,000
TOTAL ESTIMATED FOR RESCHEDULING INTO 2024-25					84,065
TOTAL GROSS PROJECTED SUPPLY AVAILABLE					169,320

NOTE: The District has 3,793 AF in storage at AEWS and 1,952 AF in storage at LTRID from prior years, and 15,000 AF in storage at AEWS (5,000 AF to be returned at a later date), and 1,606 AF in storage in OCRPP for 2023.

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VII. D.

Del Puerto Water District
Active Permits and Licenses
As of December 31, 2023

Active Permits

<u>Permit No.</u>	<u>Issued Date</u>	<u>Expires</u>	<u>Project</u>	<u>Landowner/Entity</u>	<u>Location</u>
P2402002	3/27/2023	3/31/2024	Monthly Water Samples for Trihalomethanes (THM's)	City of Turlock/NVRRWP	37.24 to 45.77
P2402020	8/11/2023	8/11/2024	Drafting Water for Landfill Dust Control	Stan. Co./Fink Road Landfill	45.77R/Davis Rd.
P2402035	12/13/2023	10/30/2024	Drafting of Construction Water - NextEra Solar Project	Stan. Co./Cupertino Elec.	45.78R/Davis Rd.

Active Licenses

<u>Permit No.</u>	<u>Issued Date</u>	<u>Expires</u>	<u>Project</u>	<u>Landowner/Entity</u>	<u>Location</u>
23-LC-20-3085	9/11/2023	9/11/2048	Orestimba Creek Recharge and Recovery Project	CCID/DPWD	51.65L/O-Creek

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2023-24 NVRWWP Supplies Use

VII.E.

Name	NVRWWP Allocated 2023-24 (AF)	Turnback Requests	NVRWWP Supply												NVRWWP Supply Remaining	
			Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb		Total Used
Total NVRWWP Allocation	20,029	7923	0	588	3234	2122	2267	1275	606	332	177	66	0	0	18,590	1439



Lee

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VII F.



LARRY WALKER
ASSOCIATES
science | policy | solutions

1480 Drew Avenue
Suite 100
Davis, CA 95618

530.753.6400
info@lwa.com
lwa.com

December 15, 2023

Ben Koehler, Chief Plant Operator
City of Modesto
Utilities Department, Wastewater
1010 Tenth Street, 6th Floor, City Clerk
Modesto, California 95353

Subject: Larry Walker Associates, Inc. Submittal in Response to the Request for Proposal for Far-Field Dilution and Constituents of Emerging Concern Studies

Mr. Koehler:

Larry Walker Associates, Inc. (LWA), in association with Woodard & Curran (W&C), hereafter referred to as the LWA Team, is pleased to submit the enclosed proposal for *Far-Field Dilution and Constituents of Emerging Concern Studies* for the cities of Modesto and Turlock (Cities) and Del Puerto Water District (DPWD) in response to the November 12, 2023 request for proposals (RFP).

PROJECT UNDERSTANDING

The LWA Team has a long and trusted relationship with the Cities and DPWD through the development of the North Valley Regional Recycled Water Program (NVRWP) and NPDES permitting for the discharge to the Delta Mendota Canal (DMC). The LWA Team provided planning and regulatory services for developing the innovative NVRWP, including navigating the technical requests to get buy-in from the Bureau of Reclamation, the Department of Drinking Water (DDW), and the Central Valley Water Board. For more than twenty years, LWA has performed NPDES compliance assistance and monitoring for both Cities' San Joaquin River discharges. LWA led separate special studies in the San Joaquin River for the Cities related to metal speciation, aquatic toxicity, and near-field mixing models. These successful collaborations were based on meaningful relationships and technical excellence.

Meaningful relationships, forward-thinking, and technical expertise will be critical to resolving the new challenges posed by the NPDES-required evaluation and subsequent review by the DDW and the Central Valley Water Board. This upcoming regulatory review is an important interpretation of the Surface Water Augmentation regulations that could impact discharges to any receiving waters used for municipal and domestic drinking water supply at distant raw water supply diversion points. DDW has asserted latitude in interpreting these regulations, which were written to apply to domestic and municipal water supply augmentation, not irrigation supply. The RFP project, particularly the far-field modeling evaluation, will require building trust with regulators through good communication, well-supported technical solutions, and a strong understanding of the regulatory requirements. LWA developed tracer studies to satisfy DDW requests on several projects. While a tracer study is not an NPDES requirement, it may be a useful tool to quantify the negligible drinking water risk due to the DMC discharge of highly treated effluent. W&C staff are experts in applying flow and operational scenarios for the State Water Project (SWP) and the federal Central Valley Project (CVP), including using CalSim data as was done for the original NVRWP NPDES permit.

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LWA developed the constituents of emerging concern (CEC) monitoring plan for the Delta Regional Monitoring Program (RMP) through an extensive stakeholder process that included a review from the Central Valley Water Board with participation from the State Water Board and drinking water agencies. LWA prepared data summaries as part of the Delta RMP that could directly inform the RFP scope of services.

PROJECT TEAM

By selecting the LWA Team as a partner, the Cities and DPWD will benefit from an experienced team of professionals with proven project management skills, relevant regulatory and technical expertise, and statewide and regional knowledge to successfully lead and deliver the required services on time and within budget. The LWA Team offers key staff dedicated to successfully achieving the Cities' and DPWD's goals and objectives.

Headquartered in Davis, LWA employs 65 individuals across six offices across California who deliver a broad spectrum of highly specialized consulting services. LWA brings extensive, enduring expertise in delivering services requested in the RFP. This experience encompasses a decades-long track record of working on wastewater projects for the Cities, involving tasks such as preparing reports of waste discharge (ROWD) and preparing the original far-field modeling for the North Valley Regional Recycled Water Program (NVRWP). **Project Manager Brian Laurensen, P.E., has provided special study, monitoring and compliance services to clients of a similar size in the Central Valley, including the Cities, for more than 25 years.**

With seven offices in California (work will be based out of their Sacramento office) and more than 1300 professionals on staff, subconsultant W&C is prepared to offer support from their experienced team of CalSIM and CalLite modelers who are well-versed in the unique challenges the Cities and DPWD face as **W&C has completed over 38 projects for DPWD, 21 for Turlock, and 82 for Modesto.**

The LWA Team consists of seasoned water quality professionals with demonstrated project management capabilities, distinctive subject matter knowledge, and technical expertise. This expertise and relevant, recent experience ensures the successful execution of the technical services specified in the RFP. The LWA Team is available to perform the requested services, has a long and productive collaborative relationship with both cities and DPWD, is uniquely qualified to conduct this work, and exceeds the RFP's minimum qualifications. The LWA Team has a reputation of excellence and forward-thinking that will successfully prepare the Cities and DPWD for the upcoming Far-Field and CEC studies.

We look forward to assisting the Cities and DPWD in performing these important technical and regulatory services. I will be the authorized signatory on all matters related to this proposal and contract. I can be reached at (530) 753-6400 x 213 or BrianL@lwa.com. Please contact me directly if you have any questions or require any additional information.

Yours truly,



Brian Laurensen, P.E.
Executive Vice President
Larry Walker Associates, Inc.

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DECEMBER 15, 2023

PROPOSAL FOR

Far-Field Dilution and Constituents of Emerging Concern Studies

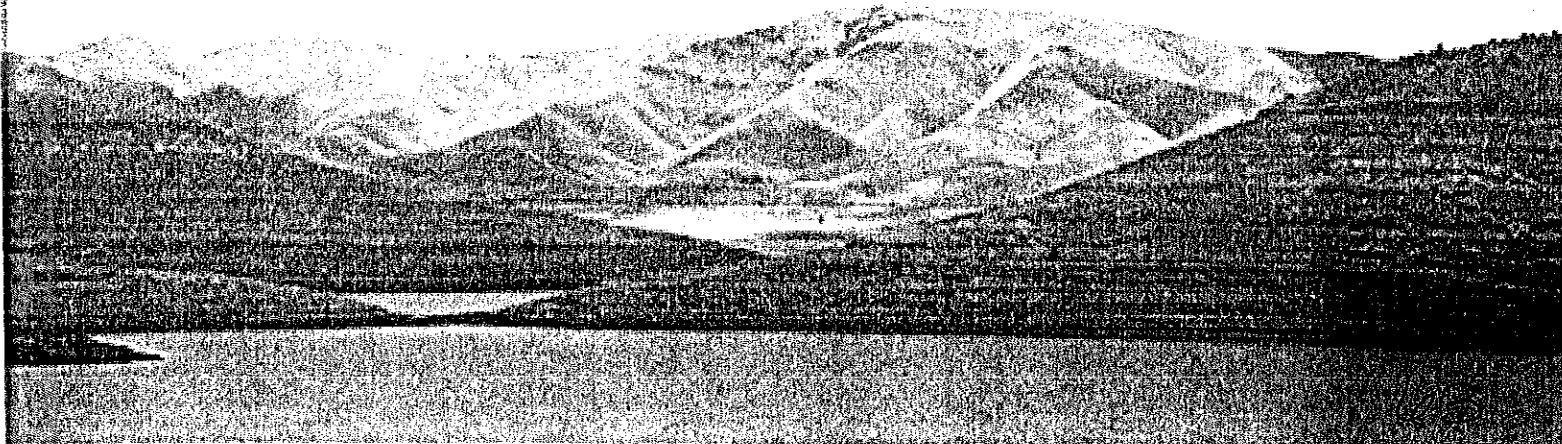
PREPARED BY



in association with



PREPARED FOR



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Larry Walker Associates, Inc. (LWA), in association with Woodard & Curran (W&C), hereafter referred to as the LWA Team, is pleased to provide the following proposal in response to the Request for Proposals (RFP) for *Far-Field Dilution and Constituents of Emerging Concern Studies* for the City of Modesto (Modesto), City of Turlock (Turlock), together referred to as the Cities, and Del Puerto Water District (DPWD).

1. PROJECT TEAM AND EXPERIENCE



Founded in 1979, LWA is a privately owned corporation and Women-Owned Business Enterprise (WBE) headquartered in Davis, CA, with regional offices in Berkeley, Yreka, Santa Monica, Ventura, and San Diego, California, and Seattle, Washington. LWA provides water quality regulatory expertise and technical assistance to municipalities and public agencies throughout California. LWA's 65 employees provide a wide range of highly specialized consulting services, including National Pollutant Discharge Elimination System (NPDES) permit assistance (wastewater, stormwater), permit-required special studies, recycled water program approvals, pretreatment program assistance, regulatory support, water quality monitoring and data evaluation, groundwater management, and source control/pollution prevention. With significant expertise with NPDES permits and Waste Discharge Requirements (WDRs), LWA has the insight and foresight that comes only with years of involvement in developing and implementing studies to address the requirements of federal and state water quality laws and regulations. LWA has a track record of innovation and success in assisting public agencies throughout the state with wastewater regulatory issues.

LWA has significant, long-term experience providing the services described in the Request for Proposals (RFP), including decades of leading wastewater projects for the City of Modesto and Turlock. This includes the initial Report of Waste Discharge (ROWD) and far-field modeling for the North Valley Regional Recycled Water Program (NVRWP).

LWA's reputation directly results from our professional and qualified staff and our commitment to fostering long-term relationships built on trust with our clients, regulators and stakeholders. LWA maintains long-term relationships with our clients, providing tailored support on projects and tasks to address complex and continuously evolving regulatory requirements. Key projects highlighting LWA's experience, with projects and tasks similar to the core services outlined in the RFP's **Scope of Services**, are provided in **Table 2**, followed by detailed project descriptions with references.



**Woodard
& Curran**

Woodard & Curran is an integrated engineering, science, and operations company founded in 1979. They have over 1300 highly qualified professionals from 27 office locations across the United States, including seven offices in California. Work for this effort will be based out of their office in Sacramento (801 T Street, Sacramento, CA). At the heart of their company are experts in their fields, offering an in-depth understanding of cutting-edge technology, astute problem-solving, multidisciplinary engineering, and regulatory guidance. They have served utilities, cities, towns, and state governments for over 44 years. Today, they offer services beginning with studies, concept, and design through construction and operations to address recycled and potable water, wastewater, stormwater, and civil engineering. W&C has completed over 38 projects for DPWD, 21 for Turlock, and 82 for Modesto.

Woodard & Curran has extensive experience in CalSim modeling, including our work with the United States Bureau of Reclamation to develop and implement an improved model logic for contractor-based demands of the American River Basin in CalSIM II and CalLite. Our team also worked closely with the Regional Water Authority to develop climate change-related time series data (from CalSIM and MPI-ECHAM5) for use in the hydrologic models of the American River Basin (ARB) Region to be used to evaluate the impacts of climate change on the water resources in ARB region through modeling and data gathering and analysis. W&C developed a Future Baseline Condition with a historic hydrologic record and future land and water use levels in the ARB Region consistent with the CalSIM scenario.



1.1 PROJECT MANAGER

MR. LAURENSEN, PE, is an Executive Vice President at LWA. Mr. Laurenson has a B.S. in Civil Engineering from the University of California at Davis and a M.S. in Environmental Engineering from the University of California at Berkeley and is a Professional Engineer in California (No. C57401). Mr. Laurenson has over 29 years of experience in the environmental engineering field (27 years at LWA), including technical work related to wastewater treatment, water supply, stormwater quality, monitoring field investigations, fate and transport modeling, computational and statistical modeling, regulatory policy development, NPDES permit negotiations, site-specific water quality objective development, environmental data analysis, rate studies, and master planning. Mr. Laurenson was most recently (2020 – 2023) Project Manager for the NPDES permit renewal for the Sacramento Regional Wastewater Treatment Plant (SRWTP), now known as EchoWater Resource Recovery Facility. In that role, he performed technical analysis, Report of Waste Discharge (ROWD) preparation, oversight of model development, and coordination with the Central Valley Water Board and Regional San staff. Since 2005, Mr. Laurenson has led LWA's work for the Sacramento Stormwater Quality Partnership NPDES MS4 permit monitoring and regulatory assistance. Mr. Laurenson provides regulatory updates to the Partnership regarding federal, state, or regional initiatives. Since 2010, Mr. Laurenson has assisted the City of Sacramento Combined Sewer System (CSS) with monitoring and regulatory compliance services, including tracking policy development and implementation for the collection and treatment systems. Mr. Laurenson has specialized experience developing statistical models to estimate mass loads and associated errors.

BRIAN LAURENSEN, PE

Executive Vice President

Education/Registrations: M.S.,
Environmental Engineering, University of
California, Berkeley

Years with LWA: 27

Years with Other Firms: 2

Availability: 40%

Role: Project Manager

Duties Include:

- Overall project oversight, insights on results, and other input as needed
- Develop project goals and track progress
- Lead technical approach development and implementation
- Provide regulatory and other technical support as needed
- Reviews project documents, plans, and reports

Mr. Laurenson participated in developing the Central Valley Drinking Water Policy, the Delta Regional Monitoring Program, the Delta Methylmercury TMDL, the Central Valley Pyrethroid TMDL, and other TMDL and Basin Plan amendment development roles. As a participant in the Delta RMP Technical Advisory Committee, he led the development and implementation of the Pathogen and CEC studies.

Importantly, Mr. Laurenson was the NPDES permit issuance Task Manager on the North Valley Regional Recycled Water Project for the Cities and DPWD to convey recycled water through the Delta Mendota Canal to the water district. This effort involved coordination with the U.S. Bureau of Reclamation, the State Water Resources Control Board Division of Drinking Water, the Central Valley Water Board, and other stakeholders. He continued this work in 2022 with the renewal of the NPDES permit. Mr. Laurenson is an alternate member of the California Water Quality Monitoring Council.

Mr. Laurenson has assisted the Cities of Modesto and Turlock in independent and joint NPDES permit renewals since 2000. Mr. Laurenson developed the monitoring plan and final study report evaluating NVRRWP nutrient discharge on the DMC for the City of Turlock. The study was required as part of a settlement agreement with the State Water Contractors based on a Water Code Section 1310 protest.

Mr. Laurenson will retain 40% availability throughout the contract.



1.2 PROJECT TEAM

The LWA Team has proven managers and expertise working with Modesto, Turlock, DPWD, and other Central Valley wastewater agencies on similar projects. An organizational chart is presented in **Figure 1**, and a brief description of the team members' roles is provided below. Relevant staff experience is demonstrated through selected projects and summarized in **Table 2**.

The LWA Team is comprised of experienced water quality professionals with proven project management skills, unique subject matter expertise, and capability to successfully execute the technical services requested in the RFP. Each team member has the experience and ability to provide the needed services to the Cities and DPWD cost-effectively. The LWA Team utilizes a transparent management structure that provides a single point of contact for all project management needs and direct access to the project's technical staff, as needed.

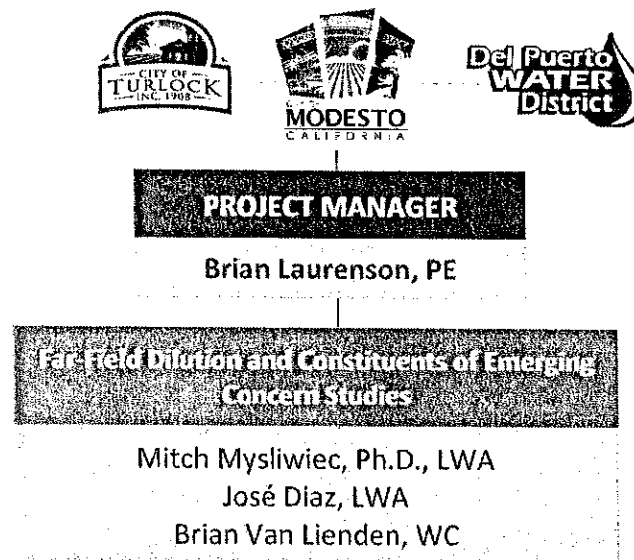


Figure 1. Project Organizational Chart

LWA Project Manager Brian Laurenson, P.E., has decades of proven organizational, communication, and project management and technical skills, coupled with a strong track record in leading project teams to accomplish specific technical tasks outlined in the Scope of Services. As the Cities and DPWD's primary and day-to-day point of contact, he will oversee the work performed for each task, manage the contract, and ensure work is completed on time and within budget.

Brief bios for proposed supporting personnel are provided in **Table 1** below, including an overview of each individual's qualifications and relevant regulatory experience. All staff assigned to this project are located in Northern California. Detailed resumes for our proposed personnel are included in **Appendix 1. Resumes**.



Table 1. Supporting Team Bios

<p>MITCH MYSLIWIEC, PH.D. <i>Senior Engineer, LWA</i></p> <p>Education/Registrations: Ph.D., Environmental Engineering, University of California, Davis Years with LWA: 22 Years with Other Firms: 4 Availability: 40%</p>	<p>DR. MYSLIWIEC is a Senior Engineer with more than 20 years of experience and is not only responsible for NPDES/WDR permitting and TMDL development and implementation but also develops, analyzes, and evaluates methods to ensure appropriate water quality objectives are maintained both at the discharge and watershed scales. Dr. Mysliwec has performed numerous technical analyses in support of the NPDES permitting effort for the Regional San Echo Water Project. Dr. Mysliwec has performed discharge modeling studies for POTWs throughout California, including tracer and fate and transport studies. Prior to joining LWA in 2001, Dr. Mysliwec worked as a post-doctorate researcher and lecturer for lower and upper-division engineering courses at the University of California, Davis. He serves as a co-chair on the CASA Regulatory Work Group and previously was the co-chair of the Water Committee of the RWG.</p>
<p>JOSÉ DIAZ <i>Project Engineer, LWA</i></p> <p>Education/Registrations: M.S., Civil and Environmental Engineering, 2019, University of California, Berkeley Years with LWA: <1 Years with Other Firms: 4 Availability: 25%</p>	<p>Mr. Díaz joined LWA in October 2023 and is a Project Engineer for LWA's work in the groundwater and watershed management fields. He has 4 years of experience studying groundwater systems in California's Central Valley and the Sacramento-San Joaquin Delta. He is proficient in the development and review of numerical hydrologic models. His responsibilities also include the collection of soil, surface water, and groundwater field data, as well as the design and installation oversight of monitoring wells. His brief time at LWA has included model development and monitoring data evaluation for the Siskiyou County Flood Control and Water Conservation District.</p>
<p>BRIAN VAN LIENDEN, PE <i>Associate Principal, Woodard & Curran</i></p> <p>Education/Registrations: Masters, Civil & Environmental Engineering, University of California, Davis; Professional Civil Engineer, CA, 63250 Years with WC: 7 Years with Other Firms: 17 Availability: 25%</p>	<p>MR. VAN LIENDEN has 23 years of experience in water resources planning and management, working with water agencies in California. His experience includes managing complex multi-objective water resources management planning projects focusing on surface water supply, groundwater, water demand, water quality, flood and stormwater management, ecological resources and climate change. He has worked with federal, state and local water agencies to develop water management planning and policy documents, facilitate stakeholder communication and engagement, and formulate and interpret technical studies and analyses.</p>



2. RELATED EXPERIENCE

Table 2 demonstrates project experience of a similar size and scope and associated staff members completed within the past five years, followed by Project descriptions of not more than five projects of similar size, scope and complexity from the past five years.

Table 2. Representative Project Experience

Relevant Projects *Project Description Provided Staffing: BL - Brian Laurensen, MM - Mitch Mysliwiec, BV - Brian Van Lienden	Far-Field Modeling		CEC and Pathogen			Nutrient Loadings			Project Roles				
	Project/Meeting Coordination	Workplan Development	Workshop Implementation	Determining Appropriate Technical Test Assignment	Project/Meeting Coordination	Monitoring Plan Development	Monitoring Site Implementation	Modeling	Load Estimation	Firm	Project Manager	Technical Lead Modeling	Technical Lead Monitoring
North Valley Regional Recycled Water Program NPDES Permitting, San Joaquin Valley, CA*	•	•	•	•	•	•	•	•	•	LWA	BL	MM	BL
Lower American River Bacteria Source Identification Special Study, CA*	•	•	•	•	•	•	•	•	•	LWA	BL	BL	BL
Delta RMP Contaminants of Emerging Concern Work Plan, CA*	•	•	•	•	•	•	•	•	•	LWA	BL	BL	BL
Technical & Policy Services Special Projects, Central Valley Clean Water Association, CA*	•	•	•	•	•	•	•	•	•	LWA		MM	BL
Delta Conveyance Project, Technical Assistance and Comment Letter, CA	•	•	•	•	•	•	•	•	•	LWA		MM	BL
City of Turlock Delta Mendota Canal Nutrient Evaluation Study, CA	•	•	•	•	•	•	•	•	•	LWA	BL	BL	MM
Tracer Study, Yuba City, CA	•	•	•	•	•	•	•	•	•	LWA	MM	MM	MM
Contact Study, City of Corning, CA	•	•	•	•	•	•	•	•	•	LWA	MM	MM	MM
Del Puerto Canyon Reservoir Feasibility Study, CA*	•	•	•	•	•	•	•	•	•	W&C		BV	
NPDES Permit Regulatory Assistance, Regional San, CA	•	•	•	•	•	•	•	•	•	LWA	BL	MM	BL

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1. North Valley Regional Recycled Water Program NPDES Permitting | Owner: LWA

Client:	City of Modesto, City of Turlock, & Del Puerto Water District		
Client Contact:	William Wong, City of Modesto Director of Utilities (209) 571-5801; 1010 10th Street Modesto, CA 95354; wwong@modestogov.com		
Years of Service:	2014-2016, 2022-2023	Costs: \$200,000	\$59,000
Personnel and Roles:	Brian Laurenson (Project Manager: Project planning, ensuring regulatory compliance, managing budgets and invoices and overseeing deliverable production and quality control); Mitch Mysliwec (Support Staff: Development of planning documents, development of ROWD)		

Description of Service Performed:

Beginning in 2014, LWA assisted the project partners in developing a compliance strategy for an innovative water recycling project to discharge Title 22 treated effluent to the Delta Mendota Canal (DMC) for use downstream by the Del Puerto Water District. The project provides irrigation water to 45,000 acres of productive agriculture that otherwise is reliant on supply from the United States Bureau of Reclamation through the DMC. LWA developed the technical documents required for the NPDES permit issuance, which will be the first NPDES to the DMC. Both the City of Modesto and the City of Turlock now recycle most of their filtered wastewater effluent for use by the Del Puerto Water District.

Tasks included:

- Coordinated with the Central Valley Regional Water Quality Control Board and the State Water Control Board Department of Drinking Water to develop the permitting approach for the use of the Delta Mendota Canal;
- Prepared the Antidegradation Analysis Report that evaluated the additional discharge to the DMC, including an assessment of "near-field" and "far-field" impacts using modeling and statistical tools. Incremental changes to loads and concentrations of key constituents were calculated at locations in the DMC, refuges, and downstream export areas. A socioeconomic analysis was performed to evaluate the cost impacts of controls for incremental water quality changes;
- Developed planning documents and performed field investigation and sample collection in the DMC to characterize existing water quality;
- Prepared mixing zone analysis using CORMIX to determine the distance in the DMC until the proposed effluent was fully mixed. This analysis is required to allow dilution credits for disinfection byproducts;
- Developed water balance model to determine the percent wastewater in the O'Neill Forebay on a monthly timestep that was aggregated to provide annual averages.
- Prepare Report of Waste Discharge (ROWD) for both cities evaluating effluent quality and the DMC water quality;
- Prepared comments on the administrative draft and tentative order permit;
- Responded to information requests from the Central Valley Regional Water Quality Control Board on technical issues identified by regulatory agencies and downstream water agencies. Prepared materials for NPDES permit adoption hearing; and
- Led permit renewal services and support in 2022, including preparation of reasonable potential analysis, administrative draft permit, and tentative order. Permit adopted as a consent item.

In 2022, LWA led the NPDES permit renewal for the City of Modesto, which included new considerations for the Surface Water Augmentation Rule and constituents of emerging concern. **Work was completed on time and within budget.**

2. Lower American River Bacteria Source Identification Special Study | LWA

Client:	City of Sacramento for the Sacramento Stormwater Quality Partnership
Client Contact:	Lisa Moretti, Supervising Engineer, (916) 808-5390; 1395 35th Avenue Sacramento, CA 95822; lmoretti@cityofsacramento.org
Years of Service:	2019-2023
Costs:	\$400,000
Personnel and Roles:	Brian Laurenson (Project Manager: Project planning, ensuring regulatory compliance, managing budgets and invoices and overseeing deliverable production and quality control)

Description of Service Performed:

The Sacramento Stormwater Quality Partnership (Partnership), in coordination with the Central Valley RWQCB, Sacramento Regional County Sanitation District (Regional), Sacramento County Regional Parks, and other stakeholders, has been participating in a study to identify potential sources of pathogens in the Lower American River. The study began its initial Phase I implementation in June 2019, but it is planned to be a multi-year effort. LWA has coordinated and overseen the monitoring design and sample collection implementation. Phase I of the study was designed to achieve the following goals:



1. Identify whether there are statistically significant differences in *E. coli* concentrations along a three-mile stretch of the Lower American River;
2. Evaluate the occurrence of urban runoff discharge *E. coli* concentrations and flows that could individually cause an exceedance in the American River;
3. Evaluate variability in source contributions to urban runoff discharge, relationship to *E. coli* levels, and observed markers and *E. coli* levels from river samples.

Tasks performed by LWA include:

- Coordination with stakeholders and the RWQCB on project goals and objectives.
- Analysis of downstream *E. coli* increases under different river flow and urban runoff discharge concentrations, based on historical *E. coli* urban runoff monitoring data.
- Development of a sampling and analysis plan for the urban runoff discharge monitoring.
- Sample collection for American River and urban runoff discharge during the dry season.
- Review and compile *E. coli* results to assess higher-priority samples for microbial source tracking analysis.
- Assessment of data quality and statistical analysis of data.
- Interpretation of qPCR markers and evaluation of possible sources .
- Future phases of the study are planned to complete up to thirty events in the current three-mile reach and then complete the remaining three-mile reach to the confluence with the Sacramento River.

Work was completed on time and within budget.

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3. Contaminants of Emerging Concern Year 3 Work Plan Development | LWA

Client:	Delta Regional Monitoring Program		
Client Contact:	Debbie Mackey, Steering Committee Chair; No address listed; (530) 268-1338; ecofficer@cvcwa.org		
Years of Service:	2022-2023	Costs: \$30,000	
Personnel and Roles:	Brian Laurensen (Project Manager: Project planning, ensuring regulatory compliance, managing budgets and invoices and overseeing deliverable production and quality control)		

Description of Service Performed:

LWA previously developed a "Stakeholder Work Plan" for POTWs and municipal stormwater agencies to address the Central Valley Water Board and State Water Board requests to characterize CEC conditions in the Central Valley scenarios identified in the State Water Board's 2018 guidance document. The Stakeholder Work Plan was reviewed by a broad group of regulatory agencies and discharger partners and finalized to address concerns and provide a cost-efficient means to satisfy regulatory requests. LWA worked with stakeholders to successfully request that the Delta Regional Monitoring Program (RMP) implement the study. Mr. Laurensen then participated as an official CEC technical advisory committee (TAC) member to oversee the implementation of the three-year study. Year three of the Stakeholder Work Plan included a "gradient study" to evaluate the fate and transport of CECs discharged from two publicly owned treatment works (POTW). LWA was chosen to develop the Year 3 Work Plan further.

Services provided include:

- Convene and facilitate four TAC meeting agenda items related to work plan development. The purpose of the meeting topic was to fully engage with the Central Valley Water Board, State Water Board, water agencies, irrigated agriculture, and municipal dischargers for technical review and to ensure that the project goals were met.
- Develop experimental study design based on a mass balance approach to estimate the attenuation of CECs discharged into effluent-dominated receiving waters that then comingled with other water sources.
- Develop a draft work plan to meet the Delta RMP documentation and technical requirements per Resolution R5-2021-0054. Technical steps included review of Year 1 and Year 2, preparation of Year 1 and Year 2 data summaries, identification of sample collection locations and field survey, review of laboratory methods, and development of flow measurement protocols.
- Respond to comments from TAC on the draft work plan using a response to the comments tracking document.
- Finalize work plan for approval from the TAC, Steering Committee, and Board of Directors.

LWA then assisted the Delta RMP with the implementation of the Year 3 Work Plan with the preparation of materials for the Quality Assurance Project Plan (QAPP), on-call technical assistance during sample collection, and presentation at Delta RMP on Year 3 Work Plan elements and implementation status.

Work was completed on time and within budget.



4. Technical & Policy Services Special Projects | LWA

Client:	Central Valley Clean Water Association (CVCWA)		
Client Contact:	Debbie Mackey, Executive Officer; 808 R Street, Suite 209 Sacramento, CA 95811; (530) 268-1338; eoofficer@cvcwa.org		
Years of Service:	2004-Present	Costs:	\$1.1M
Personnel and Roles:	Mitch Mysliwicz, Brian Laurenson (Support Staff: Reviewed NPDES permits, development of water limits, development of Basin Plan)		

Description of Service Performed:

For 20 years, LWA has provided regulatory support services to the CVCWA Permitting and Regulatory Advocacy (PRA) Special Project group and other special study groups. LWA has partnered with Somach, Simmons and Dunn to provide these services effectively and cost-effectively. During this work, LWA and SSD have helped CVCWA develop a positive and effective working relationship with the Central Valley Regional Water Board. This effort has led to many successful outcomes, including developing Central Valley-specific ammonia water quality criteria, a salinity variance, Delta methylmercury studies, and whole effluent toxicity studies. LWA provides technical and policy services, working closely with CVCWA members, Central Valley Water Board staff, and management.

Services provided include:

- Review and comment on NPDES permits and Waste Discharge Requirements in the Central Valley prior to adoption by the Central Valley Regional Water Board.
- Development of a Basin Plan amendment to allow water quality standards variances in the Central Valley, including a streamlined salinity variance and case-by-case exceptions in Waste Discharge Requirements.
- Development of Delta Drinking Water Policy and associated Basin Plan amendment.
- Development of a Central Valley policy for determining appropriate hardness values in setting effluent limits for trace metals under the California Toxics Rule.
- Development of appropriate effluent limits for aluminum in Central Valley streams based on site-specific water effect ratio determinations.
- Development of appropriate limits for dioxins in Central Valley receiving waters.
- Development of appropriate receiving water monitoring methods for NPDES permits with mixing zones.
- Development of white papers on antidegradation, nitrification/denitrification, and Whole Effluent Toxicity triggers.
- Development of a salinity management "toolbox" for Central Valley POTWs under CV-Salts.

LWA assisted CVCWA in reviewing and commenting on various statewide policy initiatives by the State Water Resources Control Board, including the Toxicity Policy, the Nutrient Policy, Biological Objectives, Sediment Quality Objectives, Cadmium objectives, Mercury Objectives, and the Bay-Delta Plan. LWA also assisted CVCWA in developing comments on the Delta Plan, Delta Plan EIR, the Bay Delta Conservation Plan and the Delta Conveyance Plan.

LWA completed additional special projects, such as an evaluation of the presence of mussel species to recalculate ammonia water quality objectives

Work to date has been completed on time and within budget. Ongoing efforts are estimated to take less than 10% of proposed staff time.

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5. Del Puerto Canyon Reservoir Feasibility Study | Woodard & Curran

Client:	Del Puerto Water District				
Client Contact:	Anthea Hansen, General Manager; P.O. Box 1596, Patterson, CA 95363; (209) 892-4470, ahansen@delpuertowd.org				
Years of Service:	2019-Present	Estimated Completion:	2025	Costs:	\$4M to Date
Personnel and Roles:	Brian Van Lienden (Task Manager: Supervised development of GoldSim systems model and completion of Environmental Impact Report)				

Description of Service Performed:



Woodard & Curran is leading the development of a Feasibility Study for the proposed Del Puerto Canyon Reservoir. The proposed Del Puerto Canyon Reservoir would create up to 85,000 acres of locally controlled land south of Delta storage for the Del Puerto Water District and the San Joaquin River Exchange Contractors Water Authority. The proposed reservoir would be located in Del Puerto Canyon near Patterson and connected to the Delta-Mendota Canal. The reservoir would provide increased reliability of supplies for the participating Districts and for south of Delta wildlife refuges. Woodard & Curran is providing Program Management and related support services necessary to complete a Water Infrastructure

Improvements for the Nation (WIIN) grant proposal. Services include the completion of an Environmental Impact Report (EIR), the development of preliminary engineering of an earth-filled dam, conveyance facilities, roadway relocation, and coordination of high voltage and gas utilities. Woodard & Curran is also supporting the Districts as they pursue water rights and other regulatory and institutional agreements necessary for project implementation.

As part of this work, Woodard & Curran developed a systems model in GoldSIM to simulate operational scenarios to determine reservoir yields for project partners and to inform environmental considerations for a new reservoir that would create up to 85,000 acre-feet of locally controlled storage. Modeling activities included simulating multiple storage pools within the reservoir with complex operating procedures that consider multiple supplies, varying demands, and operational needs that vary with water year type. Woodard & Curran is managing the comprehensive feasibility study for the reservoir to improve water supply reliability. The project also includes environmental permitting, design, and acting as the Owner's representative.

Woodard & Curran is preparing the EIR to meet the needs of the sponsoring Districts under CEQA, while providing the foundation for the Bureau of Reclamation to prepare an Environmental Assessment consistent with NEPA. Scoping meetings were conducted, and we prepared a scoping report. W&C is now preparing EIR for this complex project with an aggressive nine-month schedule for publication of the Draft EIR.

Work to date has been completed on time and within budget. Ongoing efforts are estimated to take less than 10% of proposed staff time.

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3. PROPOSED SCOPE OF SERVICES

3.1 FAR-FIELD DILUTION STUDY

The March 2022 Department of Drinking Water (DDW) Surface Water Augmentation (SWA) assessment stated that the NVRWP project is not for drinking water and is not considered a "Surface Water Source Augmentation Project" or "SWSAP." While the purpose of the NVRWP water reuse project is not expected to change, the NPDES permit allows DDW to change this finding based on the far-field results. The original DDW finding was based on an analysis performed by the LWA Team using CalSim data and a monthly time step water balance model that reported an annual average percent reclaimed water. However, to reduce the level of effort, the model did not consider diversions, mixing, or other sources of attenuation of the reclaimed water fraction. These assumptions would generally result in a higher percentage of reclaimed water. The LWA Team previously prepared an approach evaluation for the City of Modesto (Woodard-Curran and LWA, November 22, 2022, technical memorandum). [need a sentence here to describe what this study will do]

3.1.1 Project/Meeting Coordination

Regular updates and clear communication of technical products and progress are critical for success in the Far-field Model study. Because the outcomes may include nuanced interpretations of technical data, it is vital to have buy-in to the approach and technical results. Meetings with both NVRWP staff, the Central Valley Water Board and DDW will be critical as shown in the detailed project schedule below.

3.1.2 Workplan Development

The LWA Team recommends a stepwise approach to engagement to request and compile the diversion datasets and work with the San Luis & Delta- Mendota Water Authority (SLDMWA) and downstream water agencies to better understand operations. Outreach to all partners is critical to acquiring necessary data in a timely fashion, understanding system operations, and gaining approval for monitoring elements. Key refinements to the modeling include reducing the reported timestep to monthly, quantifying diversions/return water from/to the DMC, considering the mixing in the DMC such that a more significant fraction of reclaimed water is diverted from the side of the DMC with a higher percentage of wastewater, and accounting for the degradation of the strength of signal through all other processes. Accurate diversion data will be critical to improving the model. DDW highly favors source tracer studies that use introduced or natural tracers with high fidelity in a field study to confirm model results. The LWA Team recommends that the study include an evaluation of operational scenarios so that the NVRWP can justify continued operations without significant changes.

3.1.3 Workplan Implementation

While existing modeling tools (e.g., finite element models) should be evaluated, mass and water balance models could be more readily developed for the project conditions. A deterministic continuous simulation model could be developed if input conditions are well known. If the initial data compilation steps identify critical data gaps that cannot be filled, a stochastic modeling approach that considers the probabilities of occurrence based on available data could be employed to estimate the percent reclaimed water and the confidence intervals (margin of error) of the results. Modeling should include development, calibration, and verification steps. Evaluation of model sensitivity to varying assumptions and an assessment of overall error is important to the documentation of model performance.

3.1.4 Deliverables

The LWA Team will provide a draft workplan, final workplan, and final report. Outlines of the workplan and report will be prepared and shared with the clients prior to the preparation of those documents. In addition, the LWA Team will prepare meeting notes to document critical milestones, findings, or decisions. The LWA Team will provide all source documents, including code and model inputs sufficient to allow a qualified third party to replicate the analysis.



3.2 CONSTITUENTS OF EMERGING CONCERN STUDY

The CEC (and pathogen indicator) study is included in the NPDES permit as a stand-alone requirement; however, the study can be coordinated with the far-field modeling to efficiently address the downstream drinking water agency concerns related to reclaimed water in the DMC. The NPDES permit notes that the March 2022 DDW letter study suggests that the NVRWWP should collect “effluent samples and downstream receiving water samples, quarterly, for constituents of emerging concern that present health concerns...”. The presence of CECs and pathogen indicators in the DMC may not be due to the NVRWWP and it will be critical to quantify these background sources.

3.2.1 Project/Meeting Coordination

Project meetings with NVRWWP staff, the Central Valley Water Board, and DDW can be coordinated with the far-field study for efficiency, though the far-field study is a more complex technical effort.

3.2.2 CEC Monitoring Plan Development

LWA developed the Delta RMP CEC attenuation study in a stepwise collaborative process with the dischargers, the Central Valley Water Board, and all stakeholders. Drinking Water agencies augmented the study with separately collected data at various locations, including the City of Modesto effluent. Data from these programs and the State Water Boards CEC programs can be used best to select sampling locations and the specific constituent list. Laboratory performance and potential contamination issues can limit the ability to discern the CEC signal downstream. An upstream sample location allows a mass balance to separate out CECs from upstream sources. Downstream locations and methods should be considered mixing across the DMC or at locations closer to points of diversion. The CEC signal (concentration) is expected to weaken in the large spatial scale of the far-field study. It would be beneficial to characterize conditions at fully mixed locations upstream and at increasing distances downstream to characterize dilution and degradation (i.e., attenuation) adequately. The monitoring plan does not have to be a complex document, but it should adequately define the analytical targets, methods, laboratories with capability, sample collection protocols, and the expected data analysis. DDW will have suggested changes and the overall analyte list must be negotiated during work plan development. The NVRWWP will want to consider the overall cost and usefulness of the CECs for the far-field study. The NPDES permit suggests quarterly sample collection ostensibly to capture different seasons and treatment performance variability. It may be possible to reduce the study period if it can be determined during work plan development that a shorter study with adequate sample locations was sufficient to characterize conditions.

3.2.3 CEC Monitoring Plan Implementation

The CEC monitoring plan and any far-field model verification monitoring can be implemented. The LWA Team would lead field crews for the sample collection events. The work plan may require special access and sample collection equipment to ensure representative samples were collected. Because concentrations of target CECs will be low, comprehensive contamination minimization protocols would be necessary, including the addition of field and travel blanks. Field crews would likely need access to the DMC and other federal and state facilities such as the pumping station, San Luis Reservoir, and O’Neill Forebay. Sample collection timing could also be coordinated with other NPDES requirements to reduce cost or NVRWWP staffing requirements.

3.2.4 Deliverables

The LWA Team will provide a draft, final work plan, and final report. Outlines of the work plan and report will be prepared prior to the preparation of those documents. In addition, the LWA Team will prepare meeting notes to document critical milestones, findings, or decisions. The LWA Team will provide all source documents, including code, laboratory reports, and electronic data sufficient to allow a qualified third party to replicate the analysis. The study report will evaluate data quality, summary statistics, and data visualization (e.g., attenuation/spatial virility plots, time series plots, distributional plots, and comparison to other studies, where available).



4. PROJECT SCHEDULE

The project schedule must meet the NPDES permit requirements and must allow for sufficient input from stakeholders and regulators. The schedule must allow for sufficient technical rigor, laboratory analysis, and reporting time. Both studies have the same work plan due date (August 1, 2024), and both study reports are expected to be part of the July 31, 2026 Report of Waste Discharge (ROWD).

4.1 FAR-FIELD DILUTION STUDY

Milestone/Activity	Approximate Date	Note
Kick-off meeting NVRWP	March 2024 NTP or before <i>pro bono</i> to advance the project	Set communication plan, roles and responsibilities, project schedule, and project goals and expectations.
Draft Technical Approach and regulator engagement plan	March 15, 2024	Develop technical approach and initial list of data needs and alternative technical approaches to consider existing model or custom water/mass balance development [Deliverable]
Progress meeting	March 31, 2024	Review proposed technical approach and regulatory engagement
Central Valley Water Board staff meeting	April 8, 2024	Meeting to present technical approach for feedback. Central Valley Water Board may request that DDW attend.
Request for information to DPWD and SLDMWA	April 15, 2024	Develop specific data requests for diversions, pump-in, and system operations based on technical approach
Draft data gap technical memorandum	May 15, 2024	Technical memorandum that identifies and critical data needs, the impact on the technical approach, and alternatives to resolve gaps.
Progress meeting	May 22, 2024	Update on progress and present work plan outline
Regulator meeting	June 1, 2024	Optional meeting depending on input from Central Valley Water Board
Draft work plan	June 15, 2024	Submit draft work plan to NVRWP [Deliverable]
Final work plan	July 15, 2024	Submit final work plan to NVRWP within two weeks of receiving comments [Deliverable]
Workplan Due	August 1, 2024	NPDES permit submittal due date
Central Valley Water Board staff meeting	October 15, 2024	Discuss any comments from Central Valley Water Board and provide responses
Develop initial far-field model and outputs	March 1, 2025	Identify key model sensitivities and specific calibration and verification methods
Perform field verification monitoring (if necessary)	March 2025 through February 2026	Collect samples or data in coordination with CEC monitoring for any model verification and calibration
Progress meeting	April 2026	Finalize model and provide outputs
Draft far field model report	May 2026	Document model development and report results [Deliverable]
Progress meeting	May 2026	Discuss comments on draft report
Final far field model report	June 2026	Finalize report within two weeks of receiving comments including all model files and documentation [Deliverable]
Study report due	July 31, 2026	NPDES permit submittal due date



4.2 CONSTITUENTS OF EMERGING CONCERN STUDY

Milestone/Activity	Approximate Date	Note
Kick-off meeting NVRWP	At March 2024 notice to proceed or before <i>pro bono</i> to accelerate project	Set communication plan, roles and responsibilities, project schedule, and project goals and expectations
Draft Technical Approach and regulator engagement plan	March 15, 2024	Based on direction from NVRWP develop technical approach, including constituent list, and rationale [Deliverable]
Progress meeting	March 31, 2024	Review proposed technical approach and regulatory engagement
Central Valley Water Board staff meeting	April 8, 2024	Meeting to present technical approach for feedback. Central Valley Water Board may request that DDW attend.
Request and review available information	April 15, 2024	Public CEC data are already available (e.g., Delta RMP), but the State Water Contractors (SWC) and others have collected data in the study area that should be reviewed
Progress meeting	May 22, 2024	Update on progress and present workplan outline
Central Valley Water Board staff meeting	June 1, 2024	Optional meeting depending on initial input from Central Valley Water Board
Draft work plan	June 15, 2024	Submit draft work plan to NVRWP [Deliverable]
Final work plan	July 15, 2024	Submit final work plan to NVRWP within two weeks of receiving comments [Deliverable]
Monitoring Plan Due	August 1, 2024	NPDES permit submittal due date
Central Valley Water Board staff meeting	October 15, 2024	Discuss any comments from Central Valley Water Board and provide responses
Prepare sample collection plan and quality assurance project plan (QAPP)	March 1, 2025	Sample collection plan includes logistics and other planning specifications to fully implement workplan.
Perform field monitoring (if necessary)	March 2025 through February 2026	Collect samples for one year or at the work plan frequency or otherwise as specified in the work plan. For each event, provide email updates on any work plan deviations and summary results
Progress meeting and report outline	April 2026	Provide study results and initial interpretation and report outline.
Draft CEC report	May 2026	Draft report based on outline [Deliverable]
Progress meeting	May 2026	Discuss comments on draft report
Final CEC report	June 2026	Finalize report within two weeks of receiving comments [Deliverable]
Study Report Due	July 31, 2026	NPDES permit submittal due date



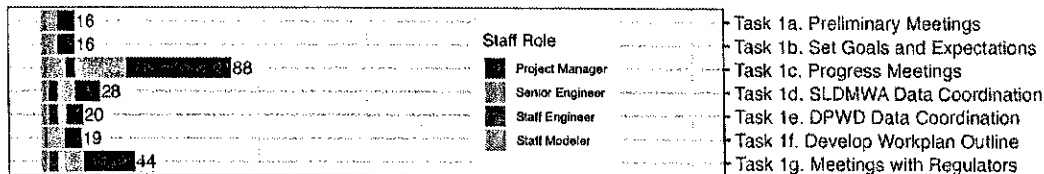
5. LEVEL OF EFFORT

A finding from DDW that the NVRRWP water reuse is a SWSAP would significantly impact the NVRRWP given the requirements of the SWA regulations. No SWA assessment examples have comparable distances between discharge and raw water intake. Because of the significance of this work, a comprehensive level-of-effort estimate is provided here. It may be possible to reduce the level of effort after or during the Far-Field Dilution Study workplan development. The level of effort for both studies will be determined in great part by the consultations required with the Central Valley Water Board (both Far-Field and CEC) and DDW (CEC only). Productive and efficient engagement with these regulatory agencies will be critical in determining the scope of technical work. The level of effort for Workplan and monitoring plan development is expected to be higher than is typical, since some key technical assumptions (e.g., allowed modeling error, target thresholds), access to data sources, and reporting requirements will not be well known until the regulatory agencies and stakeholders are fully engaged. Ideally, the initial study development will reduce these unknowns and help establish an agreed-upon framework for the analysis. The studies can be performed in coordination for efficiency; however, it may be necessary to separate some meetings or document reviews to engage regulatory agencies better and efficiently resolve issues.

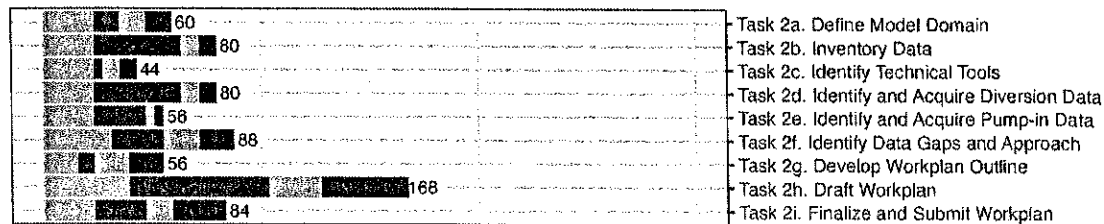
5.1 FAR-FIELD DILUTION STUDY

The expected Far-Field Dilution Study labor hours by staff level are shown in the figure below for each task included in the RFP scope. Additionally, an "optional" field verification task was included as a placeholder for tracer monitoring in coordination with sample collection in the CEC study. The NVRRWP is not a SWSAP; DDW generally requires tracer studies to determine whether the percent wastewater in the augmented reservoir is greater than 1% or 10% to determine the required additional drinking water treatment. Previously, the LWA Team estimated that the percent wastewater at the O'Neil forebay was in this range under worst-case monthly averages and other conservative assumptions.

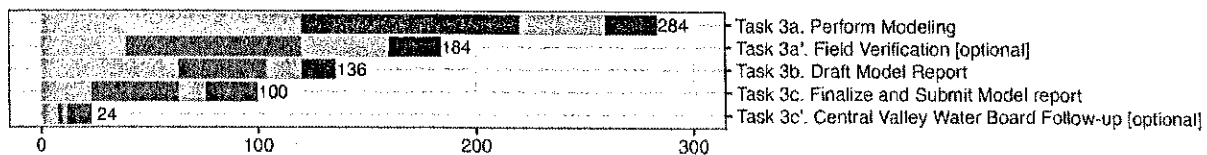
Task 1. Project and Meeting Coordination [231 hours]



Task 2. Workplan Development [716 hours]



Task 3. Workplan Implementation [728 hours]



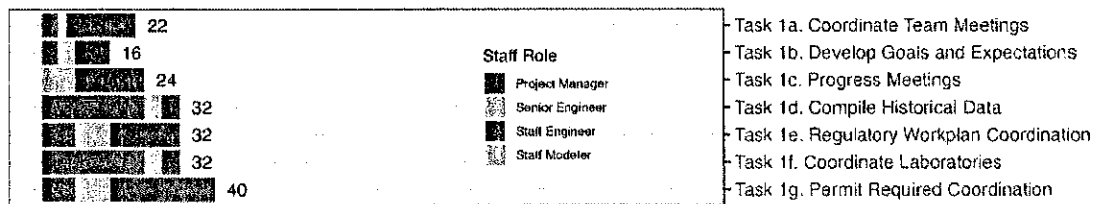
Total Study Labor = 1,675 hours. Approximately 90% of work will be performed by staff in the Sacramento Area and 10% by staff in Berkeley or Santa Monica.



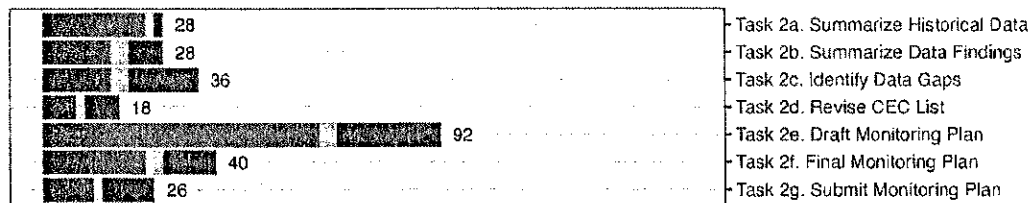
5.2 CONSTITUENTS OF EMERGING CONCERN (CEC) STUDY

The expected CEC Study labor hours by staff level are shown in the figure below for each task included in the RFP scope. The LWA Team expects that the CEC monitoring plan development and implementation can be performed efficiently due to fewer unknowns. The primary design parameters to resolve with the Central Valley Water Board and DDW will be the number of monitoring locations, the number of sampling events, and the list of CECs. The CEC study requirements suggest a relatively narrow number of locations (effluent and downstream); however, there may be some advantage to collecting upstream and multiple downstream locations. The level of effort shown below assumes quarterly events for one year at up to four locations. The actual constituent list should not change the labor cost significantly; however, some CECs can require specialty laboratories to ensure good data quality and low detection limits. Therefore, the cost will increase as the number of samples increases, including necessary quality control samples.

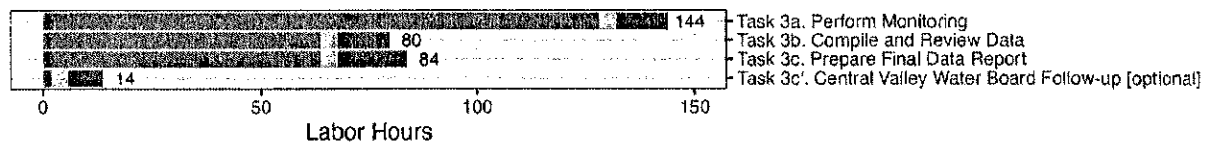
Task 1. Project and Meeting Coordination [198 hours]



Task 2. Monitoring Plan Development [268 hours]



Task 3. Monitoring Plan Implementation [322 hours]



Total Study Labor = 788 hours.
All work is expected to be performed by staff in the Sacramento Area.

The City of Turlock, with assistance from LWA, performed a nutrient characterization study in the effluent and DMC for more than four years. The level of effort for this CEC study would be similar to that prior study for sample collection, with additional special sample collection methods to minimize low-level contamination and possible sample collection at additional locations. The LWA Team could potentially reduce the proposed level of effort if the NVRWP provided some field staff assistance. Alternatively, the LWA Team could add a local subconsultant to minimize travel time to the study locations. However, because the LWA Team would recommend quarterly events, travel and mobilization costs should not be significant.

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LARRY WALKER ASSOCIATES

APPENDIX 1

RESUMES



LARRY WALKER
ASSOCIATES

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**LARRY WALKER
ASSOCIATES**
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Brian Laurenson, P.E. Executive Vice President

EDUCATION

M.S. Environmental
Engineering, 1995,
University of California,
Berkeley

B.S. Civil and Environmental
Engineering, 1993,
University of California, Davis

REGISTRATIONS

Professional Engineer, State of
California, Certificate No.
C57401

YEARS OF EXPERIENCE

With LWA: 27 years
With other Firms: 2 years

PROFESSIONAL

AFFILIATIONS

California Water Quality
Monitoring Council MS4
Alternate Member

Delta Regional Monitoring
Program MS4 Phase 1 Technical
Advisory Committee Member

Mr. Laurenson is an Executive Vice President with technical and project management expertise in the wastewater, stormwater monitoring, and regulatory assistance fields. Mr. Laurenson has over 27 years of experience developing monitoring programs, negotiating NPDES Permit conditions, and implementing permit-required special studies. Mr. Laurenson has performed comprehensive water quality monitoring and assessment programs that evaluated the impact of municipal separate stormwater system (MS4), publicly owned treatment works (POTW), and combined sewer system (CSS) discharges under NPDES permits. Mr. Laurenson has led teams developing automated data pipeline projects to streamline data acquisition, data review, and data visualization for MS4s and POTWs as an efficient means to report to the public and prepare annual reports. Mr. Laurenson is currently the California Stormwater Quality Association (CASQA) California Monitoring Council alternate representative and serves on the Delta Regional Monitoring Program (RMP) Contaminant of Emerging Concern (CEC) Technical Advisory Committee (TAC).

City of Modesto and City of Turlock NPDES Permit Renewal (2022-2023)

Mr. Laurenson was the LWA project manager on a consultant team and led the NPDES permit renewal task of the project for the City of Modesto in coordination with the City of Turlock and Del Puerto Water District for the joint discharge to the Delta Mendota Canal (DMC). The North Valley Regional Recycled Water Program (NVRWWP). The NVRWWP is a joint project to provide the Del Puerto Water District with reclaimed water using the DMC. The DMC is operated by the Bureau of Reclamation and joins with the State Water Project facilities downstream of the discharge. The permit renewal included negotiation of the terms of a study to evaluate the percent of wastewater reaching drinking water diversion points based on comments from the Division of Drinking Water.

City of Modesto and City of Turlock NPDES Permit Renewal (2003-2022)

Mr. Laurenson has also previously led ROWD preparaton, permit renewals, and permit studies for both the City of Modesto and the City of Turlock. Beginning in 2003, Mr. Laurenson developed the near-field mixing and dynamic modeling studies to evaluate metals' effluent limitations for the City of Modesto. Beginning in 2006, Mr. Laurenson provided this same support for the City of Turlock. In addition to the Delta Mendota Canal discharge permit, Mr. Laurenson led the San Joaquin River NPDES permit renewals for the City of Modesto in 2008, 2012, and the conversion to the General Permit in 2022. Mr. Laurenson led San Joaquin River NPDES permit renewals for the City of Turlock 2010 and 2015.

North Valley Regional Recycled Water Program NPDES Permit (2013-2016)

Mr. Laurenson was the NPDES permit issuance project manager for the North Valley Regional Recycled Water Program (NVRWWP), providing a new water source for agricultural customers in the Del Puerto Water District (DPWD). The NPDES permit allows the Cities of Modesto and Turlock to discharge tertiary treated municipal wastewater into the Delta Mendota Canal (DMC). Mr. Laurenson led the preparation of the discharge permit application including the Antidegradation Analysis Report and additional analysis of potential water quality impacts, and led the project team through the permitting process with the Central Valley Regional Water Quality Control Board. Mr. Laurenson assisted the

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Brian Laursen, P.E.
Executive Vice President

cities in responding to technical and monitoring comments related to water rights protests for the removal of the discharges from the San Joaquin River.

Sacramento Regional Sanitation District Permit Renewal and Compliance (2020-2023)

Mr. Laursen is the project manager overseeing the renewal of the NPDES permit. The renewal considers the District's EchoWater upgrade with both biological nutrient removal (BNR) and tertiary treatment facilities (TTF). Mr. Laursen led the team in early completion of the Report of Waste Discharge (ROWD) including management of the hydrodynamic model developed by the consultant team that considers discharge and receiving water interaction. Mr. Laursen prepared the request for time schedule orders, draft permit comments, and infeasibility analyses required for the permit renewal expected in the first half of 2021. During permit implementation in 2021-2023, Mr. Laursen prepared evaluations of disinfection byproduct compliance and prepared a request for a permit amendment to consider additional available dilution. Mr. Laursen requested a schedule order to allow additional time to start up and fully commission the tertiary treatment facilities.

City of Sacramento Combined Sewer System 2010-current

Mr. Laursen was the project manager and is now the senior technical advisor overseeing the monitoring, reporting, data analysis, and regulatory assistance for the combined system discharges to the Sacramento River. Mr. Laursen led the team preparing the water quality assessment, demonstrating the combined system's benefits, the updated Plan of Operations, CIWQS data preparation, and annual reporting. Mr. Laursen assisted the city in developing NPDES permit compliance strategies by preparing the water quality assessment, coordinating with the long-term control strategy, and developing the methylmercury control study work plan. Mr. Laursen assisted the City with NPDES permit negotiations in 2014-2015 that led to the optimization of river monitoring efforts and incorporation of TMDL and effluent limitations that were more achievable than previous permits and again in 2019-2020. Mr. Laursen assisted in the implementation of the Pathogen Study as through the Delta Regional Monitoring Program on behalf of the City. Mr. Laursen is now implementing an assessment monitoring program in preparation for Report of Waste Discharge due in September 2024.

*Sacramento Regional Sanitation District *Hyaella azteca* Study 2011-2015*

Mr. Laursen was the technical and regulatory lead on the permit-required *Hyaella azteca* as a whole effluent toxicity (WET) feasibility study. Mr. Laursen developed the work plan to assess the method development requirements and potential technical issues associated with using *Hyaella azteca* as a water column test species.

Sacramento Stormwater Quality Partnership Monitoring and Regulatory Support, Sacramento, CA. 1996-current

As project manager of a multi-consultant team, Mr. Laursen provides regulatory, technical, and monitoring support services to the Partnership. Mr. Laursen currently leads the discharge and receiving water monitoring effort to fulfill the Partnership's NPDES requirements. Regulatory assistance includes preparing Report of Waste Discharge materials, monitoring and special study planning assistance/negotiation with Regional Water Board, and preparing the Water Quality Assessment Report for the permit renewal. Mr. Laursen is assisting the Partnership with technical review of their Regionwide NPDES scheduled for June 2016. Mr. Laursen was the lead facilitator and led the LWA team that completed the Priority Water Quality Constituent (PWQC) assessment and developed and completed Reasonable Assurance Analysis (RAA) technical work and documentation. Mr. Laursen assists the Partnership with evaluation of BMP performance including development and use of the



Brian Laurenson, P.E.
Executive Vice President

Watershed Treatment Model and other mechanistic and stochastic models to determine estimates of loads of constituents removed and the overall benefit of structural and non-structural controls. Mr. Laurenson assists the Partnership in program effectiveness assessments and as-needed participation in regulatory processes such as the Central Valley Drinking Water Policy, the Delta Regional Monitoring Program, the Delta Methylmercury TMDL, Contaminants of Emerging Concern monitoring, and other stakeholder participation efforts. Along with the Partnership team, Mr. Laurenson successfully negotiated the technical work plan for the contaminants of emerging concern study and worked with stakeholders to have the Delta RMP fund and implement the study.



**LARRY WALKER
ASSOCIATES**
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Mitch Mysliwec, Ph.D.

Senior Engineer

EDUCATION

Ph.D., Environmental
Engineering, 2000,
University of California, Davis

M.S., Environmental
Engineering, 1994,
University of California, Davis

B.S. (Summa Cum Laude), Civil
Engineering, 1992,
Syracuse University

REGISTRATIONS

Passed the Fundamentals of
Engineering in 1992.
Professional exam is pending.

YEARS OF EXPERIENCE

With LWA: 21 years
With other Firms: 4 years

PROFESSIONAL AFFILIATIONS

CASA Regulatory Work Group,
Water Committee Co-Chair

Dr. Mitchell Mysliwec, Senior Engineer, demonstrates his NPDES permitting and wastewater management skills at LWA. He has over 20 years of experience and is responsible for NPDES/WDR permitting and TMDL development and implementation. He also develops/analyzes/evaluates methods to ensure appropriate water quality objectives are maintained at the discharge and watershed scales. Prior to joining LWA in 2001, Dr. Mysliwec worked as a post-doctorate researcher and lecturer for lower and upper-division engineering courses at the University of California, Davis. He serves as a co-chair of the CASA Regulatory Work Group. Representative projects include the following:

Technical and Policy Services Special Projects, Central Valley Clean Water Association

Collaborated with Regional Water Board staff to develop white papers on hardness selection for CTR metals criteria calculation and the necessity for alkalinity adjustment to maintain stable biological nitrification. NPDES permit review assistance and comment on issues affecting WWTPs across the Central Valley Region.

Report of Waste Discharge & Tracer Study, City of Yuba City

Project Manager for NPDES permit renewals. Coordinated preparation of ROWD. Facilitated meeting with the Regional Water Board to address discharge-specific issues, including mixing zone application, pond use, and effluent limitation calculation procedure. Performed technical analyses including mixing zone study and CORMIX modeling to meet SIP requirements, dynamic model for WQBEL calculations for copper, zinc, lead, and ammonia, review of aluminum criteria and aluminum WER study development, antidegradation analysis, evaluation of appropriate hardness selection for CTR metals criteria, de minimis mercury mass load modeling, and coordinated sub-consultant work. Provide ongoing permit assistance. Completed a water quality study for the City's disposal ponds, and potential impacts of flood-induced discharge. Assisted in the Regional Water Board presentation preparation Permit hearing. Water quality modeling to support the design of a new diffuser.

Dissolved Oxygen Modeling, Sacramento Regional County Sanitation District

NPDES permit renewal assistance. Dissolved oxygen modeling of the Sacramento River to determine downstream effects of discharge and appropriate UOD limitations. Continuous sensor modeling of dissolved oxygen and related parameters in the Sacramento River. Developed appropriate WQBEL from dynamic model output. Attended Regional Board meetings regarding modeling approach and Thermal Plan compliance. Prepared antidegradation analyses and associated modeling efforts for the proposed future discharge condition incorporating treatment improvements. Participated in permit development process.

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Mitch Mysliwec, Ph.D.
Senior Engineer

Dilution Modeling, Department of Water Resources

NPDES permit renewal for the William E. Warne Power Plant. Developed work plans for dilution monitoring and modeling. Coordinated technical analyses of mixing zone study demonstrating available dilution. Verified CORMIX modeling with field measured dilution incorporating cumulative discharge to account for unique discharge configuration. Managed CORMIX modeling to meet SIP requirements. Assisted in the Regional Water Board presentation of findings.

NPDES Permit Compliance, City of Colfax

Project Manager for NPDES permit compliance and special studies. Evaluated the ability to comply with current permit and developed solutions to identified issues. Developed plan for lining a storage pond to comply with permit requirements and settlement agreement. Assisted City with technical issues in a Federal Court settlement proceeding. Provided groundwater flow and quality analyses. Performed water balance analysis to determine if storage ponds met 100-year annual precipitation 2 foot freeboard requirements. Determined the appropriate actions to prevent a potential emergency overflow condition for a wastewater storage pond. Developed alternatives to increase facility capacity. Evaluated wastewater treatment plant with stress test to determine available capacity increase. Facilitated the consideration of compliance projects in-lieu of MMPs for ACLs. Developed SEP where compliance projects were not appropriate. Prepared ROWD and assisted City with NPDES permit renewal. Prepared monitoring strategy to detect leaks from Pond 3 liner, should they occur. Assisted in the Regional Water Board presentation preparation Permit hearing.

Dilution Impacts Study, Monterey One Water

Task Manager evaluation of impacts to available dilution under scenarios of increased water recycling, and accepting desalinization brine. Dilution modeling, water quality and compliance acceptance, and presentations to stakeholders. Assisted in the development of a stair-step dilution value approach to assess compliance to account for changing dilution and concentrations in the discharge as RO concentrate is mixed with increasing volumes of secondary effluent.

Permit Support, City of San Luis Obispo

Task Manager for the City of San Luis Obispo's Water Reclamation Facility Dilution Study for the NPDES permit renewal. Primary responsibilities included the study development and implementation of monitoring, conducted modeling, and final report development.

Tracer Test Study, Sonoma County Water Agency

Tracer Test Study. Designed and performed a study for Sonoma Valley Treatment Plant to determine contact time within the chlorine contact chamber. Employed continuous ion selective sensor to measure tracer exiting disinfection tank. Using regression and advection-dispersion equations, determined plant was compliant with contact time regulations for tertiary disinfected recycled water. Discussed methodology and benefits of employing a continuous fluoride probe to members of the Regional Board and the California Department of Public Health. Report has been approved by the CDPH.

NPDES Permit Compliance, City of Manteca

NPDES permit compliance. Conducted plume study for support of Thermal Plan exception and CORMIX modeling. Performed field studies and coordinated sub-consultants to assess potential thermal impacts of discharge. Additional mixing zone analysis with CORMIX to define seasonal impacts on various fish species. Antidegradation analysis performed for increased discharge flowrate.

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José Tomás Díaz Casanueva, EIT

Project Engineer II-B

EDUCATION

M.S., Civil and Environmental
Engineering, 2019,
University of California,
Berkeley,
Berkeley, CA

B.S., Industrial Engineering,
2017, Pontifical Catholic
University of Chile,
Santiago, Chile

REGISTRATIONS
Engineer in Training

YEARS OF EXPERIENCE
With LWA: 1 month
With other Firms: 4 years

PROFESSIONAL
AFFILIATIONS

SPECIALIZED TOOLS
QGIS
ARCGIS
MODFLOW
IWFM
Python
R

Mr. Díaz is a Project Engineer and serves for LWA's work in the groundwater and watershed management fields. He has 4 years of experience studying groundwater systems in California's Central Valley and the Sacramento-San Joaquin Delta. He is proficient in the development and review of numerical hydrologic models. His responsibilities also include the collection of soil, surface water, and groundwater field data, as well as the design and installation oversight of monitoring wells.

Groundwater

Shasta Valley Groundwater Sustainability Plan, Siskiyou County Flood Control & Water Conservation District, CA. 2023 - Present. Siskiyou County, CA.

Project Engineer for the update of the Shasta Watershed Groundwater Model (SWGMM) developed in the MODFLOW One-Water Hydrologic Flow Model (MF-OWHM) platform. Work efforts included quality assurance and quality control (QA/QC) of converting pre- and post-processing files from R to Python, and updating the observations dataset using new monitoring data.

Wastewater

St. Helena WWTRP Groundwater Quality Monitoring, City of St. Helena, CA. 2023 - Present. Napa County, CA.

Project Engineer for the quarterly groundwater monitoring report preparation. Responsibilities encompassed monitoring groundwater levels and the collection of samples for parameters such as total coliforms, total dissolved solids, biological oxygen demand, total suspended solids, electrical conductivity, total Kjeldahl nitrogen, ammonia, nitrate, chloride, and pH.

Work efforts extended to data processing and results reporting, involving a QA/QC process for laboratory results. Water quality results were compared against benchmarks, including water quality objectives, drinking water maximum contaminant levels, and historical medians. Statistical tests such as Wilcoxon Rank-Sum and Mann-Whitney assessed correlations between well concentrations over time. In addition, groundwater level contours and hydraulic gradients were calculated using QGIS and Python.

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José Díaz
Project Engineer II-B

Work History

HydroFocus, Hydrologist, 2019-2023

Tetra Tech, Environmental Engineer I, 2019

Cambio Global UC, Entry-Level Consultant, 2018

JD

Brian Van Lienden, PE



Education

- Masters, Civil & Environmental Engineering, University of California-Davis
- Bachelors, Civil Engineering, University of California-Davis

Registrations

- Professional Civil Engineer - CA, 63250

Professional Associations

- American Society of Civil Engineers

Professional Profile

Brian has 23 years of experience in water resources planning and management working with water agencies in California. His experience includes managing complex multi-objective water resources management planning projects focusing on surface water supply, groundwater, water demand, water quality, flood and stormwater management, ecological resources and climate change. He has worked with federal, state and local water agencies to develop water management planning and policy documents; facilitate stakeholder communication and engagement; and to formulate and interpret technical studies and analyses.

Related Experience

Del Puerto Water District, CA and San Joaquin River Exchange Contractors Water Authority, CA – Del Puerto Canyon Reservoir. Task manager for reservoir operations and flood impacts analyses performed for Feasibility Study of proposed Del Puerto Canyon Reservoir on Del Puerto Creek, a tributary of the San Joaquin River. Led efforts to develop a Goldsim model to simulate proposed reservoir operations and to perform flood modeling and damage assessment using HEC-RAS and HAZUS.

US Bureau of Reclamation, CA – Sacramento-San Joaquin Basins Study. Project Manager on a collaborative effort to assess the effects of future climate change and of potential adaptation strategies in the Central Valley water management system using the CalLite and WEAP models; managed coordination between Reclamation, DWR and other stakeholders; led development of a Basins Study report including a system risk and reliability assessment of future system risks and assessment of potential water management action portfolios.

US Bureau of Reclamation, CA – Central Valley Project Integrated Resource Plan. Managed planning and technical tasks to develop a technical approach to evaluate system risks under future climate and socioeconomic changes in Central Valley water system using the CalLite and WEAP models; led development of an integrated model package to perform tradeoff analyses for water management actions for water supply, water quality, river temperature, economics, and power objectives.

US Bureau of Reclamation, CA - Upper Sacramento River Daily Operations Model Development. Project Manager for development of an operations model of the upper Sacramento River in the CalSim software capable of simulating reservoir operations and river routing on a daily time-step.

US Bureau of Reclamation, CA – Upper Stanislaus River Hydrology and Operations Study. As Task Manager, led development of an operations model of the Upper Stanislaus River watershed in the CalSim software, including development of a historical hydrology using USGS and CDEC data and simulation of operating rules for Calaveras County WD North Fork Stanislaus River Project, Oakdale ID Tri-Dam Project and PG&E Spring Gap-Stanislaus Project.

US Bureau of Reclamation, CA – American River Daily Model Development. As Task Manager, led development of an operations model of the American River watershed in the CalSim software, including development of a historical hydrology using USGS and CDEC data and simulation of operating rules for PCWA Middle Fork Project, SMUD Upper American River Project, EID El Dorado Project, PG&E Chili Bar Project, and GDPUD Stumpy Meadows Project.

Palmdale Water District, CA – Strategic Water Resources Plan. Project Manager for the development of an update to the District's previous Strategic Water Resources Plan. The Project will examine water supply strategies to meet future uncertainty through use of WEAP and IP Tool platforms. The planning process also includes development and implementation of a stakeholder engagement plan and a programmatic EIR.

California Department of Water Resources (DWR), CA – CALFED Common Assumptions. Task Manager for multi-agency (California Bay Delta Authority, DWR, and Reclamation) effort to establish a common set of management and policy assumptions and technical tools to support the CALFED Surface Storage Investigations; assisted in development of a framework for model integration between CALSIM and other hydrologic, economic, ecosystem and power models using a common set of assumptions; managed the task to perform quantification and characterization of water transfers, conservation, recycling, conjunctive use, and other local supply projects.

California Department of Water Resources (DWR), CA – Monterey PLUS EIR. As Task Manager, led analysis of the State Water Project (SWP) delivery impacts of the Monterey Amendments to the SWP contracts, developed technical appendix, and presented results to the EIR Committee.

Cachuma Conservation Release Board – Hydrologic Analysis to Support CCRB. Currently supporting CCRB in performing hydrologic analysis support for the Cachuma Project related to the ESA Section 7 consultation and the SWRCB Water Rights Order; including development and application of the Santa Ynez River RiverWare model and development of technical documentation for presentation at CCRB Board meetings.

Carpinteria Valley Water District, CA - Independent Yield Analysis of the Cachuma Project. Project manager for an independent analysis to evaluate the current safe yield of the Cachuma Project using the RiverWare model; technical reviewer for RiverWare model simulations of Cachuma Project scenarios; developed technical memorandum and summary report to describe approach and findings.

Del Puerto Water District, CA – North Valley Regional Recycled Water Program. Led successful WIIN (Water Infrastructure for Improvements for the Nation Act) applications resulting in more than \$8 million in grant awards.

City of Santa Barbara, CA - Enhanced Urban Water Management Plan. Senior technical advisor and reviewer for effort to perform Riverware modeling and analysis of Cachuma program system under multiple

scenarios to predict sustainability for internal planning and to meet DWR's 2020 Urban Water Management Planning requirements.

Cuyama Basin Groundwater Sustainability Agency, CA – Cuyama Basin Groundwater Sustainability Plan (GSP) Development. As project manager, led project team efforts to engage with stakeholders, develop a numerical groundwater model and water budget, establish sustainable management criteria, evaluate potential projects and actions and develop a monitoring program and implementation plan to complete a robust GSP for the Cuyama Groundwater Basin that satisfies SGMA requirements and meets the needs of the Basin.

Cuyama Basin Groundwater Sustainability Agency, CA – GSP Implementation. As project manager, currently leading project team efforts to implement the GSP that was submitted in January 2021, including development of Annual Reports, management of basin monitoring program, data management, numerical modeling updates, aquifer testing, and stakeholder outreach and engagement, and assistance with responding to comments on the submitted GSP.

Camrosa Water District, CA - Strategic Plan and Facilities Master Plan. Managing the development of a multi-phase planning process beginning with Board workshops to develop the strategic vision, mission, goals and strategies to guide the District's next water resource and facilities Master plan update. Brian is working closely with staff on progressively developing and implementing a master planning framework and process to meet the outcomes of the strategic plan as well as near-term CIP needs for rate analysis and drought response as well as longer-term strategies for future water independence and resilience.

North of River Sanitary District, CA – Recycled Water Partnership Opportunities Assessment. Currently assisting the NORSD in identifying and engaging potential partners for utilization of recycled water supply that will be made available from future NORSD treatment plant expansion. Performed technical analysis to screen potential partners and led outreach meetings with potential partners representatives to discuss water needs and likely end uses to form the basis of a potential agreement.

Kern County Water Agency, CA – GSP Implementation Support for Pioneer GSA. Currently providing senior technical management and client, agency staff and stakeholder engagement support for implementation of the chapter GSP developed for the Pioneer GSA, including development of Annual Report and support for responding to DWR determination on Kern subbasin GSP.