AGENDA
IRVINE RANCH WATER DISTRICT
ENGINEERING AND OPERATIONS COMMITTEE MEETING
TUESDAY, JULY 15, 2025

This meeting will be held in-person at the District's headquarters located at 15600 Sand Canyon Avenue, Irvine, California. The meeting will also be broadcasted via Webex for those wanting to observe the meeting virtually.

To observe this meeting virtually, please join online using the link and information below:

Via Web: https://irwd.webex.com/irwd/j.php?MTID=m2b76d44c0c2a14a171b3103619028038
Meeting Number (Access Code): 2489 679 9047
Meeting password: XBcdKM2tm77

PLEASE NOTE: Webex observers of the meeting will be placed into the Webex lobby when the Board enters closed session. Participants who remain in the "lobby" will automatically be returned to the open session of the Board once the closed session has concluded. Observers joining the meeting while the Board is in closed session will receive a notice that the meeting has been locked. They will be able to observe the meeting once the closed session has concluded.

CALL TO ORDER 1:30 p.m.

ATTENDANCE
Committee Chair: Daniel Ferons _____
Committee Member: John Withers _____

ALSO PRESENT

Paul Cook	___	Kevin Burton	___	Wendy Chambers	___
Neveen Adly	___	Paul Weghorst	___	Steve Choi	___
Jim Colston	___	Jason Manning	___	Jose Zepeda	___
Eric Akiyoshi	___	Malcolm Corez	___	Jacob Moeder	___
Harry Cho	___	Alex Murphy	___	Scott Giatpaiboon	___
Belisario Rios	___	Joe Lam	___	Lance Kaneshiro	___
Cameron Smith	___	_____	___	_____	___
_____	___	_____	___	_____	___
_____	___	_____	___	_____	___
_____	___	_____	___	_____	___
_____	___	_____	___	_____	___

PUBLIC COMMENT NOTICE

If you wish to address the Committee on any item, please submit a request to speak via the "chat" feature available when joining the meeting virtually. Remarks are limited to three minutes per speaker on each subject. Public comments are limited to three minutes per speaker on each subject. You may also submit a public comment in advance of the meeting by emailing comments@irwd.com before 8:00 a.m. on Tuesday, July 15, 2025.

COMMUNICATIONS

1. Notes: Burton

2. Public Comments

3. Determine the need to discuss and/or take action on item(s) introduced that came to the attention of the District subsequent to the agenda being posted and determine which items may be approved without discussion.

INFORMATION

4. IRWD NON-POTABLE WATER STORAGE ANNUAL MANAGEMENT PLANS FOR FISCAL YEAR 2025-26 – ZEPEDA / CHAMBERS

   Recommendation: Receive and file.

ACTION

5. SYPHON RESERVOIR IMPROVEMENT PROJECT CONSULTANT SELECTION FOR CONSTRUCTION MANAGEMENT AND INSPECTION SERVICES – MOEDER / BURTON

   Recommendation: That the Board authorize the General Manager to execute a Professional Services Agreement with the COWI and Gannett Fleming joint venture in the amount of $25,402,073 for construction management and inspection services for the Syphon Reservoir Improvement Project.

6. REPORT ON WATER QUALITY RELATIVE TO PUBLIC HEALTH GOALS – RIGBY / COLSTON / BURTON

   Recommendation: That a public hearing regarding the Report on Water Quality Relative to Public Health Goals be held on August 11, 2025, at IRWD's Regular Board meeting to accept any public comments that may be provided regarding the report.

OTHER BUSINESS

7. Directors' Comments

8. Adjournment

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Availability of agenda materials: Agenda exhibits and other writings that are disclosable public records distributed to all or a majority of the members of the above-named Committee in connection with a matter subject to discussion or consideration at an open meeting of the Committee are available for public inspection in the District's office, 15600 Sand Canyon Avenue, Irvine, California ("District Office"). If such writings are distributed to members of the Committee less than 72 hours prior to the meeting, they will be available from the District Secretary of the District Office at the same time as they are distributed to Committee Members, except that if such writings are distributed one hour prior to, or during, the meeting, they will be available electronically via the Webex meeting noted. Upon request, the District will provide for written agenda materials in appropriate alternative formats, and reasonable disability-related modification or accommodation to enable individuals with disabilities to participate in and provide comments at public meetings. Please submit a request, including your name, phone number and/or email address, and a description of the modification, accommodation, or alternative format requested at least two days before the meeting. Requests should be emailed to comments@irwd.com. Requests made by mail must be received at least two days before the meeting. Requests will be granted whenever possible and resolved in favor of accessibility.

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July 15, 2025
Prepared by: J. Zepeda
Submitted by: W. Chambers
Approved by: Paul A. Cook

ENGINEERING AND OPERATIONS COMMITTEE

IRWD NON-POTABLE WATER STORAGE
ANNUAL MANAGEMENT PLANS FOR FISCAL YEAR 2025-26

SUMMARY:

IRWD utilizes its recycled water seasonal storage reservoirs to align recycled water supply rates, which are relatively fixed, with seasonal variations in recycled water demands. During the high-demand summer months, water is withdrawn from these reservoirs to supplement the recycled water system. Due to limited reservoir storage capacity, untreated imported water is purchased to supplement recycled water supplies when necessary. Conversely, when recycled storage volumes approach the targeted capacity, operational changes are made to curtail recycled water production and redirect flows to neighboring agencies or discharge treated effluent to the ocean.

IRWD's annual Reservoir Management Plan (RMP) guides the operation of seasonal storage reservoirs during the fiscal year. This annual RMP considers various factors, including forecasts of supply, demand, and rainfall amounts within the recycled water system, while also accounting for any existing system constraints or limitations. The RMP specifically addresses the operational management of Recycled Water Seasonal Storage Reservoirs, Irvine Lake Reservoir, as well as other water supplies and outlets. During the Committee meeting, staff will provide an update on reservoir operations from the past fiscal year and discuss the assumptions and system limitations considered in preparing the RMP for Fiscal Year (FY) 2025-26.

BACKGROUND:

Recycled Water Seasonal Storage Reservoir Management Plan:

IRWD owns and operates four recycled water storage reservoirs: Rattlesnake, San Joaquin, Syphon, and Sand Canyon. These reservoirs have varying storage capacities and are summarized in the following table:

Recycled Water Seasonal Storage	Maximum (Design) Capacity	Effective Capacity	Comments
Rattlesnake Reservoir	1,442 AF	413 AF	Internal operating limit
San Joaquin Reservoir	3,049 AF	3,049 AF	
Syphon Reservoir	500 AF	0 AF	Currently out of service
Sand Canyon Reservoir	790 AF	150 AF	Remainder of capacity for stormwater runoff
Total:	*5,781 AF*	*3,612 AF*	

The RMP guides staff's efforts to manage water supplies and demands by monitoring reservoir levels and optimizing water sources relative to expected demands. Recycled water is primarily sourced from the Michelson Water Recycling Plant (MWRP), Los Alisos Water Recycling Plant (LAWRP), and groundwater from El Toro Groundwater Remediation wells (ET-1, ET-2, and 78). To supplement supply, IRWD purchases untreated imported water from the Metropolitan Water District. During low-demand winter months, reservoirs are filled to approximately 95% of usable capacity. Excess recycled water is either discharged to the ocean or directed to the Green Acres Project (GAP) for beneficial use by Orange County Sanitation District (OC San) or the Orange County Water District Ground Water Replenishment System (OCWD). In exceptionally wet winters, sewage normally treated at the MWRP may also be diverted to OC San. As water demand peaks in summer, stored recycled water is used to supplement the recycled supply, reducing reliance on purchased imported water. As actual conditions deviate from the RMP's assumptions over the course of the year, staff adapts operations accordingly.

Review of Recycled Water Storage for Fiscal Year 2024-25:

The FY 2024-25 recycled water demand was slightly lower than projected. Based on previous year averages, demand was estimated at 30,378 acre-feet (AF). Actual demand was 29,585 AF – a difference of 793 AF. To effectively manage the surplus recycled water, IRWD implemented all available operational strategies to ensure proper collection, treatment, recycling, or safe disposal of wastewater in a cost-effective manner.

The following table summarizes operational actions taken to manage recycled water storage, production, and distribution during FY 2024-25:

	Operational Action Taken, in approximate chronological order	**Flows Not Sent to Storage**
1.	Non-potable water Wells ET-1, ET-2, and Well 78 were shut off in February and March 2024.	209 AF
2.	LAWRP recycled water production off for approximately six months; secondary effluent discharged to the South Orange County Wastewater Authority (SOCWA) ocean outfall	1,783 AF
3.	MWRP Zone B recycled water discharged to the SOCWA ocean outfall	66 AF
4.	Recycled water sent to the GAP system; most of this water was utilized by Orange County Water District in the Ground Water Replenishment System	1,951 AF
5.	Sewage diverted to OC San through the Main Street diversion structure. Flow bypassed from the Harvard Avenue Trunk Sewer and San Mateo diversion structures.	1,434 AF
	Total Amount of Available Flow Not Sent to Storage:	*5,443 AF*

Recycled Water Storage Management Plan for Fiscal Year 2025-26:

The recycled water storage RMP for FY 2025-26, provided as Exhibit "A", includes the following assumptions:

- Recycled system water annual demands of 28,618 AF;
- Annual supply to the non-potable system of 31,036 AF;
- Capture of 280 AF of rainfall;
- Divert 1,706 AF of recycled water to the Green Acres Project (GAP) and / or the OC San outfall;
- Direct 405 AF of LAWRP secondary effluent to the SOCWA outfall;
- Produce 3,498 AF from Wells ET-1, ET-2, and 78. They will be operated for 10 months of the year; and
- Achieve a combined Effective Capacity for all reservoirs of 95% of total available storage (approximately 3,289 AF) by April 30, 2026.

Irvine Lake Reservoir Management Plan for Fiscal Year 2025-26:

Irvine Lake's capacity is approximately 25,000 AF. IRWD owns and operates Irvine Lake (sometimes referred to as the Santiago Reservoir) primarily as a water storage facility. IRWD utilizes its water stored in Irvine Lake primarily as a source of supply to the Baker Water Treatment Plant and Howiler Water Treatment Plant; this water can also be supplied to the IRWD non-potable system, as needed.

The RMP prepared for Irvine Lake, is provided as Exhibit "B". The reservoir will be operated in accordance with guidelines in the Santiago Reservoir Interim Lake Level Operation Plan that was implemented in March 2020 to reduce the probability of discharging a significant flow over the spillway. The Irvine Lake Reservoir Management Plan was developed with the following assumptions:

- Beginning storage of 9,114 AF as of July 1, 2025;
- Demands of 10,697 AF based on a two-year average, including 2,592 AF of supply for the year to the Baker Water Treatment Plant and 2,118 AF to the Howiler Plant; and
- Annual rainfall capture of 4,500 AF into Irvine Lake.

If the 4,500 AF of runoff is not captured, imported untreated water may be purchased at an average rate of $948 per AF to meet demands.

FISCAL IMPACTS:

None.

ENVIRONMENTAL COMPLIANCE:

This item is not a project as defined in the California Environmental Quality Act, Code of Regulations, Title 14, Chapter 3, Section 15378.

RECOMMENDATION:

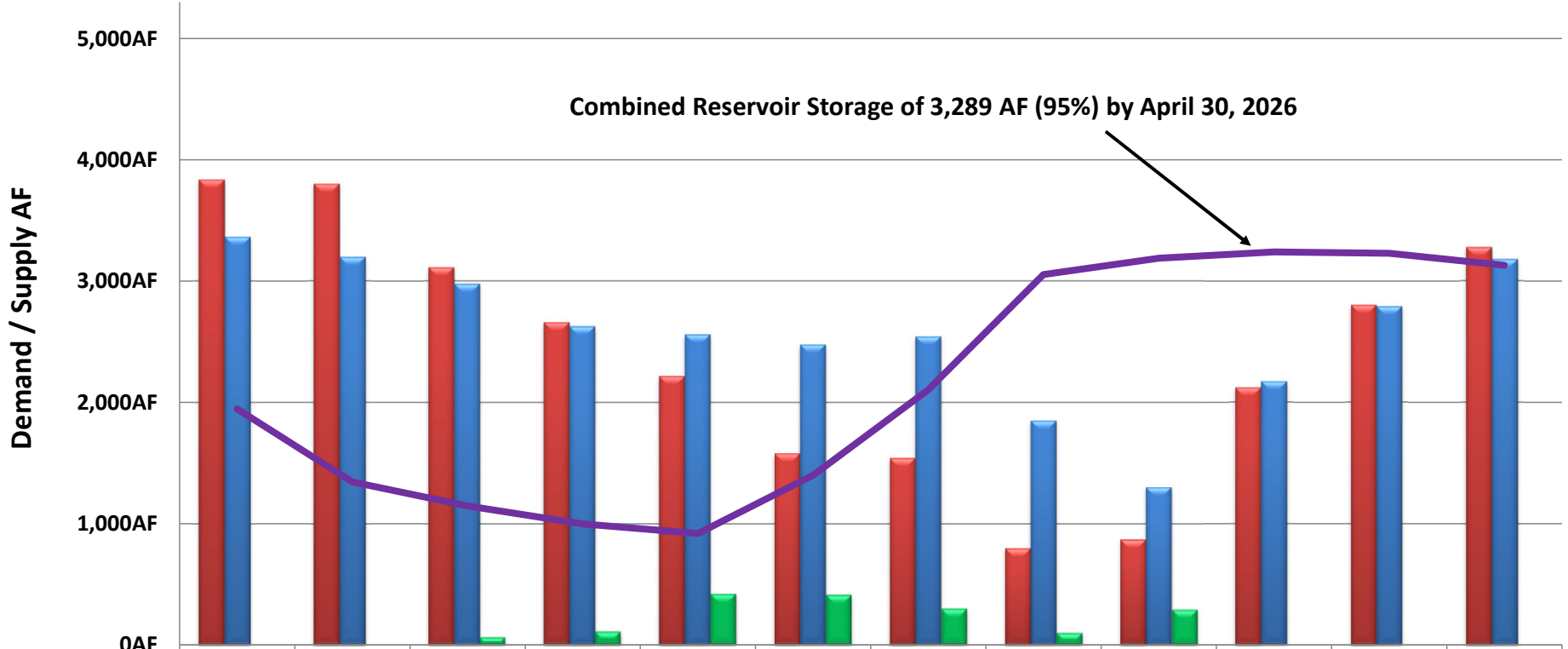
Receive and file.

LIST OF EXHIBITS:

Exhibit "A" – Recycled Reservoir Management Plan FY 2025-26
Exhibit "B" – Irvine Lake Reservoir Management FY 2025-26

EXHIBIT "A"

Recycled Reservoir Management Plan FY 2025-2026
San Joaquin, Sand Canyon, and Rattlesnake



	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26
Demand*	3,837AF	3,800AF	3,113AF	2,660AF	2,217AF	1,581AF	1,541AF	800AF	872AF	2,120AF	2,800AF	3,277AF
Supply	3,364AF	3,198AF	2,977AF	2,627AF	2,560AF	2,477AF	2,544AF	1,850AF	1,301AF	2,171AF	2,789AF	3,177AF
GAP	0AF	0AF	64AF	112AF	423AF	415AF	300AF	100AF	292AF	0AF	0AF	0AF
Total Storage	1,945AF	1,343AF	1,144AF	998AF	919AF	1,400AF	2,103AF	3,053AF	3,190AF	3,241AF	3,230AF	3,130AF

*Demand Projections Based on a 2 Year Average

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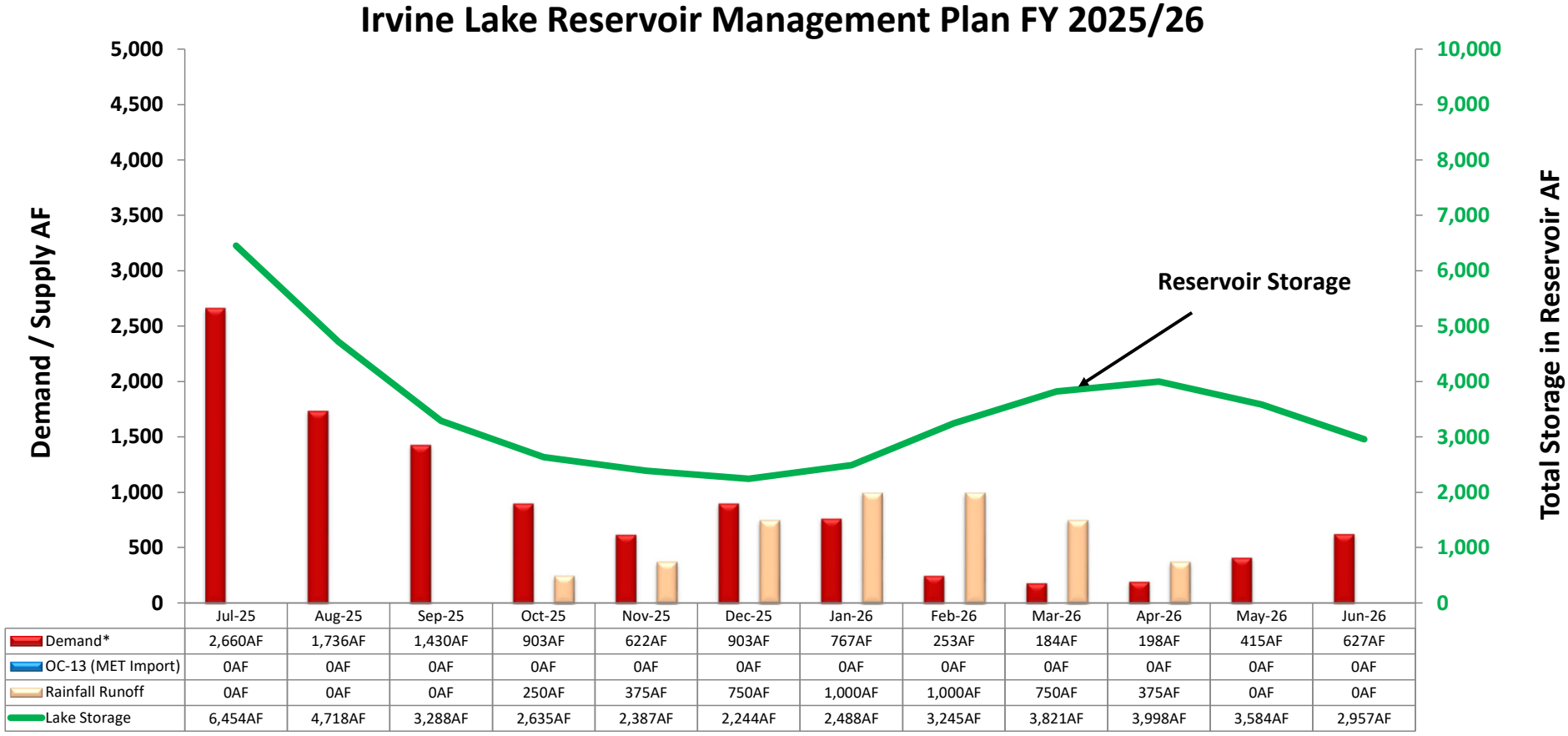
EXHIBIT "B"



	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26
Demand*	2,660AF	1,736AF	1,430AF	903AF	622AF	903AF	767AF	253AF	184AF	198AF	415AF	627AF
OC-13 (MET Import)	0AF	0AF	0AF	0AF	0AF	0AF	0AF	0AF	0AF	0AF	0AF	0AF
Rainfall Runoff	0AF	0AF	0AF	250AF	375AF	750AF	1,000AF	1,000AF	750AF	375AF	0AF	0AF
Lake Storage	6,454AF	4,718AF	3,288AF	2,635AF	2,387AF	2,244AF	2,488AF	3,245AF	3,821AF	3,998AF	3,584AF	2,957AF

*Demand and Rainfall Projections Based on a 2 Year Average and includes evaporation loss

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July 15, 2025
Prepared by: J. Moeder
Submitted by: K. Burton
Approved by: Paul A. Cook

ENGINEERING AND OPERATIONS COMMITTEE

SYPHON RESERVOIR IMPROVEMENT PROJECT CONSULTANT SELECTION FOR CONSTRUCTION MANAGEMENT AND INSPECTION SERVICES

SUMMARY:

The design of the Syphon Reservoir Improvement Project (SRIP) is nearing completion, and staff is preparing for the construction phase of the project. Staff requested proposals from four pre-qualified Construction Management Teams (CMTs). A staff review panel evaluated and ranked the consultants based on their proposals and team interviews. Staff recommends that the Board authorize the General Manager to execute a Professional Services Agreement in the amount of $25,402,073 with the COWI and Gannett Fleming joint venture for construction management and inspection services.

BACKGROUND:

The design of the SRIP is nearing completion and will be transitioning into the bidding phase. Last month, AECOM, the design engineer for the SRIP, submitted the 100% design. The design deliverable is currently under review by IRWD staff, consultants that are supporting the review effort, and the Division of Safety of Dams (DSOD) staff. DSOD staff have indicated that they anticipate this will be their final review of the design and that approving the project for construction is anticipated in the coming couple of months.

In parallel to finalizing the design, staff continues efforts to procure the necessary environmental permits for the project. Staff is currently negotiating the Lake and Streambed Alteration Agreement (LSAA) with the California Department of Fish and Wildlife (CDFW). Staff recently submitted the Crotch's Bumblebee Incidental Take Permit (ITP) application to CDFW. In April, staff received a water rights determination letter from the State Water Resources Control Board indicating that a water right is not required for the project. Staff and consultants are coordinating with the Santa Ana Regional Water Quality Control Board and consultants to determine whether a Waste Discharge Requirement (WDR) permit will be required for groundwater discharges associated with the project. Additionally, staff and consultants are reviewing the final project design to evaluate the appropriate level of environmental document required to support project changes. Staff and consultants will prepare additional environmental documentation in conformance with the California Environmental Quality Act (CEQA) and permit applications as necessary to support changes in the final design.

The project is on schedule to advertise for construction in early 2026, pending the successful procurement of the environmental permits by the end of this year. In preparation of the upcoming construction phase and to allow time for the CMT to become immersed in the project and provide valuable constructability and construction risk input on the 100% design, staff recommends bringing the CMT onto the overall project team. In September 2024, staff issued a Request for Qualifications (RFQ) for Construction Management Services for the two upcoming

dam projects: SRIP and Santiago Creek Dam Improvement Project. The RFQ was delivered to a total of 15 consultants that had expressed interest in providing Construction Management Services on the projects. Some of the consultants teamed, formed a joint venture, or declined to propose. A total of four consultant teams submitted a Statement of Qualifications for the SRIP including COWI/Gannett Fleming, GEI, MCK, and MWH. The four consultants were pre-qualified to receive the Request for Proposals that staff issued in January of this year.

Construction Phase Services & Consultant Selection:

In February, staff received proposals to provide construction management services for SRIP from the four pre-qualified consultants. A staff evaluation panel was formed to review and evaluate the proposals. GEI and the joint venture of COWI/Gannett Fleming were the two firms selected to advance to in-person interviews. Staff held interviews with the respective teams where the teams introduced their key personnel proposed for the project, explained their strategy to managing the multi-year long project with various phases and complexities, and highlighted some anticipated challenges with the project. The interviews also provided a forum for the interview panel to obtain clarification on elements of the respective proposals and further understand the team dynamics.

The interview panel carefully and thoughtfully evaluated the proposals and interviews and found that the COWI/Gannett Fleming team more closely aligns with staff's vision for the level of service for the project. The consultant evaluation matrix, provided as Exhibit "A", reflects the results of this process.

The consultant evaluation matrix shows a wide range of labor hours, which is largely a function of the quantity and duration of full-time positions and utilization of part-time roles. MCK, who provided the lowest overall fee proposal, generally includes four full-time staff during construction, assumes only three months for the pre-construction activities, and assumed minimal staffing (approximately 1,000 hours) over the final six months of startup, project close out, and site restoration. MCK's proposal also included a $1,000,000 allowance for overtime inspection services. COWI/Gannett Fleming, whose original proposal provided the highest overall fee, generally included seven full-time staff, assumes seven months of pre-construction activities, and provides full support through the final startup and restoration phase (approximately 6,000 hours over the final six months). The COWI/Gannett Fleming original proposal also estimates the overtime inspections services to be approximately $1,500,000 based on their detailed construction schedule and division of work over the course of the project.

As evidenced by the range in fee proposals, some proposals excluded or significantly limited key roles compared to the COWI/Gannett Fleming team, which further illustrated the respective CMT's approach to the project. In the case of the Project Scheduler, who is responsible for thoroughly reviewing the contractor's schedule, identifying changes, analyzing critical path work and identifying potential divergence between contract documents and field activities, GEI proposed only 42 hours a year (less than 4 hours a month) for the role whereas COWI/Gannett Fleming initial proposed a more consistent and steady level of involvement with 900 hours a year (approximately 75 hours a month). IRWD recent experience on a large, complex capital project demonstrated the importance of this position. Like the Scheduler, the Safety Manager

role proposed COWI/Gannett Fleming addressed IRWD's safety needs for this project more thoroughly than the other proposals. These staffing levels, and other full-time and part-time roles, reflected the best alignment with the project's needs and staff's experience.

The key driver for identifying COWI/Gannett Fleming as the preferred CMT for the SRIP was that their proposal and information gleaned from the interview process portrayed a team that covered all key aspects of construction management and inspection with each team member knowing their area of responsibility. The COWI/Gannett Fleming team includes, but is not limited to, a Project Manager, Construction Manager, Resident Engineer, Quality Assurance Manager, Safety Manager, Cost Engineer, Scheduler, and Inspection and Material Testing Services. The COWI/Gannett Fleming team is a blend of expertise with broad experience related to dams and treatment facilities. Some examples of the dam projects that members of the team were involved with include the Anderson Dam Tunnel Project for Valley Water, the Oroville Dam Spillway Improvements for California Department of Water Resources, and the Isabella Lake Dam Improvements for United States Army Corps of Engineers. A more detailed description of the key members of the CMT is provided later in this document.

The CMT's scope of work is primarily divided into two phases including the first phase of pre-construction activities and the second phase of supporting construction and post-construction. The fee proposal for the first phase is in the amount of $454,342 and $24,947,731 for the second phase. The pre-construction activities include project management, final design and bid phase services, and construction risk management. The bulk of the pre-construction activities effort is in the review of the 100% design for constructability and construction risk issues that should be addressed prior to advertising for construction and that should be tracked through construction as part of the construction risk management process. The construction phase support includes the staffing and resources needed to manage construction, complete inspections, and ensure a high quality and safe project is successfully completed. The negotiated and refined scope of work and level of effort total fee proposal for the approximately six year-long contract arrangement is $25,402,073. COWI/Gannett Fleming's scope of work and fee proposal are included as Exhibit "B".

Detailed Summary of Construction Team:

On past large IRWD projects, IRWD staff and portions of the design team have maintained an integral role on the CMT and maintained a full-time on-site presence throughout construction. On the SRIP, the design team will remain involved throughout the course of construction and will remain separate from the CMT but is not anticipated to maintain a full-time presence on-site. Similarly, IRWD staff will also remain fully engaged with the project and instead of being integral to the team and the day-to-day operations, will provide oversight. IRWD staff are not anticipated to maintain a full-time presence on-site. These changes to the construction management arrangement compared to past large IRWD projects (e.g., MWRP Phase 2, Biosolids, Baker Water Treatment Plant) coupled with the anticipation of starting construction on the Santiago Creek Dam Improvement project in 2027, highlights the need to have a full service CMT that is well-supported.

The CMT will consist of a team of consultants that report to IRWD staff through the Construction Manager and Project Manager. The organizational structure of the CMT will vary depending on the phase of the project. The structure during the Final Design and Construction phases are shown in Exhibit "C". The team consists of five subconsultants and generally includes seven full-time staff and various part-time staff throughout the course of the project. A summary of some of the key roles during construction are as follows.

CMT Construction Manager: Chris Fowler with Gannett Fleming will serve as the Construction Manager that is responsible for the contractor oversight. He will be coordinating field activities and utilizing the CMT to complete the work including, but not limited to, daily project management, document control, resolution of field issues, change order negotiations, requests for information, inspections, submittal reviews, project schedule reviews, progress payment requests, construction risk management, permit compliance, and safety monitoring and compliance.

CMT Resident Engineer: Mike Jubran with COWI will serve as the Resident Engineer for the dam and William Moss with Gannett Fleming will serve as the Resident Engineer for the treatment plant. Mr. Jubran, who has served as the Resident Engineer on over 35 dam projects and has extensive experience working with the Division of Safety of Dams (DSOD), will directly coordinate and build trusting relationships with DSOD. He will be responsible for tracking progress leading up to DSOD inspections and ensure project compliance prior to DSOD inspections. Mr. Moss's primary responsibilities will include startup coordination, electrical and instrumentation controls inspections, coordination with IRWD's System Integrator, and coordinating training for staff.

CMT Project Manager: Arun Parsons with COWI will serve as the Project Manager that will manage the Construction Management Services contract with IRWD and the various subconsultants. In collaboration with IRWD, Mr. Parsons will ensure the CMT is appropriately staffed and utilized throughout the project and will be responsible for the team's performance. As needed, Mr. Parsons will become involved with construction risk management and conflict resolution.

Other CMT Members: Several other roles are part of the CMT including but not limited to a Scheduler, Safety Manager Cost Engineers, Grout Injection Inspector, and Document Controller and will be utilized on a part-time or full-time basis depending on the phase of the project. The Scheduler will have a part-time presence on-site and be responsible for critically reviewing and analyzing the Contractor's schedule to ensure work is planned, progressing, and assess impacts associated with changes in the contract. IRWD staff have learned from past projects that a Scheduler working on behalf of the owner (IRWD) can be helpful in keeping the project on track. The Safety Manager will also have a part-time role that includes preparing, maintaining and overseeing the CMT's site-specific safety plan, and reviewing and monitoring the Contractor's safety. This integral role, which is consistent with IRWD's overall Health and Safety Program, will continue IRWD's commitment to prioritizing safety for the community, staff and those that work on district projects and will also establish clear separation from the Contractor's responsibility. The Safety Manager role will help to minimize risk to the District on the heavy civil construction project that is naturally exposed to more complex construction

compared to traditional IRWD capital projects. For document control, the CMT will utilize Procore, a well-known and often used online construction management platform. Providing the cloud-based platform for the duration of the project and hosting it for all parties involved with construction, including the Contractor, is included in the fee proposal.

Geotechnical Engineer: Ninyo & Moore, a subconsultant to COWI/Gannett Fleming, will perform the materials inspections and testing for the project. Their material and inspection services will include welding, concrete, and all aspects of the geotechnical work. Ninyo & Moore will be responsible for operating and managing the on-site geotechnical laboratory, which will ensure efficient use of on-site geotechnical inspection staff and expedite the processing of soil samples.

Engineer of Record: AECOM will remain the Engineer of Record throughout construction. Staff currently intends to recommend a construction phase services contract with AECOM at the time of construction award. The construction phase services contract will generally include providing support to the CMT and IRWD in reviewing submittals, requests for information, plan revisions, and other design and construction related services.

Owner's Representative: HDR, who has served as the Owner's Representative for the dam since 2018, has provided a variety of key functions on the project. HDR developed the request for proposal for the geotechnical site investigations, reviewed the various design submittals, participated in risk analysis workshops, and provided expert input on the design and construction of the dam. During construction, HDR will remain involved as the Owner's Representative and provide risk analysis continuity by ensuring dam safety related changes during construction are appropriately documented and addressed. They will also serve as a third-party dam safety expert on an as needed basis. HDR has remaining funds in their design phase Owner's Representative contract and additional funds are not requested at this time.

IRWD Staff: Staff will oversee the CMT and remain engaged through the course of the project by regularly attending construction-related meetings, reviewing reports related to the Contractor's and CMT's work, and providing Owner-related decisions to maintain progress while protecting the interest of IRWD. Staff will also manage the environmental permit compliance and mitigation management plan contract. Community relations services will be provided with in-house staff and build upon all the past outreach efforts from the Communications Department. While the CMT and DSOD will directly communicate and coordinate on logistics and technical issues, IRWD will remain in constant communication with DSOD to ensure positive outcomes and relationships with the state regulator.

<u>Design & Construction Schedule:</u>

Staff anticipates the following upcoming project milestones.

- CMT provides comments on the 100% design – October 2025
- Addendum No. 3 to the Final Environmental Impact Report (EIR) – October 2025
- Procure environmental permits – December 2025
- Finalize construction documents and advertise for construction – January 2026

- Construction award – June 2026
- Construction completion – June 2031

Conclusion:

Staff recommends that the Board authorize the General Manager to execute a Professional Services Agreement, in the amount of $25,402,073, with COWI/Gannett Fleming since their approach and staffing are consistent with the goals and objectives. While staff is requesting the full contract amount at this time, staff will only issue a Notice to Proceed on the final design support task and will issue a Notice to Proceed on the construction phase services after the Board approves construction award.

FISCAL IMPACTS:

The Syphon Reservoir Improvements, Project 03808, is included in the FY 2025-26 Capital Budget. Sufficient budget is available to fund the recommendations presented herein.

ENVIRONMENTAL COMPLIANCE:

The Syphon Reservoir Improvement Project Final EIR was adopted by the IRWD Board of Directors on July 26, 2021. Addendum No. 1 to the Syphon Reservoir Improvement Project Final EIR was adopted by the IRWD Board of Directors on August 26, 2024. Addendum No. 2 to the Syphon Reservoir Improvement Project Final EIR was adopted by the IRWD Board of Directors on May 12, 2025. CEQA Guidelines Section 15164 allows a lead agency to prepare an addendum to a previously certified EIR if some changes or additions are necessary but none of the conditions described in CEQA Guidelines Section 15162 calling for preparation of a subsequent EIR have occurred. In conformance with CEQA Guidelines Section 15164, IRWD is preparing Addendum No. 3 to the Syphon Reservoir Improvement Project Final EIR.

RECOMMENDATION:

That the Board authorize the General Manager to execute a Professional Services Agreement with the COWI and Gannett Fleming joint venture in the amount of $25,402,073 for construction management and inspection services for the Syphon Reservoir Improvement Project.

LIST OF EXHIBITS:

Exhibit “A” – Consultant Selection Matrix
Exhibit “B” – Scope of Work and Fee Proposal
Exhibit “C” – Organizational Structure of the Construction Management Team

EXHIBIT "A"

CONSULTANT SELECTION MATRIX

Syphon Reservoir Improvement Project Construction Management and Inspection Services Evaluation Matrix										
Item	Description	Weight	COWI/GF		GEI		MCK		MWH	
A	**Evaluation**									
1	Project Understanding & Approach	25%	2		1		4		3	
2	Construction Management Team	40%	1		2		3		4	
3	Subconsultants	20%	1		2		4		3	
4	Overall Value	15%	1		2		3		4	
	Weighted Score		1		2		3		4	
	Ranking of Consultants		**1**		**2**		**3**		**4**	
B	**Scope of Work[1]**									
TASK				FEE		FEE		FEE		FEE
1	Original Fee Proposal			$30,772,000		$18,431,092		$16,445,079		$28,868,829
2	Negotiated Fee Proposal[2]			$25,402,073		-		-		-
	TOTAL ENGINEERING SERVICES FEE[3]			**$25,403,000**		**$18,432,000**		**$16,446,000**		**$28,869,000**
C	**Roles on Construction Management Team - Construction Phase**									
	Principal-In-Charge		Ed Durazo - Gannett Fleming (GF)		Jerry Reed - GEI		Brendan McDevitt - MCK		Melanie Carrido - MWH	
	Project Manager		Arun Parsons - COWI		-		Nate Gavzy - MCK		-	
	Construction Manager		Chris Fowler - GF		Eric Weber - BUTIER		Keith Gudenkauf - STANTEC		Glenn Vita - MWH	
	Resident Engineer - Dam		Michael Jubran (RE) - COWI Thomas Michael (Assistant RE) - GF		Ted Warren - GEI		Mike Cole (RE) - MCK Ryan Coe (Assistant RE) - SCHNABEL		Michael Holligrel - MWH Scott Johnson - MWH	
	Resident Engineer - Treatment Plant		William Moss - GF		Billy Stewart - BUTIER		Mike Cole (RE) - MCK Ryan Coe (Assistant RE) - SCHNABEL		Kieler Smith - MBI	
	Quality Assurance Manager		Corey Kesler - GF		Brandon Brockett - GEI		-		Owais Andrabi - MWH	
	Safety Manager		David Albright - GF		-		Scott Purves - STANTEC		Jeremiah Leake - MWH	
	Risk Manager		Bill Foos - GF		Violletta McDaniel - GEI		-		Keith Whitener (Risk Analysis) - MWH	
	Inspector		Juan Le Roy - GF		Mason Shaw (Dams) - GEI Casey Lack (Treatment) - BUTIER		Patrick Nigel Moore - SCHNABEL		Owais Andrabi - MWH	
	Inspector - Electrical		William Moss - GF		-		James Weber - MCK		Jerry Rodriguez - MWH	
	Scheduler		Autumn Hall - CAPO		Fernando Flores		Matt White - MCK		Angel Ripepi - PMA	
	Document Controller		Victor Enriquez - COWI		Katie Squires - BUTIER		Fernanda Miranda - MCK		Suhas Ravindra - MWH Jasmine Bloom - MWH	
	Cost Estimator		Trevor Kroesch - CAPO		-		Jeff Kerby - MCK		-	
	Construction Contract Manager		Ajinkya Sarawade - COWI		-		-		-	
D	**2025/26 Bill Rate Comparison of Core Team[4]**									
	Construction Manager		Chris Fowler	$250	Eric Weber	$215	Keith Gudenkauf	$294	Melanie Carrido	$240
	Resident Engineer - Dam		Mike Jubran	$280	Ted Warren	$250	Mike Cole	$228	Michael Holligrel	$195
	Resident Engineer - Treatment Plant		William Moss	$210	Billy Stewart	$215	Ryan Coe	$172	Kieler Smith	$190
	Quality Assurance Manager		Corey Kesler	$223	Brandon Brockett	$245	None	N/A	Owais Andrabi	$210
	Inspector		Juan Le Roy	$192	Mason Shaw Casey Lack	$170	Patrick Nigel Moore	$235	Owais Andrabi	$210
	Document Controller		Victor Enriquez	$144	Katie Squires	$155	Fernanda Miranda	$158	Suhas Ravindra Jasmine Bloom	$190
	Construction Contract Manager		Ajinkya Sarawade	$239	None	N/A	None	N/A	None	N/A
	Number of Full-Time Positions[5]		7		5		4		5	
	Exceptions taken to IRWD Std. Contract		None		None		None		None	
	Insurance (Professional & General Liability)		Yes		Yes		Yes		Yes	

[1] Each of the original fee proposals varied in the division of work and assumptions for overtime work, annual bill rate escalations, and project duration. All proposals assumed project completion in 2030.
[2] COWI/GF negotiated proposal includes services through 2031 because the design and construction schedule was updated during the fee proposal negotiation phase.
[3] Rounded up to the nearest $1,000.
[4] Comparison does not include all core team members, which may fluctuate throughout the project.
[5] The quantity of full-time and part-time positions represent sustained positions and may not fully represent the brief periods of time throughout construction that a full-time or part-time position is utilized.

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PROJECT PROPOSAL

Exhibit "B"

CONSTRUCTION MANAGEMENT SERVICES FOR THE SYPHON RESERVOIR IMPROVEMENT PROJECT

PR 03808 - February 24, 2025

Updated Proposal - June 27, 2025

Sections: 1 Approach; 2 Scope; 3 Project team

This updated proposal supersedes the original proposal submitted on February 24, 2025. In cases of conflict, this update takes precedence.

Prepared for

Irvine Ranch Water District

COWI | GANNETT FLEMING

1. Approach

In this section, we present:

- ✓ Our understanding of the Project's background, purpose, elements, and constraints
- ✓ Foundational elements of our approach to successfully complete the Project
- ✓ Our strategies for delivery of CM services though the various project phases
- ✓ Potential project risks that we have identified
- ✓ Our expected staffing levels

1.1. PROJECT UNDERSTANDING

Established in 1961 as a not-for-profit local public agency, IRWD provides water and wastewater services throughout central Orange County to residents and businesses alike with high quality potable water, sewage collection and treatment, production and delivery of tertiary treated recycled water and urban runoff treatment. The IRWD service area is the largest Water District in Orange County and equivalent to 20% of the county area or 181-square-miles including parts of Irvine, Lake Forest, Newport Beach, Tustin, Costa Mesa, Orange, and Unincorporated Orange County.

Constructed in 1949, Syphon Dam is one of five open water reservoirs owned and operated by IRWD with four of the five for storing recycled water for reuse. Through years of strategic planning and asset management, IRWD has been focused on increasing storage capacity to have better command of capturing recycled water to mitigate losses during the winter months, as surface water bodies are typically at full capacity leading to meaningful water loss from uncontrolled discharges into the county storm drain system and therefore lost for recycled use.

In 2021, IRWD started design of the Project to include increasing the dam's open water reservoir capacity from 538 acre-feet to store about 5000 acre-feet for recycled water. By increasing the overall capacity at Syphon dam, IRWD will greatly enhance the operational flexibility to counterbalance peak seasonal deficits, including importing water from other water purveyors and the additional expense typically passed to the end users.

IRWD has secured project funding from the Bureau of Reclamation, Title XVI, WaterSMART Grant Program and State Water Resources Control Board's (SWRCB) Water Recycling Funding Program.

1.1.a. Project Elements

The Project will include the following major elements:

- Removal of the existing embankment dam and stockpiling of material to be reused in the new dam.
- Construction of a grout curtain along the axis of the new dam foundation.
- Construction of a new earth embankment dam with an impermeable core and filter drain system, using on-site borrow to provide the materials for the dam.
- Construction of a new dam control building that houses the electrical and mechanical equipment for the reservoir aeration system, programmable logic

controller (PLC), automatic data acquisition system (ADAS), and pneumatic system for the control valves on the inclined/outlet structure.

- Construction of an inclined inlet/outlet structure with pneumatically operated valves.
- Construction of a 36-inch outlet pipe through the foundation of the dam.
- Construction of concrete spillway drop inlet structure and associated 60-inch spillway pipe from the inlet structure at the left abutment to the storm drain system near the toe of the dam, using trenchless technology and traditional cut and cover construction.
- Construction of an approximate 6.5 acre riparian mitigation area located at the back of the reservoir and extensive on-site upland habitat restoration.

1.1.b. Project Constraints

The Project faces numerous constraints, challenges and risks. Later in this section, we discuss the challenges that we anticipate through each project phase, and in Section 1.4, we present a selection of potential risks and our proposed mitigation actions. Key project constraints that IRWD has noted in the RFP and addendum include:

- Constructing the dam improvements in a heavily populated urban area and directly adjacent to residential communities and the Crean Lutheran High School Athletics Complex.
- Management of construction dust, construction noise, and construction traffic.
- Limited available space on site.
- Constructing the dam and treatment facility improvements concurrently.
- 10-hour workdays. Monday to Friday.
- Management of a 0.32 square mile upstream watershed during construction of the new dam, which includes a temporary diversion berm and temporary pumping system.
- Close coordination with all stakeholders including DSOD.

1.2 FOUNDATIONAL ELEMENTS OF OUR APPROACH

The only thing that all dam projects have in common is that they are all unique. Our CMT leaders know from experience that successful CM of each dams requires a tailored approach. Based on our study of the Syphon Reservoir Improvement Project, we have developed a tailored approach to CM services of which the most important, foundational elements are as follows.

In this section we briefly discuss why each of these elements is important to the Project, how we will implement them, and how they will provide benefit.

- ✓ Leveraging Preconstruction
- ✓ Maintaining Public Support
- ✓ Prioritizing Site Safety
- ✓ Earning Trust with the Contractor
- ✓ Efficient Coordination with the Designer and DSOD
- ✓ Rapid Change Management
- ✓ Effective Construction Quality Management
- ✓ Proactive and Collaborative Schedule Management
- ✓ A Committed Champion for Startup and Commissioning
- ✓ Timely Equipment Procurement

1.2.1. Leveraging Preconstruction

Why is this Important?

The completeness, accuracy, and clarity of the contract documents will greatly influence the number and quality of contractor bids and will also directly influence the amount of contract changes and cost increases during construction. The similarity of the Syphon Reservoir Improvement design to that for the Trampas Canyon Dam Project may present the risk of complacency in development of design and contract documents. Fresh eyes and a rigorous approach are required to verify quality.

Our Approach for Success

The Design Review Team, led by Constructability and Bid Specialist **Tom Pursel,** will assemble technical and contractual experts on the CMT to review the design documents for constructability, biddability, and consistency, with the aim of maximizing project safety, protecting project schedule and minimizing change orders during construction. We will also confirm the adequacy of temporary on-site facilities.

Our approach focuses on:

- **Leverage vested interest:** Our constructability reviews will be performed by CM experts who will be key members of the CMT through construction. Their vested interest in the success of construction encourages maximum focus and dedication to preconstruction reviews; a dedication that may be lacking in specialists brought in only for preconstruction who disengage after completing their reviews.
- **Engage a broad range of expertise:** Our review team will include a broad range of CM experts, each focusing on their particular area of expertise and responsibility. This approach verifies both a comprehensive review and cost efficiency.
- **Use in-person meetings:** We will "book end" our reviews with in-person meetings with the Designer and IRWD to maximize common understanding, and to begin developing the personal relationships that will continue through the Project. The CMT review will be kicked off by an initial orientation meeting with the Design team to present their design to the CMT and explain the background and intent, following which the CMT will perform their reviews and develop organized, written comments for the consideration of IRWD and the Design team. Shortly after submitting our comments and allowing the Design team and IRWD a chance to review them, the CMT will host a meeting to discuss our comments and clear up any lack of clarity.

Benefits to the Project and IRWD

This approach will minimize RFIs and change orders during construction, thus saving time and cost. Receiving reliable bids from contractors will help IRWD to select the right Contractor for the job and have confidence in the bid price. Attending in-person meetings during the review phase will start to develop a Project Team culture.

Tom has led or overseen 23 dam construction projects in the last 10 years.

1.2.2. Maintaining Public Support

Why is this Important?

The Project will place significant burdens on the local community and adjacent Crean Lutheran High School, including heavy truck traffic on public roads, noise, and dust from construction operations. If these issues are not managed IRWD may face complaints from the public, potential costs and/or delays for mitigation measures, and general erosion of public support for this Project and future IRWD projects.

Our Approach for Success

Our approach will focus primarily on minimizing community impacts of construction activities and will include supporting community engagement to inform and maintain trust with the public

- **Confirm Contractor responsibility:** In preconstruction, Construction Manager **Chris Fowler** will verify that all permit requirements, including those pertaining to work hours, noise, dust and traffic control, are incorporated into the contract documents so that the Contractor is bound to abide by them.

Monitor Compliance: During construction, our construction inspectors will diligently oversee all of the Contractor's activities to verify compliance with permit requirements. For non-compliance related to community impacts, our inspectors will immediately notify the Contractor's superintendent and require corrective actions, and will follow up with detailed reporting.

- **Support IRWD's community engagement efforts:** We have engaged Ardurra to support IRWD's community engagement efforts based upon their extensive experience in this role for large water programs across southern California, and their skilled staff and proven approaches to effective community engagement including community meetings, site tours, and the development of informational materials.
- **Visible CMT leaders:** Chris Fowler will be available as requested by IRWD to attend community meetings and provide support, answer questions or present materials to the public.
- **Prioritize community protection:** Chris will take personal responsibility for community protection on the job. This topic will be prominent on the agenda of each weekly construction progress meeting, and any issue observed or reported will be immediately addressed with maximum priority. Chris will personally be on-call at all times to receive complaints from IRWD or directly from the public, will personally confirm that each issue is addressed immediately, and will personally follow-up with IRWD to confirm that issues have been addressed.

Benefits to the Project and IRWD

We provide experienced PR support and CMT leaders with personal involvement and commitment to provide IRWD with the necessary support to implement a broad community outreach program, with peace of mind that community complaints will be rare and always swiftly addressed.

Chris is a local, living just 30 minutes from the site. He has managed the construction of public works water projects in Orange County for more than 20 years.

1.2.3. Prioritizing Site Safety

Why is this Important?

The Syphon Reservoir Improvement Project will present serious safety hazards, including heavy construction traffic, large earth moving equipment, steep slopes and excavation, chemical exposure, and environmental hazards such as excessive heat. The health and safety of workers, IRWD staff, consultants, DSOD, and the public is the top priority for the Project. Safety incidents or unsafe practices can result in work stoppages and OSHA citations.

Our Approach for Success

Safety is a priority for the COWI and Gannett Fleming, particularly on construction sites, and we expect the same prioritization from all of our subconsultants and partners. We take an active role and forward-thinking approach to project safety, which is evidenced by our firms' excellent safety record. Site safety on the Syphon Reservoir Project will be the contractual responsibility of the Contractor.

COWI H&S Stats (2023)

Hours Worked: 500,000+

Recordable Incidents: 0

Lost-Time Incidents: 0

Experience Modification Rating (EMR): 0.90

Gannett Fleming H&S Stats (2024)

Hours Worked: 5,600,000+

Recordable Incidents: 9

Lost-Time Incidents: 2

EMR: 0.74

- Design for safety: During the constructability review in preconstruction, Construction Manager **Chris Fowler** and Resident Engineer **Mike Jubran** will look for activities and sequencing that present potential safety issues, then discuss with our in-house safety professional, the Designer and IRWD the best approaches to mitigation.
- **Plan for safety:** During preconstruction, Safety Manager **Robert Nunez** will develop our CMT Site-Specific Safety Plan which will require all staff to follow the contractor's Site-Specific Safety Plan, and will include requirements for staff safety training and incident reporting. All CMT project staff will study and sign off on the QA Plan, which will be rigorously implemented through construction and updated annually based on changing Project requirements and lessons learned.
- **Coordinate with contractor safety:** After Contractor NTP, Robert will assist IRWD with reviewing the Contractor's submitted Site-Specific Safety Plan for completeness and conformance to industry standards. Construction Manager **Chris Fowler** will not formally approve the Contractor's Safety Plan but will provide relevant comments for consideration.
- **Train and Orient for safety:** Robert will be responsible for making sure that all CMT staff receive appropriate safety training, that CMT, Designer, environmental DSOD and IRWD field staff are appropriately trained and equipped before entering the site, and maintaining safety training records at the Project site. Robert will prepare a PowerPoint-based Safety Orientation for all visitors that will be updated on a quarterly basis to reflect the changing Project conditions.
- **Stay alert and take action:** Our CMT inspectors will, during their daily inspection, observe all work activities and site conditions to identify potentially unsafe practices and conditions, and report on these in their daily reports. All CMT staff members will have stop-work authority if a potentially unsafe situation is observed.

As a Project local, Robert brings strong experience in safety management directly to the Project site.

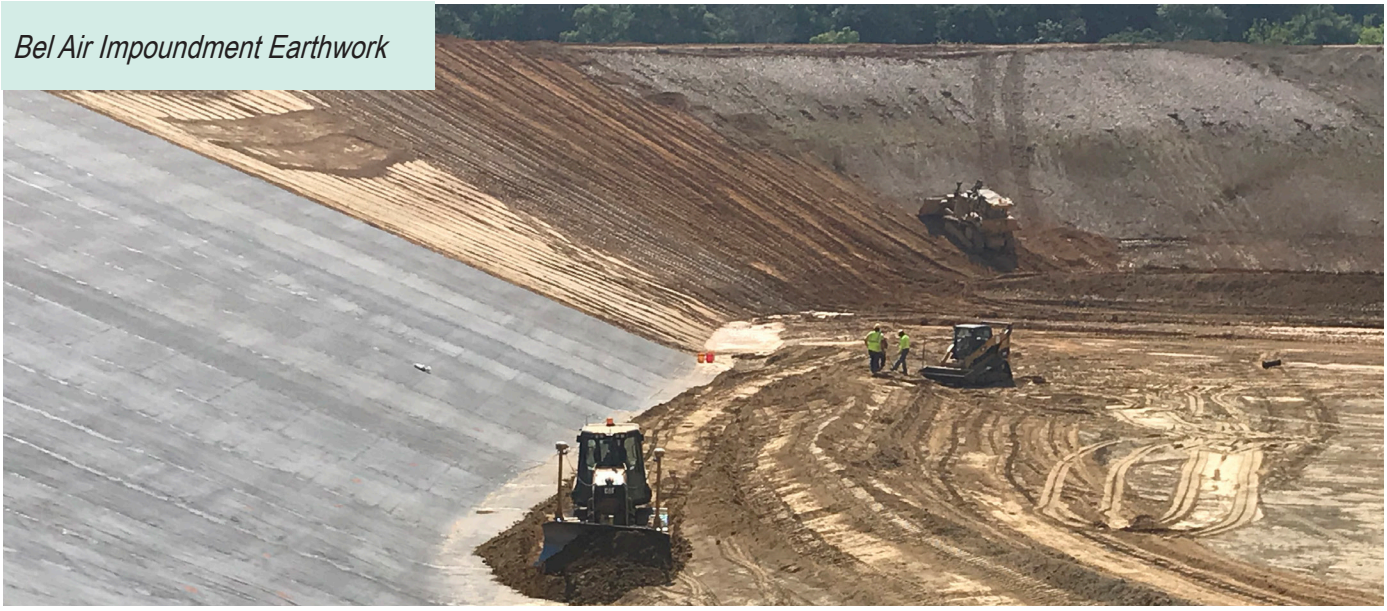
- **Report and document:** If any safety incidents occur, Robert will immediately inform IRWD and work with the Contractor to ascertain all pertinent details. Robert will make sure that the Contractor provides a complete and timely incident report to the CMT and IRWD and will assist IRWD with resolving any follow up questions or investigations.

Benefits to the Project and IRWD

We set up for success in preconstruction and apply an organized, "full-team" approach to supporting site safety, backed by swift reporting and investigation to ultimately minimize safety incidents, protect everyone on site, and maintain IRWD in good standing with safety regulatory agencies.

San Vicente Dam Raise

Bel Air Impoundment Earthwork



Bel Air Impoundment Earthwork

1.2.4. Earning Trust with the Contractor

Why is this Important?

Collaborative relationships between CMTs and Contractors are widely recognized to lead to better outcomes for project schedule, cost, safety and regulatory satisfaction. In particular for the Syphon Reservoir Project, collaboration with the Contractor will likely improve schedule and cost outcomes. Due to the amount of excavation, this project is likely to face differing site conditions and/or require design changes during construction. In these situations, we will need the Contractor to trust the CMT sufficiently that they will continue with the changed work even while a final change order is still in development and yet to be executed.

Our Approach for Success

All of our key CMT members have practice in working with contractors to develop the trust, collaboration and leverage to have the Contractor continue working under changed conditions, and take a proactive role in solving constructability and schedule-related issues. The key to developing collaborative working relationships is to recognize what motivates heavy civil contractors:

- **Prioritize Contractor payments:** Contractors require cashflow to operate. Delaying a Contractor's monthly payment places them in a difficult operational position and erodes goodwill. Our CMT will prioritize the review, negotiation and finalization of contractor payment requests and, once approved, we will push IRWD to make timely payments.
- **Quickly process change:** If we are to ask the Contractor to move forward with some aspect of changed work prior to receiving a fully executed change order, we must first establish a track record of efficient and reliable change management. Our efforts in this regard are discussed later in this section.
- **Demonstrate fairness:** The CMT's role is to manage construction for the benefit of the Project – not for the benefit of one party. We will be transparent and fair in our management of construction, and decision-making recommendations to IRWD. By demonstrating fairness and principle to the Contractor, we will gain their respect and trust.
- **Know the job; know contracting:** Contractors are more likely to work collaboratively with a CMT that understands the work and how the Contractor should approach it. Our CMT is stacked with big-dam construction experience in California under DSOD, and our CM, Chris Fowler, has many years of experience as a heavy-civil contractor Superintendent and Operations Manager. We will gain the respect of the Contractor and collaborate with them on their level.
- **Use Formal Partnering to engage the executive level:** Formal Partnering can be a valuable tool in developing relationships with the Contractor, particularly at the executive level. It is possible that the Project will require additional support or resources (for acceleration of a specific activity, for example) that the current project team is unable or unwilling to provide. In these cases, upper-level management of the CMT, IRWD and Contractor need to collaborate to bring the resources and/or solutions to the Project.

Benefits to the Project and IRWD

Our approach to building trust and collaboration with the Contractor, based upon demonstrated actions, will allow us to more effectively mitigate the schedule and cost impacts of differing site conditions and design changes during construction, and generally create a pleasant working environment over this critical, multi-year Project.

1.2.5. Efficient Coordination with the Designer and DSOD

Why is this Important?

A lack of adequate coordination between the CMT, Designer and DSOD is likely to result in deficient work being discovered later than optimal, potentially affecting the construction schedule and inevitably eroding working relationships across the team. In the worst case, poor coordination can result in the final constructed work not conforming to the design and thus compromising dam safety and operational performance. On the other end of the scale, good coordination breeds trust between all parties, to the point where Designer and/ or DSOD may approve hold point inspections based upon the inspection and reporting of the CMT, potentially improving schedule.

Our Approach for Success

Our approach is based upon understanding and respecting each party's role. The Designer has a complete understanding of the project goals and how the design has been developed to achieve them (the design intent). DSOD has a mandate to verify that the design and the constructed work meet the necessary standards for dam safety to protect the public. The CMT has two primary roles: a) to verify work is constructed in accordance with the design, and to transparently demonstrate as such to the Designer and DSOD, and b) to support the Designer's responses to RFIs and Submittals, and development of any design changes during construction by providing input on constructability, safety, cost and schedule impacts. Our approach to fulfilling our roles focuses on:

- **Establishing the Team:** During preconstruction, CM **Chris Fowler** and Resident Engineer **Mike Jubran** will establish the roles, responsibilities, points of contact, situational procedures, and lines of communication between the CMT, IRWD, the Designer and DSOD, and document them in our Construction Management Plan (CMP).
- **Maintaining Contractor accountability:** In preconstruction, Mike will review the contract documents to verify that necessary Designer and DSOD hold-point inspections, including notice periods, are clearly included in the specifications. After contractor NTP, Chris and Mike will review the Contractor's Baseline Schedule to make sure that these hold-point inspections and notice periods are included.
- **Effectively coordinating inspections:** Prior to the start of each new construction activity, the CMT will require the Contractor to host a pre-activity meeting in which any necessary hold-point inspections are identified and the procedures for achieving them is confirmed. During construction, when work is anticipated to soon be ready for Designer/ DSOD inspection:

  1. The Contractor will formally inform our Resident Engineer, Mike Jubran, and request DSOD and Designer inspection at the required notice period.
  2. Mike will independently confirm the status of the work before formally notifying the Design and DSOD (with IRWD included) of the requested inspection and scheduling it accordingly.
  3. Mike will track the progress of the work leading up to the inspection to confirm that it will be ready as planned and that it will meet the expectations of the Designer and DSOD. If there is any doubt that the work will be ready for or pass inspection, Mike will call off the inspection until the work is ready. This avoids wasting the time of DSOD and the Designer.
  4. On all of Mike's CA Dam Resident Engineering roles, he has been able to establish trusting relationships with the local DSOD field staff, to the point that, when it is difficult for DSOD to visit the site, they will approve hold point inspections based on his written field report and photographs. This kind of trusting collaboration greatly benefits the project schedule.

Mike has served as Resident Engineer for several large dams in CA under the jurisdiction of DSOD, including the Oroville Spillways Recovery and the San Vicente Dam Raise.

- **Driving the RFI, Submittal and Design Change process forward:** Our approach is based on the understanding that up-to-date design documentation is essential to all parties. The Contractor relies upon RFI responses, approved submittals, and executed design changes to proceed with the work; the Designer and IRWD rely upon acceptable submittals to confirm that the work will be executed correctly. Our role, therefore, is to support and push all parties forward in the efficient development, review and completion of Project design documentation. Our Resident Engineer, supported by assistant REs, will work collaboratively with the contractor to identify and develop necessary RFIs in such a manner that they can be efficiently responded to by the Designer, and we will perform initial reviews of Submittals to verify that they are complete before submission to the Designer. Similarly, Mike will review the Designer's responses for completeness, constructability, cost and schedule considerations before transmitting to the Contractor. The RFI and Submittal Log will be discussed at each weekly Construction Progress Meeting and the CMT will hold a weekly Design Meeting with the Designer and IRWD to discuss and expedite outstanding RFIs, Submittals and Design Changes.

Benefits to the Project and IRWD

Our collaborative and proactive approach places the CMT at the center of coordination between the construction project, the Designer and DSOD. By maintaining Contractor accountability, effectively managing hold-point inspections and driving forward the flow of design documentation, we will maintain construction progress while meeting the expectations of the Designer and DSOD.

Anderson Dam Tunnel DSOD Site Visit

1.2.6. Rapid Change Management

Why is this Important?

A rapid change management process is key to:

1. Construction schedule management - the Contractor typically will not perform work resulting from a contract change until that change is defined, negotiated and executed. Therefore, changes need to be processed quickly to keep the Contractor moving.
2. Healthy project budget and contingency management – Change Order Requests (COR) and Potential Change Orders (PCO) represent budget uncertainty and risk for IRWD and should be quickly resolved to provide a reliable financial forecast.
3. A good working relationship with the Contractor - if a PCO does have merit then the Contractor should be made whole with their additional cost or time as quickly as possible.

Our Approach for Success

The CMT is IRWD's representative managing the construction contract. We perform the heavy lifting of change management to provide IRWD with all necessary information and CMT recommendations for IRWD to make decisions on contract changes.

Some amount of contract change is inevitable on a large dam project, our focus is on:

- **Minimizing change:** Our constructability review in preconstruction, discussed earlier, is focused heavily on identifying and correcting errors, omissions and ambiguities in the contract documents that may form the basis of a change during construction. Contract Administrator **Ajinkya (AJ) Sarawade** and Claims Manager **Craig Beeson** will take part in this review, applying their lessons learned in change management to create the best possible contract documents.
- **Establishing a simple and efficient change process:** AJ will develop a Construction Contract Administration Plan, including a change management process that aligns with IRWD's Construction Manual, detailing roles, responsibilities and processes for change management. While our change management process will be based on fast, dynamic and sometimes informal collaboration, we will always follow the correct formal processes for documentation and decision-making.
- **Doing the heavy lifting:** AJ will be on site full time and in constant informal contact with the Contractor to understand what CORs the Contractor may be considering. AJ will screen all CORs that are submitted, and if necessary, request additional backup documentation from the Contractor.

AJ managed $70M+ in change orders on the Anderson Dam Tunnel Project in Northern California.

Craig has decades of experience in claims management, dispute resolution and arbitration on large infrastructure projects

AJ will use his team of cost engineers, scheduler and cost estimator to perform an independent assessment of the merit and quantum of each COR and then meet with IRWD to present a complete summary of the COR and a recommended path forward. If directed, AJ will negotiate with the Contractor on IRWD's behalf to arrive at the best solution for the Project and for IRWD. IRWD will have final approval for all contract changes.

- **Staying ahead of the work:** Allowing CORs and PCOs to sit unresolved is poison to the progress, working relationships and financial health of the Project. The solution is to assign a skilled, dedicated Contract Manager (not expecting the Construction Manager to manage change) and provide them with enough resources to stay on top of the change workload. Our dedicated Change Contract Manager, AJ Sarawade, will be supported by two cost engineers, and we can quickly assign additional cost engineers if needed. This team will be based on-site full-time where they can work directly and efficiently with the Contractor to receive, discuss, evaluate and negotiate change to stay ahead of the work.

Benefits to the Project and IRWD

Our approach minimizes change to enhance project cost certainty, removes administrative burden from IRWD, and provides a team with the dedication and capacity to keep contract change ahead of the work, maintaining good working relationships and avoiding schedule delays.

Lake Williams Dam Rehabilitation

Oroville Dam Spillway Recovery

1.2.7. Effective Construction Quality Management

Why is this Important?

Quality management will be perhaps the single most important CMT function on the Syphon Reservoir Project. Our quality program is essential to make sure that the Project is constructed to meet IRWD's goals for dam safety, functionality and reliability, while also maintaining the work progress on track with the construction schedule. Our quality management documentation will also provide comprehensive construction records to support change management, claims, Contractor payments, and as-built documentation.

Our Approach for Success

COWI and Gannett Fleming both have extensive experience developing and implementing construction quality programs for California dams overseen, variously, by DOSD, FERC, and the USACE. Our staff are adept and efficient at managing extensive and detailed quality programs integrated with engineering and regulatory hold points. For this project we anticipate the following quality framework.

- The Contractor will be required to implement a quality control (QC) program and will be ultimately responsible for the quality of all constructed work.
- The CMT will implement a quality assurance (QA) program to independently confirm that construction meets requirements, and that the Contractor's QC process is effective.
- The CMT will engage the services of a local, on-site materials testing laboratory.
- Ninyo & Moore will furnish and equip an on-site materials testing laboratory during the embankment construction phase of the Project to ensure efficiency and expediency of embankment materials testing. Additional materials testing will be performed at Ninyo & Moore's laboratory just 5 miles from the Project site.

Based on this framework, key elements of our approach to quality management will include:

- **Establishing the right team:** QA Manager **Corey Kesler** is experienced in setting up for and managing construction quality programs for large earthen dams in California and will be supported by Chief Inspector **Juan Le Roy.** We provide a broad team of inspectors suited to covering general daily inspections of civil works (earthwork, concrete etc.) and more technical works (grouting, trenchless, instrumentation etc.), and specialty works (welding, coatings, structural etc.). Ninyo & Moore will perform construction materials testing, both in the lab and in the field.
- **Plan the Work, Work the Plan:** Corey Kesler will develop the CMT's QA Plan for the Project, based upon the design documents, for review and approval by IRWD, the Designer and DSOD. The QA Plan will include roles, responsibilities and procedures for the CMT's quality assurance activities, including oversight of Division 1 requirements and permit requirements, and coordination with the Environmental team, Design team and DSOD. All CMT field staff will study and sign off on the QA Plan, which will be rigorously implemented through construction and updated

Corey has extensive experience constructing dams and WTPs, performing both QC for Contractors and QA for Owners.

Juan is extensively experienced, certified and qualified in all aspects of construction inspection and materials testing, with proven Quality Team leadership on large public water projects.

annually based on changing Project requirements and lessons learned.

- **Comprehensive and organized documentation:** The CMT will develop reporting templates that align with IRWD's expectations, and implement processes for complete, daily recording of construction quality observations and data that will be uploaded to the document management system for instant access by relevant parties. Our quality documentation will provide the basis for tracking and correcting non-conforming work, for negotiating disputes and potential change orders, confirming contactor monthly payments, and establishing the completion and acceptance of parts of the work.
- **Effective coordination:** Corey Kesler will spearhead daily coordination with the Contractor's QC Manager to confirm ongoing quality activities, prepare for upcoming activities, and chase down the resolution of outstanding compliance issues. The QA Manager will also be in daily contact with our materials testing lab, as needed, to chase up outstanding materials testing reports. The QA Manager will discuss quality management as an agenda item in the weekly Construction Progress Meeting and, if necessary, implement a weekly stand-alone Quality Management Meeting with the Contractor to drive high standards and efficiency in quality management. The QA Manager will coordinate as-needed with IRWD and the Designer to gain approval of the Contractor's proposed corrective actions for non-conforming work and will take a proactive approach to working with the Project team to expedite those solutions to protect the project schedule.
- **Speed in Execution:** We will execute quality management with a focus on speed of reporting, speed of identification of deficiencies, and speed of development and implementation of acceptable corrective actions. Juan Le Roy, our Chief Inspector, will be instrumental in achieving this by acting as Corey Kesler "right-hand-person" to drive forward progress on multiple fronts. This approach will require effective systems and trained staff and will make sure that the corrective actions are always taken in good time and are never a cause for delay.
- **Efficiency in staffing:** Our staffing plan demonstrates our approach to efficiency in quality management staffing. Our full-time inspectors are multi-skilled and highly experienced and will be able to cover a large amount of the work and produce efficient reporting. Where highly technical or specialized parts of the work require specialist inspection experience, we engage the right staff at the right time, and disengage them once that part of the work is complete.

Benefits to the Project and IRWD

Our approach uses a coordinated team to quickly resolve quality issues and avoid schedule delays. We will produce comprehensive quality documentation to support multiple contract administration functions and ultimately makes sure that the constructed work meets the design intent to provide IRWD with a safe and reliable Syphon Reservoir.

1.2.8. Proactive and Collaborative Schedule Management

Why is this Important?

The Syphon Reservoir Improvement Project faces several significant schedule risks, including uncertainty in grade of acceptable foundation, uncertainty in necessary quantities of foundation grouting, long lead times for equipment, and inclement weather. The planned regular 10-hour workdays, Monday to Friday, restrict the Project's capacity for acceleration to recover from schedule delays without receiving permit relaxations to work longer or additional shifts. Therefore, it is important that the CMT implement a proactive and comprehensive approach to keeping the Project on schedule through effective planning, collaborative implementation, and timely and decisive actions.

Our Approach for Success

- **Incorporate schedule management into all key CMT functions:** Our CMT knows from experience that managing schedule on large and complex dam projects is not achieved only through scheduling tools and procedures, it is also achieved through managing risk, partnering with the Contractor, managing construction quality and regulatory approvals, managing change, and managing RFIs and Submittals. Details of our schedule-focused approach to each of these functions is provided in their respective parts of this section; in general we focus on proactive management to identify and address issues before they occur, and driving forward the quality, contract and design administration processes to stay ahead of the work.
- **Set the ground rules for schedule management:** During preconstruction, Technical Advisor (Scheduling) **Aaron Trimm** will take part in the constructability review of the contract documents, paying special attention to scheduling requirements in the contract specifications to make sure that they specify the right tools, methods, personnel and reporting requirements. We recommend that the Contractor be required to have a full-time, on-site scheduler for the project duration, with IRWD having approval authority over the staff assignment. The scheduler should have at least 15 years of scheduling experience on comparable projects and 10 years of experience using Primavera P6.
- **Measure twice, cut once for the Baseline Schedule:** Once the Contractor is on board, Aaron and Construction Manager **Chris Fowler** will work with the Contractor to establish an acceptable Baseline Schedule, which they will review for conformance with the contract requirements including resource and cost loading, and interim milestones. Chris and Resident Engineer **Mike Jubran** will also review the Baseline Schedule for technical feasibility. The Contractor will be required to provide a detailed schedule narrative documenting the basis and assumptions used to develop their schedule, such as resources, equipment usage, productivity rates, critical paths and schedule risks. This information will highlight any concerns with schedule feasibility and identify specific activities or work phases with high schedule risk. Such a narrative also provides a useful basis for the negotiation of any subsequent change orders and time-impact analyses. Our team will involve IRWD in the schedule review process and IRWD will have final approval of the Baseline Schedule.

Aaron has served as lead project scheduler for Contractors and Owners on large water infrastructure projects including the San Vicente Dam Raise in California.

- **Collaborate with the Contractor for early issue identification:** Once the Baseline CMS is established and construction commences, Project Scheduler **Autumn Hall** will manage the Project schedule day-to-day through construction. Autumn will receive and review the 4-week look-ahead and monthly updates from the Contractor, track progress and analyze the critical path, and identify any potential divergence between resource requirements and allocations which could indicate future productivity issues. Autumn's approach will be to work collaboratively with the Contractor to generate accurate and acceptable updates and identify any actual or potential schedule deviations. If deviations are identified the CMT will immediately notify IRWD and work with the Contractor to implement required recovery measures to mitigate construction delays. Aaron Trimm will stay engaged throughout the Project to provide immediate support in managing schedule-related issues.
- **On-site presence for Project understanding and relationship building:** Autumn Hall will perform a large part of her duties on-site, where she will develop relationships with the CMT and the Contractor and become familiar with the specific needs, issues and challenges of the construction project. This on-site approach will produce highly effective schedule management.

Benefits to the Project and IRWD

Our collaborative relationship with the Contractor will help us to proactively identify cost or schedule trends and quickly develop strategies to mitigate impacts. We will be able to communicate both issues and solutions to IRWD as early as possible, avoiding surprises and enabling positive messaging to stakeholders. By developing a realistic Baseline Schedule backed by detailed, documented assumptions, we will be able to effectively assess and negotiate time impacts with the Contractor and assign contractual responsibility for any delays.

Autumn manages construction schedules for major heavy civil construction projects, including most recently as the on-site Project Scheduler for the Chimney Hollow Dam in Colorado.

Anderson Dam Tunnel Water Main Installation

1.2.9. A Committed Champion for Startup and Commissioning

Why is this Important?

Startup, testing and commissioning are typically some of the last activities on a major construction project, yet their success relies upon all of the work that has come before – accurate specifications and submittals, effective manufacturing, timely delivery, correct installation of power and control systems. Errors in any of these areas can be time-consuming to correct if caught late in the process. Therefore, to protect schedule, it is imperative that the Project team prepares early and thoroughly for startup and commissioning.

Our Approach for Success

Our approach is based upon lessons learned and past successes, and hinges upon assigning a multi-skilled expert to champion startup from a position of embedment within the team.

- **Assign a capable champion and maximize their engagement: William Moss** will be the CMT's Startup Coordinator and brings excellent experience in this role for water and wastewater facilities in southern California. Crucially to our approach, William will also be an Assistant Resident Engineer and Electrical Inspector on the Project. This places him on the project site, fully integrated day-to-day with the project team, and perfectly placed to lead the team through startup and commissioning – unlike the common and less effective approach of assigning a Startup Coordinator with no other role on the Project, who is not based on site and has minimal engagement with the project team.
- **Use preconstruction:** William will personally review the electrical, mechanical, and instrumentation and controls design documents, so that he can identify issues while there is still time to address them and take ownership for the Projects successful startup. Based on his experience, William may recommend that IRWD hire a third-party programmer prior to advertising the Project for bid to verify that the programmable logic controllers (PLCs) will meet IRWD's Supervisory Control and Data Acquisition (SCADA) system requirements. If left to the General Contractor, this important scope may fall to an underqualified or "low bid" subcontractor, which can cause problems later in the Project.
- **Assemble a Startup Team and work together to implement the Startup Plan:** Once the Contractor is on board, William will assemble a Startup Team including representatives from IRWD Operations, the Designer, Contractor and CMT. This team will review the Startup Plan developed by the CMT and the Contractor and meet regularly to assess progress towards Startup and take necessary actions to prepare.

Benefits to the Project and IRWD

By assigning a capable champion to Startup and Commissioning, and integrating that person fully into the Project team, we confirm that preparation will comprehensive, collaborative and effective, thus supporting successful and timely startup and handover of IRWD's Syphon Reservoir facilities.

William has excellent, proven experience as an Electrical Field Engineer, Startup Coordinator, and Construction Quality Inspector on water treatment and flow control facilities. His broad range of skills will be a major asset to the construction and startup of the new Syphon facilities.

1.2.10. Timely Equipment Procurement

Why is this Important?

In today's manufacturing and import/export climate, items such as steel pipe, valves, and electrical switchgear can take many months if not years of "lead time" from ordering to delivery. If not adequately built into the Project schedule and effectively managed, lead times for equipment for the outlet works and water treatment plant could become a controlling cause of delay for the Project.

Our Approach for Success

As with most of our approaches, supporting timely procurement of equipment begins in preconstruction, and involves the CMT taking a leadership role in organizing the Project parties to take timely actions to drive the procurement process forward:

- **Set up for efficiency and flexibility:** During our team's review of plans and specifications in preconstruction, Construction Manager **Chris Fowler** and Resident Engineer **Mike Jubran** will verify that:
  - Submittals related to long-lead equipment are identified as priority for early submittal.
  - Where possible an "or equal" clause is added to equipment specifications to allow for Contractor flexibility on sourcing.
  - Shop inspections are required for key equipment during the manufacturing process, for which the Contractor will organize and facilitate the attendance of IRWD's representatives (the Designer and/or the CMT).
- **Confirm procurement durations are in the Baseline Schedule:** After Contractor NTP, our team will work with the contractor to develop an acceptable Baseline Schedule which includes reasonable durations for equipment procurement based on latest industry date and anticipated future market changes.
- **Expedite procurement:** In early construction Mike Jubran will work collaboratively with the Contactor, Designer and IRWD to expedite the submission, review and approval of submittals related to long-lead equipment so that these items can be ordered as soon as possible.
- **Inspect equipment before it leaves the factory:** Through construction, QA Manager **Corey Kesler**, will coordinate with the Contractor's QC Manager to confirm that shop inspections are coordinated and performed during manufacturing to identify deficiencies and allow time for correction, rather than waiting for equipment to arrive on site before identifying deficiencies.

Benefits to the Project and IRWD

Our holistic approach maximizes procurement efficiency at every step of the construction process by providing flexibility in procurement, setting a realistic schedule, fast-tracking necessary procurement activities, and working to identify manufacturing issues before items leave the factory so they can be quickly addressed. Overall this approach minimizes the risk of Project schedule delays.

1.3 STRATEGIES FOR DELIVERY OF CM SERVICES

In this section we succinctly discuss our strategies to delivering CM services across the various phases of the work. This section does not exhaustively address all scope items; a comprehensive summary of our proposed scope of work is provided in Section 2.

1.3.1. Final Design Phase

General Project Review, and Final Design Review

Tom Pursel, our Constructability and Bid Specialist, will lead the CMT's activities in the Final Design Phase. Tom will coordinate with the Designer and IRWD to set up necessary meetings and gather materials, and coordinate the internal reviews of the CMT, and the compiling and transmittal of comments. Tom will be supported administratively by a junior cost engineer.

Construction Manager **Chris Fowler** will review the documents for constructability, biddability, and consistency, with the aim of maximizing project safety, protecting project schedule and minimizing change orders during construction. We will also confirm the adequacy of temporary on-site facilities, check that the CMT's document control system is clearly described, and look for opportunities to add value to the Project.

Our approach focuses on leveraging the vested interests of the construction-phase team, engaging a broad range of expertise, and using in-person meetings with the Designer and IRWD to maintain clear communications and being building the personal relationships that the Project will require for success. More detail of our approach is provided above with the Foundational Elements of our Approach.

Temporary Site Geotechnical Laboratory Adequacy Review

Our specialty subconsultant Ninyo & Moore has performed a preliminary analysis of the benefits of an on-site lab.

One benefit of an on-site lab is to provide a quick turnaround time for laboratory test results. On a long duration project, this can result in earlier completion dates. An example of this is fill placement during mass grading. The California Division of Safety of Dams (DSOD) requirements for embankment placement are very strict and require each lift to be approved before placement of subsequent lifts. If laboratory tests are completed quickly, DSOD approvals can be obtained and the work can proceed quickly.

Another benefit of an on-site laboratory is improving the efficiency of geotechnical operations. If the Field Technician is cross trained in both field and laboratory testing, the technician can perform both duties when the schedule allows. This typically results in efficient services and cost savings. An example is when embankment placement is taking place and the pace of placement is slow enough that it may not warrant the need for full-time observation; the Technician can then perform laboratory testing in between field testing.

The unique value that Ninyo & Moore brings to the project is that their Irvine office and full-service laboratory is located only 7 miles from the Project site and their proposed Field Technician is cross-trained for both field services and laboratory testing. Therefore, they can provide services quickly and efficiently with or without an on-site laboratory.

We recommend using an on-site laboratory to maintain maximum efficiency and schedule benefits.
We would equip the on-site laboratory to perform Atterberg limits (plastic limit and liquid limit), proctor density, moisture content, proctor check points, sieve analysis and sand equivalent testing. These are the tests that are anticipated to be needed more frequently. Other tests are less frequent and will be performed at Ninyo & Moore's nearby Irvine laboratory.

1.3.2. Bid Phase

Pre-Bid Meeting Attendance and Addenda Support

Tom Pursel will also manage the CMT's efforts in the Bid Phase. The pre-bid meeting will be attended by Tom, our CM, Project Manager, and Resident Engineer. If requested, the CMT can participate in or otherwise support the pre-bid meeting.

Tom will receive bidder questions routed from IRWD and will manage the CMT's efforts in proposing appropriate responses which we will draft into addenda for review by IRWD.

Construction Phase Preparation

During the Bid Phase, our CMT anticipates organizing the following materials and resources in anticipation of mobilizing to the site and commencing construction:

- Organizing equipment and materials for the on-site laboratory (assuming that this approach is approved by IRWD).
- Organizing any additional field office equipment that may be required outside of that being provided by the Contractor (to be determined during design review).
- Preparing to conduct pre-construction surveys of the site and surrounding areas and infrastructure, to provide a baseline for expected Contractor repairs and restoration at the end of the Project.
- Verifying all project parties – CMT, IRWD, Designer, Environmental, etc. – have access and training for our proposed document management system (DCS), Procore.
- Verifying all CMT subconsultants are correctly under subcontract with the COWI-Gannett Fleming JV, and hosting Project kick-off meetings as appropriate to confirm that their resources are available and prepared
- Initiating a pick-up truck rental agreement for the core CMT staff.

1.3.3. Construction Phase

As the project enters construction phase, our on-site team will mobilize to the Project site. It is a widely understood in heavy-civil construction that on-site presence is most effective in solving issues and making administrative progress to keep the work moving. Hence, our approach is to "make on-site the default position" for CMT staff.

Some CMT staff will be remote on the basis of cost efficiency, meaning that their roles are part-time and it is not cost efficient to establish office space for them on site. Further information and discussion of our proposed staffing levels through the project is provided later in this section.

Construction Management

An early activity for the CMT will be the development of our ***Construction Management Plan*** (CMP) detailing the roles and responsibilities of CMT staff, our protocols for internal and external communications, and the methods and procedures for delivering all of the CMT services. Our CMP will be tailored for the Project and for integration with IRWD's existing CM processes. All CMT staff will be required to read the CMP and correctly implement it. The CMP will be available in digital and hard copy to the CMT, who will be encouraged to reference it regularly to guide our service execution.

Project Management

Construction Manager Project Manager **Arun Parsons** will manage our CM Services Contract with IRWD, working with the CM to understand the staffing needs of the Project and coordinating with IRWD and our subconsultants to add and remove staff from the project as needed. Arun will lead a ***monthly Project Management meeting*** with the IRWD Contract Manager to discuss the status of the Project and gain feedback from IRWD on any concerns or areas that require additional focus in delivery.

Quality Assurance/ Quality Control

Corey Kesler will be our QA Manager and lead the CMT's QA/QC Program. Corey will be supported throughout the project by Chief Inspector **Juan Le Roy**. Corey will develop a QA Plan detailing all of the CMT's quality activities and procedures covering inspections, special inspections, materials testing and surveying, aimed at overseeing the Contractor's QC program and confirming that the work is constructed in accordance with the contract documents. The key principles of our approach to QA/QC are provided above as one of the Foundational Elements of our Approach.

Submittals and RFIs

Resident Engineer **Mike Jubran** will be responsible for managing RFIs and Submittals. Previously in this section we discussed the importance of efficient and timely flow of design documentation, including RFIs and Submittals, to ***maintaining the construction schedule*** and positive working relationships. With this in mind, Mike will:

- Implement a simple and streamlined process for RFIs and Submittals that aligns with IRWD's Construction Manual.
- Personally take the lead in relentlessly driving this process forward on a daily basis.
- Use his team of Assistant Resident Engineers to verify documentation stays ahead of the work.

Mike's RFI and Submittal process will include:

1. Working informally with the contractor to support their development of acceptable and substantive RFIs and Submittals, prior to submission through Procore.
2. Performing initial reviews of contractor submissions before routing to the Designer or IRWD as appropriate.
3. Maintaining an RFI Log and Submittal Log in Procore which is reviewed at each weekly Construction Progress Meeting.
4. Meeting weekly with the Design team to discuss outstanding RFIs and Submittals and drive them toward resolution.
5. Reviewing Designer responses to RFIs to identify any impacts to constructability, cost, schedule or safety, and discussing any potential impacts with the Designer and IRWD prior to issuing to the Contactor.

Correspondences

Construction related correspondence will be drafted by Construction Manager **Chris Fowler**. Chris may use others on our CMT and coordinate with the Designer or other Project parties as needed, but he will always be the final reviewer. For correspondence prepared in the name or IRWD, such as contractual letters to the Contractor, Chris will provide drafts to IRWD for review and approval prior to transmittal.

Coordination of Field Activities

Our CMT will take responsibility for coordinating all field activities outside of the Contractor's activities. In addition to all the CMT's on-site activities and services, this coordination will include, but not be limited to, Designer and IRWD site visits, DSOD and other regulatory agency visits and inspections, Environmental monitoring activities, and public and media site tours.

Chris Fowler, our CM, will be ultimately responsible for coordination of field activities, and he will ***delegate*** variously amongst the team. For example, our QA Manager will coordinate CMT specialty inspections and surveying. Our resident Engineer will coordinate Designer and DSOD site visits, and our Community Engagement Administrator will coordinate media or public site visits.

Coordination with External Entities

We understand IRWD's expectation that the CMT will lead coordination with external agencies and we are prepared to do so. Given that IRWD will engage a broad team of owner-representatives on the project, including the CMT, Designer, Environmental and Risk Management consultants, it is important to establish the ***procedures and lines of communication f***or external coordination.

Soon after CM NTP, our Project Manager and CM will meet with IRWD to discuss and develop the specifics for external communication protocols. The CMT will then meet with IRWD's other Project representatives to discuss the protocols and gain concurrence, before memorialize them in the Construction Management Plan.

Permit Compliance

Our CMT will review and become familiar with all Project permits during the preconstruction phase, and our Quality Assurance Plan will detail all permit requirements. We will take responsibility for facilitating and verifying project permit compliance, either directly (such as daily oversight of construction hours, noise, dust, and traffic control) or indirectly (such as facilitating environmental compliance monitoring).

Where permit non-compliance is reported by another party, such as the Environmental Consultant, our Construction Manager will take responsibility for requiring and enforcing corrective actions.

Construction Risk Management

We note that IRWD has engaged a Risk Management Consultant, but their scope appears to be focused on dam safety and not on construction cost, schedule, safety and compliance. As we have done on similar projects, the CMT will implement a ***construction-focused risk management process*** to identify potential risks during construction, identify strategies to avoid or mitigate them before they occur, and take specific actions to implement those strategies. Specific details of this scope of work are included in **Section 2** of this Proposal.

Inspections and Materials Testing

We have assembled a team with all requisite capabilities and qualifications to perform the construction inspections, special inspections, materials testing and surveying that the Project requires. Further, we have strategically selected teaming partners that provide redundancy in all areas of field services to confirm that the CMT will never be short-staffed.

QA Manager **Corey Kesler** will organize and schedule the CMT's inspections and materials testing. He will:

- Stay up-to-date with the latest construction schedule, looking several months into the future, to develop the shifts, resources and roster for inspections and materials testing.
- Maintain a 4-week look-ahead Inspection Staffing Matrix that will be updated and shared with the CMT and IRWD each week.
- Maintain a 6-month look-ahead Inspection Staffing Matrix that will be updated and shared with the Construction Manager and Project Manager each month to support forward planning for adding or removing staff from the project.
- Oversee the development and submission of Special Inspection verification reports by specialty inspectors.
- Receive and review all materials testing reports and survey reports and share with the Designer and IRWD. All specialty inspection, materials testing and surveying reports will be uploaded to Procore.
- Oversee the development and submission of Daily Inspection Reports and photographic records by the inspectors, verifying that they are timely, complete and conform to the templates and standards set forth in the QA Plan
- Maintain a Daily Update Tracking Sheet for each activity. This sheet will provide a concise, one-line summary of daily progress on that activity, serving as an effective tool for payment processing, change order management, and claims administration.
- Maintain a Construction Productivity Field Report which will be consistent with the contract payment bid items and Contractor schedule of values to maintain the efficient monthly payment progress. For example, timeline analysis of cubic yards of dam excavation, cubic yards of concrete placement, etc.

Environmental

Our CMT will coordinate with IRWD 's Environmental Consultant to implement effective and efficient oversight of the Project. We are accustomed to performing large-dam CM with environmental compliance monitoring incorporated as part of the CMT's cope, so we are practiced and effective at coordinating with and supporting these activities.

Construction Manager **Chris Fowler** will take responsibility for informing the Environmental consultant of the near-term and long-term construction schedule, pointing out where activities will occur in new areas of the work, or when new activities will begin. With time, Chris will likely delegate this coordination to QA Manager **Corey Kesler**, who performs a similar look-ahead to develop his own field staffing plan.

We will request that an environmental representative attend all construction progress meetings, pre-activity meetings and site safety meetings. While we commit to keeping the Environmental Consultant informed, coordination will be more effective with ***active participation.***

A key area of the CMT's involvement in environmental compliance will be enforcement. As the responsible party for construction contract administration, which includes the project permits, our CMT will take responsibility for requiring and ***enforcing corrective actions*** for non-compliance reported by the Environmental Consultant.

Meetings

Our CMT will organize and lead regular project meetings, including developing agendas, chairing meetings, taking notes and distributing to attendees within 5 business days. Based on our experience on similar projects, we recommend the following general guidelines:

- Assign mid-level staff such as Cost Engineers or Assistant Resident Engineers to develop agendas, organize meetings and distribute notes. This frees up senior staff to effectively chair the meetings.
- Assign only relevant staff to attend each meeting. Expecting all key staff to attend all meetings is a burden on time and affects productivity in other areas of CM services.

Our proposed regular meetings for this Project are included in **Table 1.3-1**.

Reporting

Our CMT will develop and distribute Project reports on an organized and regular basis. Based on our experience on similar projects, we recommend the following general guidelines:

- Report templates should be based upon similar report templates that IRWD is already using and tailored for the Syphon Reservoir Project. Templates will be as approved by IRWD.
- An internal review process for CMT reports will be established, as part of the Construction Management Plan, that requires at least two independent reviewers of each report before transmittal to IRWD, to maximize quality.
- Reports will be transmitted via Procore, except where requested in email or hardcopy. All reports will be filed in Procore.

Our proposed regular CMT reporting for this Project is included in **Table 1.3-2**.

Table 1.3-1. Proposed Meetings.

MEETING	ATTENDEES	PURPOSE	CHAIR
REQUIRED MEETINGS			
Pre-Construction Meeting	IRWD; Contractor; Designer; Environmental; CMT	Reinforce Project expectations and requirements prior to mobilization.	Construction Manager
Weekly Construction Progress Meeting	IRWD; Contractor; Designer; Environmental; CMT	Broad agenda to update on all aspects of the construction work, share issues, and develop actions.	Construction Manager
Weekly Design Meeting	IRWD, Designer, CMT	Discuss outstanding RFIs, Submittals and any Design Changes, to expedite solutions and keep the work moving	Resident Engineer
Monthly Project Management Meeting	IRWD, CMT	Discuss the progress of the work, any issues with CMT performance, and any CMT needs such as additional staffing.	Project Manager
MEETINGS TO BE IMPLEMENTED IF NECESSARY BASED ON PROJECT PERFORMANCE			
Weekly RFI/ Submittal Meeting	CMT, Contractor (IRWD optional)	If RFIs or Submittals are backlogged, this meeting will serve to identify and clear bottlenecks to keep the work moving.	Resident Engineer
Weekly Change Order Meeting	CMT, Contractor (IRWD optional)	If numerous change orders are being processed simultaneously, this meeting will serve to review the current status and necessary actions for each, to maintain forward progress.	Construction Contract Manager
Weekly Quality Meeting	CMT, Contractor (IRWD optional)	If non-conformances are becoming common or corrective actions are delayed, this meeting will serve to enhance oversight and accountability between the CMT and the Contractor.	Quality Assurance Manager
Weekly Quality Meeting	CMT, Contractor (IRWD optional)	If non-conformances are becoming common or corrective actions are delayed, this meeting will serve to enhance oversight and accountability between the CMT and the Contractor.	Quality Assurance Manager

Table 1.3-2. Proposed Reporting.

REPORT	RECIPIENT	PURPOSE	RESPONSIBLE PARTY
REQUIRED REPORTING			
Daily Inspection Reports	IRWD (cc Designer, Environmental)	Inform of daily work performed: activities an areas of work, progress made, quality issues, permit compliance, safety issues etc.	Quality Assurance Manager
Monthly Reports	IRWD	Summarize Project status and metrics: schedule, cost, cash flow, performance on RFIs and Submittals, outstanding change orders and budget risk etc.	Construction Manager
Quarterly Reports	IRWD	Summarize Project status and metrics similarly to Monthly Reports but at a higher level and using efficient graphical tools. The CMT has the capability to gather drone photos and videos of the Project site if desired.	Construction Manager
Non-Conformance Reports	Contractor, (cc IRWD, Designer)	Formally notify of non-conforming work and require corrective actions as specified by contract.	Quality Assurance Manager (signed by CM)
Structural Observation Reports	IRWD (cc Designer)	Verify and document that structural elements are being constructed according to the plans and specifications.	Quality Assurance Manager
Grant Reports	Reclamation, SWRCB	Provide documentation demonstrating that the Project is being executed in accordance with funding requirements such as labor compliance and materials procurement.	IRWD (CMT Construction Contract Manager will support)

Contract Change Orders

Earlier in this section, we discuss in detail our approach to managing contract changes, which minimizes change to enhance project cost certainty, removes administrative burden from IRWD, and provides a team with the dedication and capacity to keep contract change ahead of the work, maintaining good working relationships and avoiding schedule delays.

Schedule Review

Earlier in this section, we discuss in detail our approach to managing the construction schedule and performing schedule reviews. Our collaborative relationship with the Contractor will help us to proactively identify cost or schedule trends and quickly develop strategies to mitigate impacts. We will be able to communicate both issues and solutions to IRWD as early as possible, avoiding surprises and enabling positive messaging to stakeholders. By developing a realistic Baseline Schedule backed by detailed, documented assumptions, we will be able to effectively assess and negotiate time impacts with the Contractor and assign contractual responsibility for any delays.

Document Control

COWI and Gannett Fleming both have experience using Procore as a platform for project and construction management and we recommend this as an online document control system for this Project. Our Document Controller, **Victor Enriquez**, will set up Procore for the Project and develop protocols that provides each Project team member with the appropriate level of access and permissions, and will work with IRWD to develop appropriate filing and naming conventions for the documentation in the system.

Victor will be based on-site full-time and will directly manage, day-to-day, the storage and flow of documentation and files through the system. He will coordinate Procore training for CMT and IRWD staff as needed, and will be on-hand to support the Project team with speedy retrieval and upload of documents.

We propose Procore as the Project's online document control system.

Quality Assurance/ Quality Control Plan

Earlier in this section, we discuss in detail our approach to quality assurance and quality control. Our approach uses a coordinated team to quickly resolve quality issues and avoid schedule delays. We will produce comprehensive quality documentation to support multiple contract administration functions and ultimately makes sure that the constructed work meets the design intent to provide IRWD with a safe and reliable Syphon Reservoir.

Safety and Training

Earlier in this section, we discuss in detail our approach to maximizing safety on site. We set up for success in preconstruction and apply an organized, "full-team" approach to maintaining site safety, backed by swift reporting and investigation to ultimately minimize safety incidents, protect everyone on site, and maintain IRWD in good standing with safety regulatory agencies.

Public Relations

Earlier in this section, we discuss in detail our approach to supporting IRWD's public relations. We provide experienced PR support and CMT leaders with personal involvement and commitment to provide IRWD with the necessary support to implement a broad community outreach program, with peace of mind that community complaints will be rare and always swiftly addressed.

Partnering

Earlier in this section, we discuss in detail our approach to establishing collaboration and trust with the Contractor. We take deliberate and demonstrable steps to build respect and trust with the Contractor, which ultimately leads to positive collaboration. Our CMT members are practiced at formal partnering with Contractors on complex projects, and are prepared to do so for this Project if IRWD requests. Our staffing plan assumes that our ***Project Manager, Construction Manager, Resident Engineer, and Quality Assurance Manager*** will attend periodic partnering sessions.

1.3.4. Training, Commissioning and Startup Services

Startup

Earlier in this section, as one of the ***Foundational Elements of our Approach***, we discuss our approach to maintaining successful startup of the new Syphon Reservoir facilities. We focus on assigning a capable champion, **William Moss**, and integrating him fully into the Project team with additional roles in Resident Engineering and Electrical Inspection.

Unlike the common and less effective approach of assigning a Startup Coordinator with no other role on the Project, who is not based on site and has minimal engagement with the project team, our approach of full integration will confirm that preparation will be comprehensive, collaborative and effective, thus supporting successful and timely startup and handover of IRWD's Syphon Reservoir facilities.

Training

Once equipment is on-site and sufficiently installed and certified by the manufacturer, our Startup Coordinator, **William Moss**, will coordinate ***manufacturer-led training of IRWD staff.*** The Startup Plan developed by the CMT and Contractor will detail the expected schedule for various trainings, which will be reviewed and updated on a regular basis to make sure that IRWD staff have ample notice of trainings and receive maximum benefit. William will verify that all trainings are documented by video and will gather all supporting documentation and provide to IRWD for their records.

1.3.5. Post Construction Services

Project Closeout

Following final completion we assume that the Site facilities will no longer be available and our CMT will demobilize from the Project site and complete Project closeout services remotely.

Closeout can be an arduous process, particularly after the bulk of the Project team has disbanded, and it is beneficial to work through construction to streamline Closeout. Through construction, QA Manager **Corey Kesler** and Resident Engineer **Mike Jubran** will compile and audit construction documentation for various parts of the Work as they are completed, to make sure that RFIs, Submittals and non-conformance reports are closed out, and Contractor red-lines drawings are accurate and complete. This will streamline the Project Closeout process and the development of the Final Completion Report.

1.4. POTENTIAL PROJECT RISKS

We have carefully studied the site and the available documents issued with the RFP, and identified potential issues and risks based on our extensive heavy civil and dam experience in California. We understand that the CMT will coordinate with the Risk Management Consultant on a limited basis. Based on our experience constructing similar projects, we recommend enhancing our scope to develop and implement a process to identify, avoid, and/or mitigate construction risks. To this end and as featured with examples throughout our approach, we have compiled a supplementary list of potential risks or challenges to the Project with abbreviated strategies for actions and best practices to mitigate them. This, in turn, will promote cost effectiveness and successful completion of the work. The layout of Table 1.4-1 is indicative of a simple ***risk register***, identifying potential risks or challenges, consequences, and actions to be taken to avoid risks or minimize impacts. This "action-based" approach to identifying and mitigating risks would form the backbone of our proposed (optional) scope addition for construction risk management.

Table 1.4-1. Initial Risk Register.

CATEGORY	POTENTIAL RISKS TO THE SYPHON RESERVOIR IMPROVEMENT PROJECT	RECOMMENDED MITIGATION STRATEGIES AND ACTIONS
Safety: Personal Injury	**Personal injury or death on construction site.** **Causes:** Unsafe work practices or behaviors **Impacts:** Injury or loss of life, Schedule delays, Potential lawsuits	**Pre-Construction:** 1. Perform an independent review of the design documents to identify potentially unsafe activities, scenarios or conditions, and discuss with the Designer the best way to mitigate those safety risks – either through design modifications or on-site safety practices. 2. Select a contractor with a good safety record on similar projects. If prequalifying, include a pass/fail criterion that relates to the Contractor's quantifiable safety record in the past 5 years. 3. Select a CMT with a good safety record. **Construction:** 4. Review and abide by the Contractor's site safety plan (all project participants). 5. Train and empower all project participants – IRWD, Designer, CMT, environmental consultant – to "call out" potential safety hazards as they occur, for the benefit of all. 6. Include a safety section in each weekly meeting with the Contractor to discuss near misses and incidents and discuss current and upcoming hazardous activities. 7. Require all project participants that are in the field on a given day to attend the Contractor's daily activity planning meetings to understand exactly what work is being performed that day. Similarly, require staff to attend the Contractor's pre-activity meetings for any activity that they may be involved in. 8. Require the Contractor to provide the CMT with 2-way radios that operate on the same wavelength as the Contractor's so all field staff can be in communication and stay informed of activities, hauling activity, and possible safety hazards.
Safety: Wildfire	**Construction activity causes brush fire.** **Causes**: Work activities cause fires, Fire suppression equipment or methods are ineffective **Impacts:** Potential injuries and loss of life, Destruction of habitat, Construction delays, Potential lawsuits, Loss of public trust in project	**Pre-Construction:** 1. Require in the contract documents that the Contractor submit a fire prevention plan as part of their Site Safety Plan, which complies with all local fire safety codes. **Construction:** 2. Highlight in the pre-construction meeting the high fire hazard at the site and the applicable ordinances pertaining to fire prevention at the site. 3. Enforce the Contractor's fire prevention submittal as part of their Site Safety Plan. 4. Verify that all site staff – Contractor, CMT, IRWD, Designer – receive training in fire prevention as part of their safety training.
Contractor Procurement	**Lack of competitive bids for the construction contract.** **Causes:** Heavy civil contractors are too busy, Contractor requirements place too much risk on the Contractor, Limited number of qualified specialty contractors **Impacts:** Higher bid prices, Poorly qualified bidders who do not understand the work, Too few bidders to make an award	**Pre-Construction:** 1. Market the project to Associated General Contractors (AGC) and other local and out-of-state-Contractor groups, starting far ahead of the potential advertisement for bid date. Remember that experienced roller-compacted concrete (RCC) dam constructors are not all based in California. Start messaging that the project is a good opportunity for Contractors, and that IRWD is an Agency of choice to work with. Inform Contractors of the expected prequalification requirements and timing, so they can get ready. 2. Track bid schedules for similar projects in the western US, and for other large civil works projects in Southern California. Plan to release the bid so that it does not coincide with others. 3. Verify that the contract documents contain fair conditions and risk allocations. 4. Run a transparent and timely procurement process.

Table 1.4-1. Initial Risk Register continued.

CATEGORY	POTENTIAL RISKS TO THE SYPHON RESERVOIR IMPROVEMENT PROJECT	RECOMMENDED MITIGATION STRATEGIES AND ACTIONS
Contractor Procurement	**Construction Contractor is not sufficiently qualified to perform the work**. **Causes:** Contractor prequalification requirements are not conformed with the contract specifications, Joint-Venture (JV) Contractor teams perform a "bait and switch" **Impacts:** Construction quality issues, Schedule delays, Potential claims	**Pre-Construction:** 1. Consider performing Contractor prequalification prior to bidding. 2. Require that presenting experienced and qualified staff is a pass/fail criterion of prequalification and not just a minimum score. 3. Focus on the qualifications for the Contractor's Project Manager, Earthwork Superintendent, and Grouting Subcontractor 4. Require that JV teams demonstrate that both JV partners have stand-alone dam qualifications, to avoid a "bait and switch" whereby the firm used to demonstrate dam qualifications is not actually used for the work. 5. Verify that the same pre-qualification criteria is transferred to construction contract specifications so that Contractors must present the same qualified staff for construction as were presented during prequalification.
Public Affairs: Community Impacts	**Community complaints due to construction activities.** **Causes:** Dust, Noise, Traffic, Public is not adequately prepared **Impacts:** Loss of public support for the project, Loss of public support for IRWD leading to complaints at IRWD Board meetings, Potential increases in cost and/or delays for mitigation measures	**Pre-Construction:** 1. Conduct organized and extensive public outreach prior to advertising the project for construction to inform local communities of what to expect during construction, hear their concerns, and potentially adjust the construction documents to address those concerns, where feasible. 2. Include in the contract documents all permit requirement pertaining to traffic, haulage, work hours, use of City and County roads. **Construction:** 3. Review carefully the Contractor's Traffic Control Plan. 4. Enforce all contract requirements regarding control of traffic, dust, and noise during construction. 5. Manage a website for the project with a call number and email for public concerns/complaints and assign the construction manager to champion the resolution of issues, alongside IRWD. 6. Hold public meetings periodically during construction in which the project status and upcoming activities are discussed, and public comments, questions, and complaints are heard.
Public Affairs: Property Damage	**IRWD is held responsible for damages to public property caused by construction activities.** **Causes:** Contractor's responsibilities are not clearly defined, Pre-construction surveys are incomplete or ambiguous **Impacts:** City or County may pursue IRWD for the cost of repairs or claimed damages	**Pre-Construction:** 1. Include in the contract documents a requirement for the Contractor to submit comprehensive documentation of the pre-construction conditions of all public roads and facilities, and all IRWD roads and facilities, which may be impacted by construction activities. An accurate, Contractor-performed survey will provide the best basis for subsequent repair and restoration work. 2. Establish in the contract documents the trigger points for the Contractor's interim repairs to public roads and facilities through the construction period. **Construction:** 3. Assign the CMT to review the Contractor's submitted pre-construction survey for accuracy and completeness. 4. Plan ahead with the Contractor to verify that interim and final repairs are adequately performed. 5. Withhold payments from the Contractor if they do not fulfill their contractual responsibilities for repair of public roads and facilities.

Table 1.4-1. Initial Risk Register continued.

CATEGORY	POTENTIAL RISKS TO THE SYPHON RESERVOIR IMPROVEMENT PROJECT	RECOMMENDED MITIGATION STRATEGIES AND ACTIONS
DSOD	**DSOD does not approve elements of the work, or they do not accept the completed project.** **Causes:** Constructed work is deficient, Quality management records are incomplete, Misunderstanding of design requirements between DSOD/Designer/CMT/ Contractor **Impacts:** Schedule delays, Potential change orders or claims, Additional testing costs, Deterioration of working relationships	**Pre-Construction:** 1. Review plans and specs with DSOD field and engineering staff prior to bid to confirm that expectations for approvals in the field are understood and accurately reflected in the contract documents. 2. Review the Designer's and CMT's construction QMP with DSOD to gain their concurrence prior the start of construction. 3. Specify DSOD notification requirements clearly in contract documents so the Contractor plans for and includes DSOD inspections and notifications in their project plan and schedule. **Construction:** 4. Verify that the Designer, DSOD and CMT all approve of Contractor submittals prior to the start of each activity. 5. Implement a field-led system of scheduling DSOD and Designer inspections. Focus on using their time wisely; make sure work is acceptable before they make the trip to inspect it. 6. Maintain comprehensive, organized, and detailed records of all quality management activities, including inspections reports, photographs, videos, laboratory testing, and the corrections for deficient work to support discussions after the fact.
Environmental Permit Compliance: Biological	**Biological resources are impacted by construction activities.** **Causes:** Ineffective wildlife exclusion fencing, Ineffective preconstruction surveys and/or construction monitoring, Contractor fails to follow protocols **Impacts:** Fines from permitting agency, Loss of trust with permitting agency, Potential Project delays if work is shut down by permitting agency	**Pre-Construction:** 1. Include all relevant permit requirements in the construction contract documents. 2. Engage an environmental monitoring team with sufficient local resources to perform construction monitoring and with detailed knowledge of local special status species. 3. Provide the environmental monitoring team with comprehensive scope and adequate budget to cover all construction monitoring needs. 4. Perform vegetation clearing of the construction site prior to commencing construction. **Construction:** 5. Require that the CMT and the environmental monitoring team coordinate daily to discuss upcoming activities, monitoring needs, and concerns. 6. Require that an environmental monitoring representative attend weekly construction meetings with the CMT and Contractor to engage directly on upcoming activities and monitoring requirements.
Environmental Permit Compliance: Cultural	**Cultural resources are impacted by construction activities.** **Causes:** Ineffective preconstruction surveys and/ or construction monitoring, Contractor fails to follow protocols **Impacts:** Fines and/or stop work notices from permitting agency, Loss of trust with local Tribes	**Pre-Construction:** 1. Include all relevant permit requirements in the construction contract documents. 2. If needed, engage representatives of local Tribes to establish monitoring needs and processes. **Construction:** 3. If needed, require that the CMT proactively coordinate with and support Tribal monitoring of construction activities to maintain compliance while keeping the work moving.
Contract Administration and Claims Avoidance	**Extraneous specifications provide basis for change orders or claims.** **Causes:** Extraneous specifications **Impacts:** Potential change orders	**Pre-Construction:** 1. Remove from the specifications any mention of means or methods got earthwork, grouting, trenchless construction or concrete work that are not applicable for this specific dam job, even though they may be generally applicable to dams. Contractors are typically adept at identifying any ambiguity in the contract documents and leveraging that in the discussion of change orders and claims.

Table 1.4-1. Initial Risk Register continued.

CATEGORY	POTENTIAL RISKS TO THE SYPHON RESERVOIR IMPROVEMENT PROJECT	RECOMMENDED MITIGATION STRATEGIES AND ACTIONS
Contract Administration and Claims Avoidance	**Disagreement with Contractor on acceptable schedule affects work progress.** **Causes:** Insufficient contractual requirements for schedule management and submittals, Failure to strictly enforce scheduling requirements **Impacts:** Deterioration of working relationship, Loss of momentum, Schedule delays	**Pre-Construction:** 1. Specify in the contract documents the requirements for schedule management and reporting so that the CMT can hold the Contractor to account and effectively manage the construction schedule. 2. Require the Contractor to submit a summary schedule and narrative at time of bid that meets all contract requirements and use this for bid evaluation. **Construction:** 3. Require that the Contractor submit a baseline schedule that is acceptable to the CMT and IRWD, after NTP and prior to work commencing. 4. Review monthly schedule updates and not allow payment until updates are completed and accepted. These actions will allow the CMT and Contractor to use the schedule as a tool to effectively monitor progress and have a basis to resolve any delay claims in an efficient manner.
Construction: Procurement	**Necessary equipment is not delivered to the Project on time** **Causes:** Ordered too late, delays in manufacturing process **Impacts:** Schedule delays	**Pre-Construction:** 1. Incorporate flexibility into the design by including an “or equal” clause in the specifications where possible for electrical and mechanical equipment. This provides the Contractor flexibility on selecting suppliers and products while meeting the deign intent. 2. Verify that submittals related to long-lead equipment are identified as critical and to be submitted directly after Contractor NTP. 3. Make it a responsibility of the Contractor to organize and schedule shop inspections for the CMT and/or designer during equipment fabrication. **Construction:** 4. Confirm that appropriate procurement durations are in the Baseline Schedule to support effective planning and risk identification. 5. Collaborate with the Contactor, Designer and IRWD to expedite the submission, review and approval of submittals related to long-lead equipment so that these items can be ordered as soon as possible. 6. Inspect equipment before it leaves the factory to identify any deficiencies in good time to address them.
Construction: Utility Coordination	**Relocation of existing utilities and/or installation of new utilities is not effectively coordinated.** **Causes:** Insufficient or unclear requirements of Contractor, Contractor’s schedule does provide sufficient time for coordination with SCE **Impacts:** Schedule delays, Potential change order requests	**Pre-Construction:** 1. Provide SCE with proposed design information prior to bidding the construction contract to make sure that the proposed relocations and/or new facilities are approved. 2. State clearly in the contract documents the Contractor’s responsibilities for coordination with SCE, including the timeframes required by SCE for notice of required work. **Construction:** 3. Verify that the Contractor’s baseline schedule includes all necessary SCE coordination activities and timeframes. 4. Highlight SCE coordination requirements in the pre-construction meeting and during weekly construction meetings to verify that any potential issues are highlighted early for effective mitigation.
Construction: Excavation	**Excavation quantities are significantly greater than anticipated.** **Causes:** Designer or DSOD determines that acceptable foundation material is deeper than anticipated **Impacts:** Additional excavation quantities, Potential schedule delays, Additional foundation treatments and RCC quantities, Additional shoring/slope support, Potential change orders	**Pre-Construction:** 1. Include in the contract documents provisions for over excavation and additional quantities of backfill, foundation treatments and RCC, as directed by IRWD, to be paid at the established unit prices for these items. 2. Establish with DSOD that they can approve discreet areas of foundation as they become exposed, efficiency of excavation advancement, and final approval. 3. Consider gaining permit approval for weekend or night work of excavation, if needed to protect the schedule. **Construction:** 4. Confirm that the Contractor’s baseline schedule milestone for the start of dam construction accounts for Designer and DSOD approvals, and potential extended excavation and foundation treatment activities. 5. Implement a field-driven system of efficiently scheduling DSOD and Designer inspections of the foundation. 6. Require the Designer’s geologist be on-site daily to map the excavation and keep all parties up to date, so that potential deviations from design can be anticipated.

Table 1.4-1. Initial Risk Register continued.

CATEGORY	POTENTIAL RISKS TO THE SYPHON RESERVOIR IMPROVEMENT PROJECT	RECOMMENDED MITIGATION STRATEGIES AND ACTIONS
Construction: Foundation Grouting	**Foundation grouting quantities are significantly greater than anticipated**. **Causes**: Rock fractures and voids are more extensive than anticipated **Impacts:** Additional grout quantities, Potential schedule delays, Potential change orders, Potential disputes if Contractor bid items are not appropriate	**Pre-Construction:** 1. Include separate bid items for grouting quantities, labor costs, and rig set-ups. Separating these bid items will make it easier to quantify payments to the Contractor and avoid disputes over payments. 2. Require during prequalification and bidding that the Contractor's grouting subcontractor have the capacity and capability to mobilize multiple rigs and perform night and weekend work if necessary. 3. Require that the Contractor provide up-to-date grouting data to the Designer or CMT at least once per shift to inform timely decisions for closure and/or split-spacing of holes. 4. Consider gaining permit approval for weekend or night work of grouting, if needed to protect the schedule. **Construction:** 5. Confirm that the Contractor's baseline schedule milestone for the start of dam construction accounts for potential additional grouting quantities. 6. Provide an Designer or CMT grouting inspector to oversee all grouting activities to verify in real-time that Contractor data is accurate and directives to the Contractor are understood and implemented.
Construction: Groundwater	**Groundwater inflow rate to excavation greater than expected and/or unexpected contamination.** **Causes:** Insufficient design data, Incomplete or inaccurate contract documents **Impacts:** Schedule delays, Potential change orders.	**Pre-Construction:** 1. Gather comprehensive groundwater data in design phase – depth, flow rate, potential contaminants. Consider how expected reservoir levels during construction will affect these data. 2. Include appropriate data and information in the contract documents. 3. Test groundwater again just prior to advertising the Project for bid to maintain an up-to-date analysis of any groundwater flow rates and/or contamination (if original data is old). 4. Include a bid item allowance for groundwater treatment before discharge, even if none is anticipated. This will avoid negotiating costs after executing the contract.
Construction: Mechanical/ Electrical	**Mechanical/electrical equipment delivered to site is defective.** **Causes:** Substandard manufacturing and QC, Damage during transport **Impacts:** Schedule delays	**Pre-Construction:** 1. Include in the contract documents a requirement that the Contractor coordinate third-party (CMT and or Designer) shop inspections of equipment at specific stages of manufacture. Require that the Contractor reimburse the CMT for third-party inspections to verify that coordination is efficient. Third-party inspections do not relieve the Contractor of their responsibility for furnishing quality equipment. **Construction:** 2. Verify that CMT and/or Designer performs thorough third-party shop inspections with qualified staff
Construction: Water Treatment Plant (WTP)	**Contractor struggles to adequately construct the WTP** **Causes:** General Contractor or subcontractor is insufficiently qualified, funded and/or prepared **Impacts:** Quality issues, Schedule delays	**Pre-Construction:** 1. Require specific experience in WTP construction from prospective bidders, including subcontractor firms and individuals. 2. Include in the contract documents that IRWD will have approval authority over key staff that the Contractor assigns to the WTP, such as the Structures Superintendent and the Process Superintendent. 3. Review bids carefully to identify those that have included reasonable budgets, durations and work sequencing for the WTP construction. **Construction:** 4. Review the Contractor's Baseline Schedule to verify that the WTP construction durations and sequencing and resource loading are reasonable. 5. Expedite submittals for procurement of WTP equipment and materials, particularly long-lead mechanical and electrical components. 6. Assign a CMT Assistant Resident Engineer or Project Engineer to champion the WTP RFIs and Submittals, and stay in close contact with both the Contractor and Designer to drive the identification and resolution of issues before they become a problem. 7. Review the Contractor's QC plan for the WTP construction and verify that the CMT's QA Plan will comprehensively oversee it. 8. Conduct pre-activity meetings with the Contractor and CMT prior to each new phase of the WTP construction to make sure that the work is understood and coordinate on quality management expectations.

Table 1.4-1. Initial Risk Register continued.

CATEGORY	POTENTIAL RISKS TO THE SYPHON RESERVOIR IMPROVEMENT PROJECT	RECOMMENDED MITIGATION STRATEGIES AND ACTIONS
Operations: SCADA	**Programmable logic controller (PLC) and supervisory control and data acquisition (SCADA) tie-in is not planned or executed effectively.** **Causes:** Poorly defined specifications, Inadequate coordination between project team members, Low bid Contractor lacks necessary expertise/understanding **Impacts:** Schedule delays, Potential change orders	**Pre-Construction:** 1. Identify a IRWD representative (Designer or CMT) I&C specialist, at the start of the job, who will champion PLC coordination. 2. Consider directly hiring a third-party programmer prior to bidding the construction contract to verify that the PLCs will meet IRWD's SCADA system requirements, and have the third-party programmer perform all programming of the PLCs. Engage the third-party programmer and/or I&C specialist in review of design specifications to verify they are accurate and comprehensive.
Operations: Start-Up	**Start-up and testing are not efficient and/or successful.** **Causes:** Poorly qualified Contractor, Incomplete or conflicting contract requirements, Inadequate preparation and coordination **Impacts:** Schedule delays, Potential change orders	**Pre-Construction:** 1. Create a clear and complete Start-Up and Commissioning Plan prior to bid, which includes Contractor and other participant responsibilities, and include that plan in the contract documents. The plan should include periodic meetings through construction, well ahead of start-up, between IRWD, CMT, Designer, and Contractor, to confirm that the plan is on track and make any necessary adjustments. **Construction:** 2. Assign a CMT Startup Coordinator to lead the start-up and commissioning process. The CMT is well-placed to lead the coordination between IRWD, Designer, and Contractor. 3. Involve the CMT Startup Coordinator with additional relevant on-site CMT activities, such as project engineering, to verify full integration with the project team for effective Startup leadership.

Lake Williams Dam Rehabilitation

RISK FOCUS - DEWATERING FOUNDATION

It is assumed dewatering activities could last up to approximately 20-months with the installation consisting of several wells and / or sumps with appurtenances to achieve the project foundation unwatering goals.

The CMT understands the embankment excavation operations to proposed foundation will likely not start prior to the installation of the dewatering system with the Contractor's arrangement anticipated to remain in-service or otherwise on-call for use until the new dam embankment grade is above the adjacent valley bottom and/or until the reservoir valley alluvium is removed.

Achieving site dewatering constraints from a temporary control standpoint to setup construction for a sustained amount of time without delay is a critical aspect to finishing the foundation work expeditiously.

As temporary works, the Contractor is responsible for the design and operation of the dewatering system. The system will be robust to ebb and flow on demand, including the installation of primary wells and/or sumps and contingency-based secondary dewatering points as needed capable of operating 24/7 unabated. It is important that the contractor is provided with all available information in the contract documents to help them design a system with sufficient capacity to avoid schedule delays due to redesign and/or modifying during construction.

The CMT understands nine vibrating wire piezometers for measuring water pressure in multiple geologic zones were installed at the project site, including data loggers equipped with radio antennas recording transducer readings at set intervals with data readily accessible for evaluating the both the existing earthen embankment and foundation water levels.

Considering the Syphon Canyon Reservoir has been drawdown for some time, it's presumed five of nine piezometers installed into bedrock (B-9B, B-16, B17, B-21, B34) may benefit the project through continued use offering baseline data and/or real time foundation water levels to the contractor for areas located immediately downstream of the proposed new dam baseline.

The CMT understand additional temporary piezometers will be required from a site wide monitoring plan by augmenting the existing instruments if still available, including installation of temporary instruments in areas upstream of the proposed new dam baseline which will compliment those existing downstream. This will enhance the contractor's overall ability to assess and delineate water levels globally to pinpoint suspicious area not seeing results.

A proactive approach will give project stakeholders piece of mind or a better understanding of the current conditions and whether supplemental dewatering well points are required for installation strategically depending on zoned foundation conditions, including for two fault zones which transect the new dam baseline to control water and meeting the project specifications.

Elmhurst Dam Dewatering

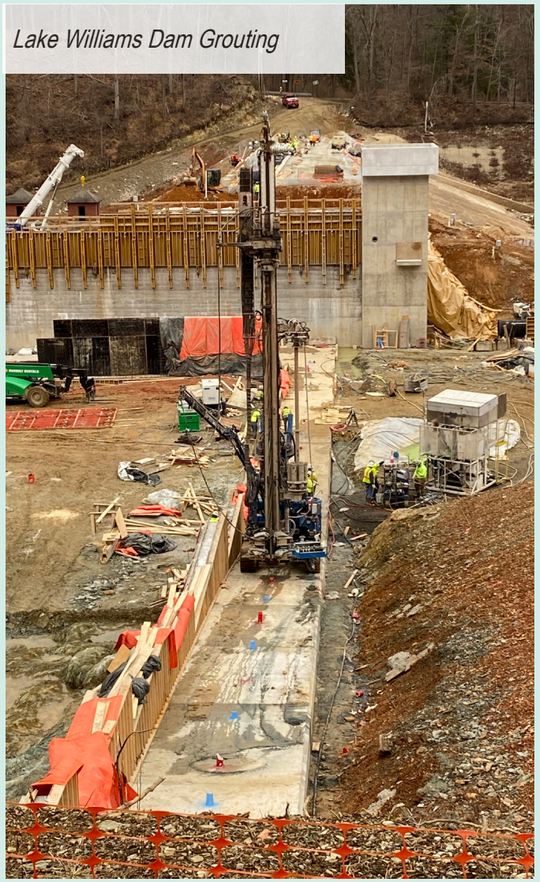
RISK FOCUS - FOUNDATION GROUTING

The project requires the construction of a two-line grout curtain across the excavated foundation and to depths of up to around 175 feet below planned foundation grades. The bedrock at the site is variably weathered and the permeability is high as indicated by water pressure testing and loss of flushing fluids during drilling. Foundation grouting is mandated to begin on the abutments then extend through the valley section of the project. ***This work is on the critical path for the project.***

Our Team has extensive experience in dam foundation grouting. We regularly design our own grout curtains and normally oversee their construction. We have worked for owners, for contractors, and rewrote the Corps of Engineers EM1110-2-3506 Grouting Technology manual. ***You will not find a more qualified and experienced team on this matter.***

Foundation grouting can be a claim-heavy activity during dam construction. As is normally the case, the Engineer makes certain assumptions based on a limited number of exploration holes performed at the site. The grouting contractor subsequently then develops work plans and anticipated sequences and durations based on the information provided to them in the geotechnical data, plans and specifications. The problem comes when what is found in the field is not as shown in the places and specifications. Examples we have encountered include:

Lake Williams Dam Grouting



- Access for drilling equipment can be difficult especially if the final foundation surface undulates significantly. Coordinating with the grouting contractor during excavation and foundation preparation, such as during dental concrete placement, can reduce the likelihood of a claim at a later date related to site accessibility.
- Subsurface conditions can differ with regard to the stability of drill holes. While a specification may assume upstage grouting will be used (the most efficient method), conditions in the field may not allow that and downstage grouting, a less efficient method but used for difficult ground conditions, may prove to be required. This can be a very significant claim issue if not considered in the specifications and measurement and payment provisions.
- While a two-line grout curtain may be shown on a set of plans, the reality is the ground conditions and data collected during grouting determines how many lines and holes will be required to achieve the desired results. Fault and shear zones may necessitate that additional grout lines be added over short distances to provide more intensified foundation treatment.

We have found through our extensive experience that cooperation between the grouting contractor and those making design-related grouting decisions in the field is critical to the success of a project. It cannot be acceptable that a dispute results in a significant reduction in the production rate of the grouting contractor. Equipment cannot sit idle for days while decisions are pondered off-site. This is how a claim takes root.

1.5. EXPECTED STAFFING LEVELS

Our expected staffing levels through each phase of the project are detailed in the following pages, organized by the major elements of CM services, and with succinct notes and assumptions for each individual's role and involvement, illustrating exactly how our CMT will fulfill the Scope of Services. We also provide staffing details for our proposed additional scope of Construction Risk Management. Key elements of our staffing plan are explained below, and we look forward to discussing with IRWD to arrive at the best approach for the Project.

Plan and execute staff ramp-ups and ramp-downs. Our staffing will ramp up and down through the Project phases and seasons. A foundational element of effective CM execution, staff morale and cost efficiency is to correctly prepare for and implement these ramp ups and downs in a predictable and transparent fashion. Our Project Manager will be looking 6 months ahead and working with our CM, IRWD, and subconsultants to execute the ramping as planned.

Stay vigilant and be prepared to quickly adapt. The Syphon Reservoir Improvement Project is a complex job on a tight schedule. Additional staffing might be required at any point and work progress may rely on swiftly bringing those staff on board. Construction Manager **Chris Fowler** will be responsible for identifying any needs for additional staff and communicating this to our Project Manager. The pair can then work with IRWD to confirm staffing needs, identify appropriate staff from the bench, and have them approved to join the Project when needed.

Focus on construction administration. Key to success on the Project will be confirming that the processing of RFIs, submittals, and contract changes keeps up with the pace of the work and lagging administration is never a cause for construction delay. Our staffing plan provides ample involvement from Assistant Resident Engineers and Cost Engineers to support this effort, scheduled to be engaged and then disengaged in increments as the work progresses. If the work progresses smoothly with minimal administrative load, this team can be reduced for IRWD's cost efficiency and staff morale.

Maintain staffing efficiency. Staffing efficiency benefits both the project Owner by avoiding unnecessary costs and benefits the CMT in keeping staff fully engaged and maintaining morale. Our staffing plan clearly demonstrates our commitment to running a lean team, engaging staff only when needed. Some examples of our efficiency measures include:

- Assigning multi-skilled staff to full-time roles performing multiple functions to avoid the inefficiency inherent in part-time staffing, such as Adam Kanaan performing cost engineering and CM contract administration, and William Moss performing assistant resident engineering, startup coordination and electrical inspection.
- Engaging junior staff to support most CM activities such as preconstruction review documentation, meeting management and report generation. In addition to being cost effective, this approach will also develop their skills and maximize our team's effectiveness as the Project progresses.

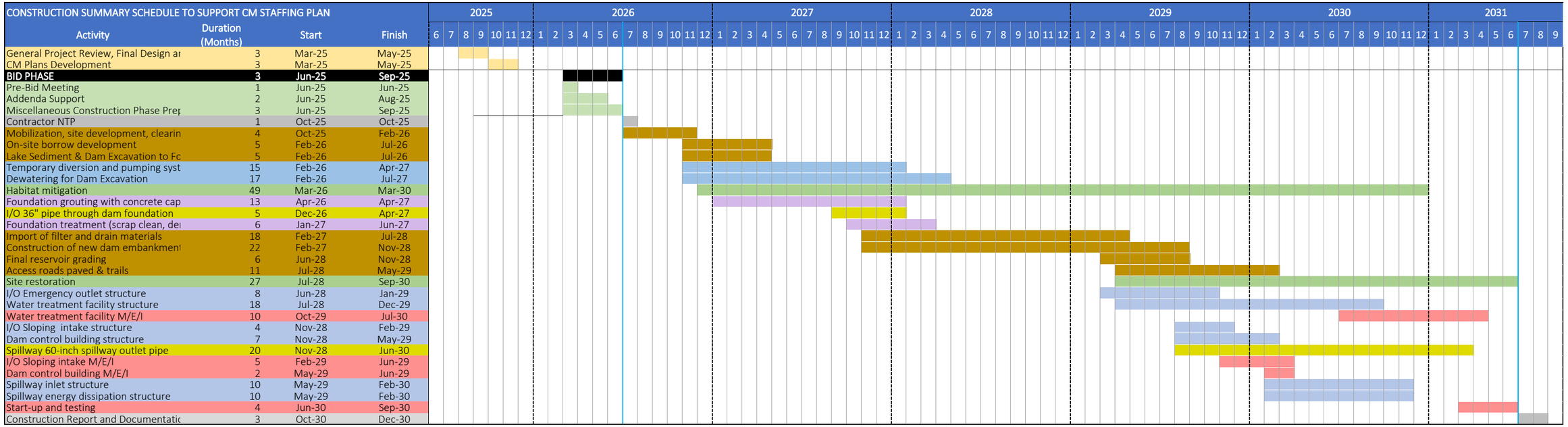
We have included below and on the following pages our anticipated staffing levels per phase (**Table 1.5-1**) and our anticipated staffing levels per team member per phase (**Table 1.5.-2**).

Table 1.5-1. Anticipated Staffing Levels per Phase.

PHASE	HOURS
Project Management	4,782
Final Design and Bid Phase Services	1,272
Construction Management	42,140
Resident Engineering	10,275
Safety Management	4,680
Training, Commissioning, and Startup Services	1,432
QA/QC Program and Construction Inspections	42,112
Partnering	249
Post Construction Services	1,120
Construction Risk Management	1,008
TOTAL HOURS	**109,070**

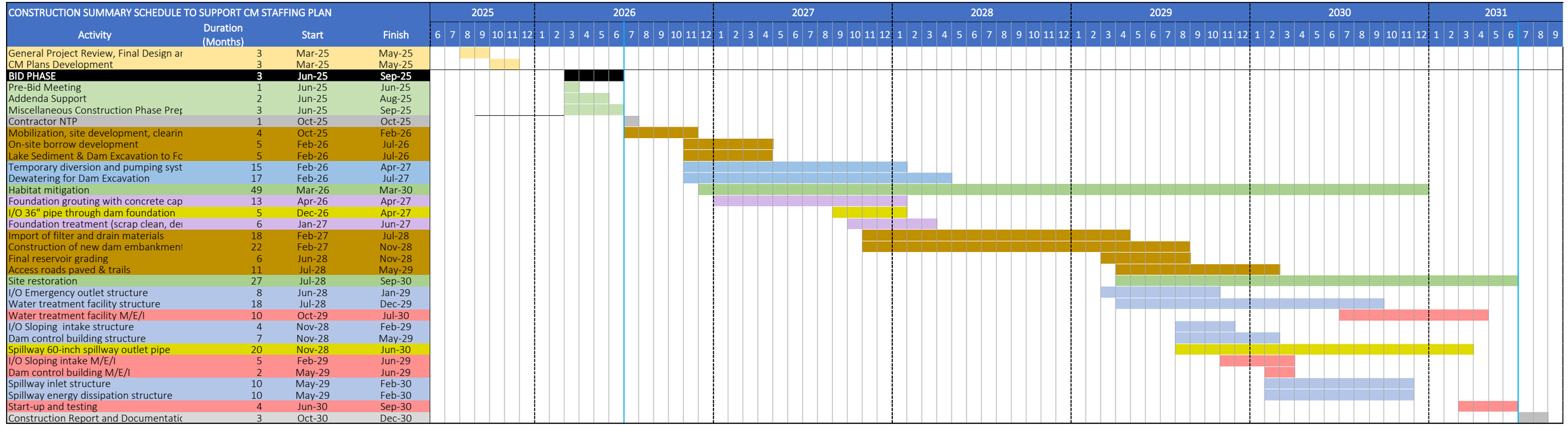
TABLE1.5-2 Anticipated Staffing Levels per Team Member per Phase

SYPHON RESERVOIR CMS



LABOR	Name	Firm	PW Hrs.	TOTAL PROJECT LABOR HOURS
Project Management				**4,782**
Principal In Charge	Jack Gerwick	COWI		-
Principal In Charge	Ed Durazo	Gannett Fleming		-
Project Manager	Arun Parsons	COWI		1,088
CM Services Contract Administrator	Adam Kanaan	COWI		3,110
CM Services Accounting Support	Jennifer Kegel	COWI		584
Final Design and Bid Phase Services				**1,272**
Constructability and Bid Specialist	Tom Pursel	Gannett Fleming		216
Construction Manager	Chris Fowler	Gannett Fleming		344
Project Manager	Arun Parsons	COWI		112
Resident Engineer	Mike Jubran	COWI		104
Senior Advisor - Dam Construction	Scott Brough	Gannett Fleming		20
Construction Contract Manager	Ajinkya Sarawade	COWI		100
Claims Support	Craig Beeson	COWI		8
Quality Assurance Manager	Corey Kesler	Gannett Fleming		60
Senior Advisor - Scheduling	Aaron Trimm	CAPO		24
Assistant RE - WTP & Startup Coordinator	William Moss	Gannett Fleming		24
CM Services Contract Administrator	Adam Kanaan	COWI		140
Document Controller	Victor Enriquez	COWI		120

LABOR HOURS



				2025	2026	2027	2028	2029	2030	2031	TOTAL PROJECT
				LABOR HOURS							LABOR HOURS
Construction Risk Management											**1,008**
Risk Management Support	Bill Foos	Gannett Fleming		60	60	32	32	32	32	32	664
Construction Manager	Chris Fowler	Gannett Fleming		12							12
Project Manager	Arun Parsons	COWI		12		8	8	8	8	8	148
Resident Engineer	Mike Jubran	COWI		12							12
Construction Contract Manager	Ajinkya Sarawade	COWI		12							12
Quality Assurance Manager	Corey Kesler	Gannett Fleming		12							12
CM Safety Manager	Robert Nunez	RMA		12		8	8	8	8	8	148
Construction Management											**42,140**
Construction Manager	Chris Fowler	Gannett Fleming				160 160 160 160 160 157	160 160 160 157 160 160	160 160 157 160 160 160	157 160 160 160 157 160	160 160 160 157 160 160	9,546
Construction Contract Manager	Ajinkya Sarawade	COWI				160 160 160 160 160 157	160 160 157 160 160 160	157 160 160 160 157 160	160 160 160 157 160 160	160 160 157 160 160 160	9,546
Cost Engineer	Adam Kanaan	COWI				110 110 110 110 110 110	110 110 110 110 110 110	110 110 110 110 110 110	110 110 110 110 110 110	110 110 110 110 110 110	6,600
Cost Engineer	Jason Dong	COWI									-
Scheduler	Autumn Hall	CAPO			120 120 52 52 52 52	52 52 52 52 52 52	52 52 52 52 52 52	52 52 52 52 52 52	52 52 52 52 52 52	52 52 52 20 20 20	3,128
Cost Estimator	Trevor Kroesch	CAPO				20 20 20 20 20 20	20 20 20 20 20 20	20 20 20 20 20 20	20 20 20 20 20 20	20 20 20 20 20 20	960
Labor Compliance Specialist	Erica Berger	Ardurra			20 20 20 20 20 20	20 20 20 20 20 20	20 20 20 20 20 20	20 20 20 20 20 20	20 20 20 20 20 20	20 20 20 20 20 20	1,200
Document Controller	Victor Enriquez	COWI			160 160 160 160 160 160	160 160 160 160 160 160	160 160 160 160 160 160	160 160 160 160 160 160	160 160 160 160 160 160	160 160 160 160 160 160	9,600
Project Manager	Arun Parsons	COWI			10 10 10 10 10 10	10 10 10 10 10 10	10 10 10 10 10 10	10 10 10 10 10 10	10 10 10 10 10 10	10 10 10 10 10 10	600
Senior Advisor - Scheduling	Aaron Trimm	CAPO			8 8 8 8 8 8	8 8 8 8 8 8	8 8 8 8 8 8	8 8 8 8 8 8	8 8 8 8 8 8	8 8 8 8 8 8	480
Claims Support	Craig Beeson	COWI			8 8 8 8 8 8	8 8 8 8 8 8	8 8 8 8 8 8	8 8 8 8 8 8	8 8 8 8 8 8	8 8 8 8 8 8	480

TABLE1.5-2 Anticipated Staffing Levels per Team Member per Phase

SYPHON RESERVOIR CMS

CONSTRUCTION SUMMARY SCHEDULE TO SUPPORT CM STAFFING PLAN			
Activity	Duration (Months)	Start	Finish
General Project Review, Final Design ar	3	Mar-25	May-25
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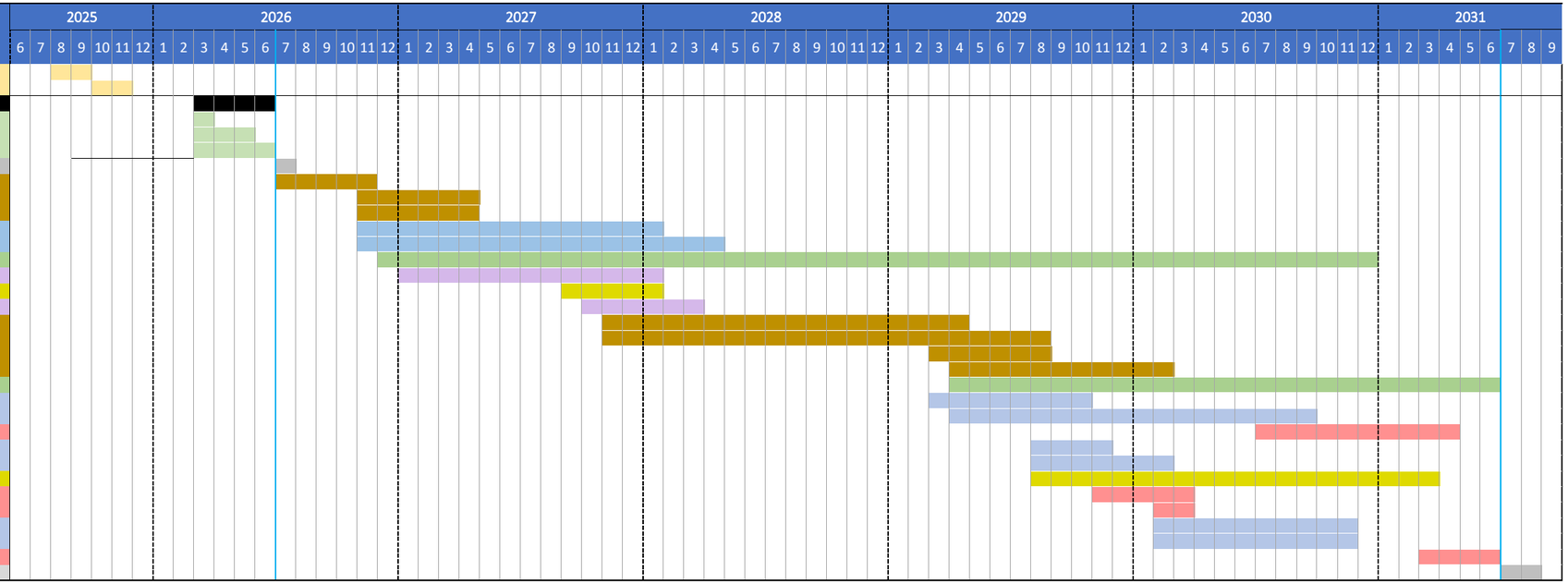
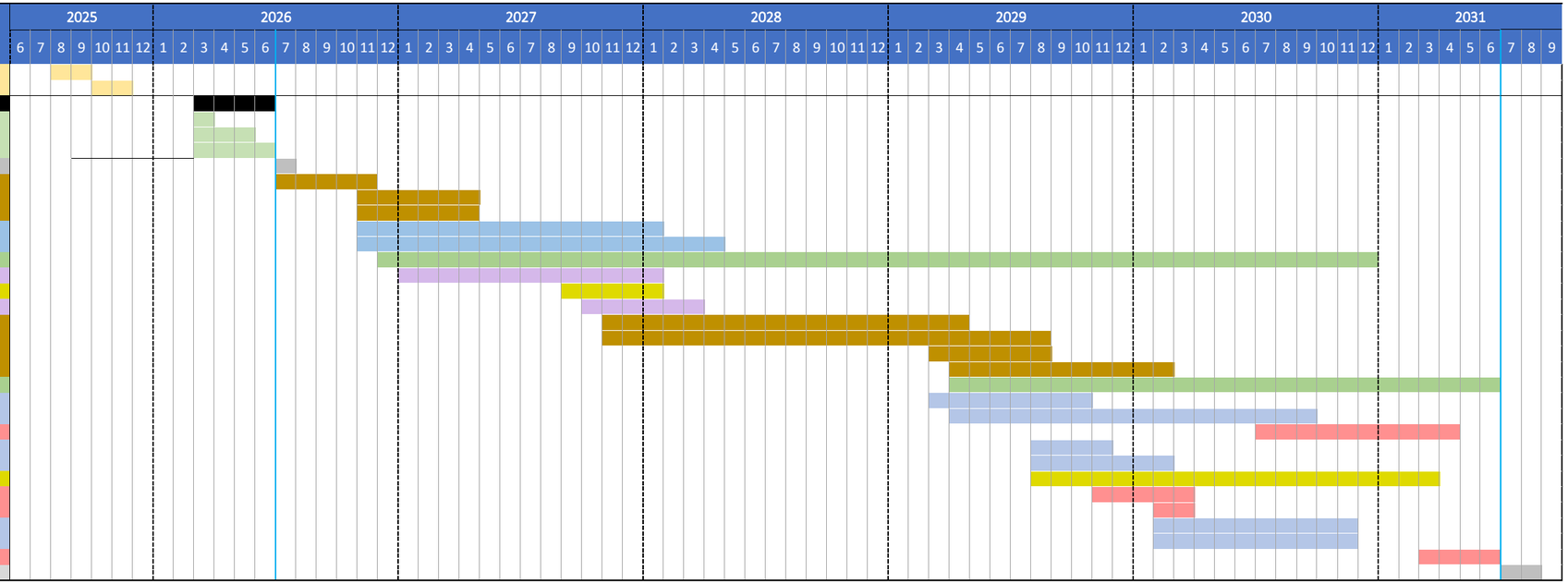
BID PHASE	**3**	**Jun-25**	**Sep-25**
Pre-Bid Meeting	1	Jun-25	Jun-25
Addenda Support	2	Jun-25	Aug-25
Miscellaneous Construction Phase Pre	3	Jun-25	Sep-25
Contractor NTP	1	Oct-25	Oct-25
Mobilization, site development, clearin	4	Oct-25	Feb-26
On-site borrow development	5	Feb-26	Jul-26
Lake Sediment & Dam Excavation to Fc	5	Feb-26	Jul-26
Temporary diversion and pumping syst	15	Feb-26	Apr-27
Dewatering for Dam Excavation	17	Feb-26	Jul-27
Habitat mitigation	49	Mar-26	Mar-30
Foundation grouting with concrete cap	13	Apr-26	Apr-27
I/O 36" pipe through dam foundation	5	Dec-26	Apr-27
Foundation treatment (scrap clean, de	6	Jan-27	Jun-27
Import of filter and drain materials	18	Feb-27	Jul-28
Construction of new dam embankmen	22	Feb-27	Nov-28
Final reservoir grading	6	Jun-28	Nov-28
Access roads paved & trails	11	Jul-28	May-29
Site restoration	27	Jul-28	Sep-30
I/O Emergency outlet structure	8	Jun-28	Jan-29
Water treatment facility structure	18	Jul-28	Dec-29
Water treatment facility M/E/I	10	Oct-29	Jul-30
I/O Sloping intake structure	4	Nov-28	Feb-29
Dam control building structure	7	Nov-28	May-29
Spillway 60-inch spillway outlet pipe	20	Nov-28	Jun-30
I/O Sloping intake M/E/I	5	Feb-29	Jun-29
Dam control building M/E/I	2	May-29	Jun-29
Spillway inlet structure	10	May-29	Feb-30
Spillway energy dissipation structure	10	May-29	Feb-30
Start-up and testing	4	Jun-30	Sep-30
Construction Report and Documentatic	3	Oct-30	Dec-30



				2025	2026	2027	2028	2029	2030	2031	TOTAL PROJECT
				LABOR HOURS							LABOR HOURS
Resident Engineering											**10,275**
Resident Engineer	Mike Jubran	COWI			160 160 160 160 160 157	160 160 157 160 160 157 160 160 157 160 160 157	160 160 157 160 160 157 160 160 157 160 160 157	160 160 157 160 160 157 160			6,047
Assistant RE - Outlet Works	Thomas Michael	Gannett Fleming									-
Assistant RE - WTP & Startup Coordinator	William Moss	Gannett Fleming			40 40 10 10 10 10	10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10	10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10	10 10 152 140 140 140 140 140 140 140 106 106	106 106 106 140 140 106 106 106 86 86 86 86	86 26 26 26 60 60	3,268
Senior Advisor - Dam Construction	Tom Pursel	Gannett Fleming			8 8 8 8 8 8	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	8 8 8 8 8 8	480
Senior Advisor - Dam Construction	Scott Brough	Gannett Fleming			8 8 8 8 8 8	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	8 8 8 8 8 8	480
Safety Management											**4,680**
CM Safety Manager	Robert Nunez	RMA			78 78 78 78 78 78	78 78 78 78 78 78 78 78 78 78 78 78 78 78 78 78 78 78	78 78 78 78 78 78 78 78 78 78 78 78 78 78 78 78 78 78	78 78 78 78 78 78 78 78 78 78 78 78 78 78 78 78 78 78	78 78 78 78 78 78 78 78 78 78 78 78 78 78 78 78 78 78	78 78 78 78 78 78	4,680
Training, Commissioning, and Startup Services											**1,432**
Assistant RE - WTP & Startup Coordinator	William Moss	Gannett Fleming			40 40 40 40 8 8	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	8 8 8 20 20 20 20 20 20 20 20 20 20	20 20 20 20 20 20 20 20 20 40 40 40 40	40 100 100 100 100 100	1,432

TABLE1.5-2 Anticipated Staffing Levels per Team Member per Phase



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Miscellaneous Construction Phase Prep	3	Jun-25	Sep-25
Contractor NTP	1	Oct-25	Oct-25
Mobilization, site development, clearin	4	Oct-25	Feb-26
On-site borrow development	5	Feb-26	Jul-26
Lake Sediment & Dam Excavation to Fc	5	Feb-26	Jul-26
Temporary diversion and pumping syst	15	Feb-26	Apr-27
Dewatering for Dam Excavation	17	Feb-26	Jul-27
Habitat mitigation	49	Mar-26	Mar-30
Foundation grouting with concrete cap	13	Apr-26	Apr-27
I/O 36" pipe through dam foundation	5	Dec-26	Apr-27
Foundation treatment (scrap clean, de	6	Jan-27	Jun-27
Import of filter and drain materials	18	Feb-27	Jul-28
Construction of new dam embankment	22	Feb-27	Nov-28
Final reservoir grading	6	Jun-28	Nov-28
Access roads paved & trails	11	Jul-28	May-29
Site restoration	27	Jul-28	Sep-30
I/O Emergency outlet structure	8	Jun-28	Jan-29
Water treatment facility structure	18	Jul-28	Dec-29
Water treatment facility M/E/I	10	Oct-29	Jul-30
I/O Sloping intake structure	4	Nov-28	Feb-29
Dam control building structure	7	Nov-28	May-29
Spillway 60-inch spillway outlet pipe	20	Nov-28	Jun-30
I/O Sloping intake M/E/I	5	Feb-29	Jun-29
Dam control building M/E/I	2	May-29	Jun-29
Spillway inlet structure	10	May-29	Feb-30
Spillway energy dissipation structure	10	May-29	Feb-30
Start-up and testing	4	Jun-30	Sep-30
Construction Report and Documentatic	3	Oct-30	Dec-30

LABOR HOURS

QA/ QC Program and Construction Inspections				TOTAL PROJECT LABOR HOURS 42,112
Quality Assurance Manager	Corey Kesler	Gannett Fleming		9,546
Chief Inspector	Juan Le Roy	Gannett Fleming	Day ST	9,600
			Day OT	2,040
			Day DT	-
Geotech Inspector	Adriana Paucean	Gannett Fleming	Day ST	5,120
			Day OT	1,088
			Day DT	-
Materials Testing Technician	Tino Rodriguez	Ninyo & Moore	Day ST	3,520
			Day OT	748
			Day DT	-
Materials Testing Technician	Andy Rodriguez	Ninyo & Moore	Day ST	3,520
			Day OT	748
			Day DT	-
Concrete Inspector	Matthew Jacobs	Ninyo & Moore	Day ST	3,360
			Day OT	714
			Day DT	-
Welding Inspector	Robert Ritter	Ninyo & Moore	Day ST	884
			Day OT	-
			Day DT	-
Mechanical Inspector	Steven Brown	Gannett Fleming	Day ST	544
			Day OT	-
			Day DT	-

2025

Name		6	7	8	9	10	11	12
Corey Kesler								
Juan Le Roy	Day ST							
Juan Le Roy	Day OT							
Juan Le Roy	Day DT							
Adriana Paucean	Day ST							
Adriana Paucean	Day OT							
Adriana Paucean	Day DT							
Tino Rodriguez	Day ST							
Tino Rodriguez	Day OT							
Tino Rodriguez	Day DT							
Andy Rodriguez	Day ST							
Andy Rodriguez	Day OT							
Andy Rodriguez	Day DT							
Matthew Jacobs	Day ST							
Matthew Jacobs	Day OT							
Matthew Jacobs	Day DT							
Robert Ritter	Day ST							
Robert Ritter	Day OT							
Robert Ritter	Day DT							
Steven Brown	Day ST							
Steven Brown	Day OT							
Steven Brown	Day DT							

2026

Name		1	2	3	4	5	6	7	8	9	10	11	12
Corey Kesler								160	160	160	160	160	157
Juan Le Roy	Day ST							160	160	160	160	160	160
Juan Le Roy	Day OT							34	34	34	34	34	34
Juan Le Roy	Day DT												
Adriana Paucean	Day ST												
Adriana Paucean	Day OT												
Adriana Paucean	Day DT												
Tino Rodriguez	Day ST												
Tino Rodriguez	Day OT												
Tino Rodriguez	Day DT												
Andy Rodriguez	Day ST												
Andy Rodriguez	Day OT												
Andy Rodriguez	Day DT												
Matthew Jacobs	Day ST												
Matthew Jacobs	Day OT												
Matthew Jacobs	Day DT												
Robert Ritter	Day ST												
Robert Ritter	Day OT												
Robert Ritter	Day DT												
Steven Brown	Day ST												
Steven Brown	Day OT												
Steven Brown	Day DT												

2027

Name		1	2	3	4	5	6	7	8	9	10	11	12
Corey Kesler		160	160	157	160	160	157	160	160	157	160	160	157
Juan Le Roy	Day ST	160	160	160	160	160	160	160	160	160	160	160	160
Juan Le Roy	Day OT	34	34	34	34	34	34	34	34	34	34	34	34
Juan Le Roy	Day DT												
Adriana Paucean	Day ST	160	160	160	160	160	160	160	160	160	160	160	160
Adriana Paucean	Day OT	34	34	34	34	34	34	34	34	34	34	34	34
Adriana Paucean	Day DT												
Tino Rodriguez	Day ST											160	160
Tino Rodriguez	Day OT											34	34
Tino Rodriguez	Day DT												
Andy Rodriguez	Day ST											160	160
Andy Rodriguez	Day OT											34	34
Andy Rodriguez	Day DT												
Matthew Jacobs	Day ST												
Matthew Jacobs	Day OT												
Matthew Jacobs	Day DT												
Robert Ritter	Day ST									68	68	68	68
Robert Ritter	Day OT												
Robert Ritter	Day DT												
Steven Brown	Day ST												
Steven Brown	Day OT												
Steven Brown	Day DT												

2028

Name		1	2	3	4	5	6	7	8	9	10	11	12
Corey Kesler		160	160	157	160	160	157	160	160	157	160	160	157
Juan Le Roy	Day ST	160	160	160	160	160	160	160	160	160	160	160	160
Juan Le Roy	Day OT	34	34	34	34	34	34	34	34	34	34	34	34
Juan Le Roy	Day DT												
Adriana Paucean	Day ST	160	160	160	160	160	160	160	160	160	160	160	160
Adriana Paucean	Day OT	34	34	34	34	34	34	34	34	34	34	34	34
Adriana Paucean	Day DT												
Tino Rodriguez	Day ST	160	160	160	160	160	160	160	160	160	160	160	160
Tino Rodriguez	Day OT	34	34	34	34	34	34	34	34	34	34	34	34
Tino Rodriguez	Day DT												
Andy Rodriguez	Day ST	160	160	160	160	160	160	160	160	160	160	160	160
Andy Rodriguez	Day OT	34	34	34	34	34	34	34	34	34	34	34	34
Andy Rodriguez	Day DT												
Matthew Jacobs	Day ST												
Matthew Jacobs	Day OT												
Matthew Jacobs	Day DT												
Robert Ritter	Day ST	68											
Robert Ritter	Day OT												
Robert Ritter	Day DT												
Steven Brown	Day ST												
Steven Brown	Day OT												
Steven Brown	Day DT												

2029

Name		1	2	3	4	5	6	7	8	9	10	11	12
Corey Kesler		160	160	157	160	160	157	160	160	157	160	160	157
Juan Le Roy	Day ST	160	160	160	160	160	160	160	160	160	160	160	160
Juan Le Roy	Day OT	34	34	34	34	34	34	34	34	34	34	34	34
Juan Le Roy	Day DT												
Adriana Paucean	Day ST	160	160	160	160	160	160	160	160				
Adriana Paucean	Day OT	34	34	34	34	34	34	34	34				
Adriana Paucean	Day DT												
Tino Rodriguez	Day ST	160	160	160	160	160	160	160	160				
Tino Rodriguez	Day OT	34	34	34	34	34	34	34	34				
Tino Rodriguez	Day DT												
Andy Rodriguez	Day ST	160	160	160	160	160	160	160	160				
Andy Rodriguez	Day OT	34	34	34	34	34	34	34	34				
Andy Rodriguez	Day DT												
Matthew Jacobs	Day ST			160	160	160	160	160	160	160	160	160	160
Matthew Jacobs	Day OT			34	34	34	34	34	34	34	34	34	34
Matthew Jacobs	Day DT												
Robert Ritter	Day ST												
Robert Ritter	Day OT												
Robert Ritter	Day DT												
Steven Brown	Day ST											34	34
Steven Brown	Day OT												
Steven Brown	Day DT												

2030

Name		1	2	3	4	5	6	7	8	9	10	11	12
Corey Kesler		160	160	157	160	160	157	160	160	157	160	160	157
Juan Le Roy	Day ST	160	160	160	160	160	160	160	160	160	160	160	160
Juan Le Roy	Day OT	34	34	34	34	34	34	34	34	34	34	34	34
Juan Le Roy	Day DT												
Adriana Paucean	Day ST												
Adriana Paucean	Day OT												
Adriana Paucean	Day DT												
Tino Rodriguez	Day ST												
Tino Rodriguez	Day OT												
Tino Rodriguez	Day DT												
Andy Rodriguez	Day ST												
Andy Rodriguez	Day OT												
Andy Rodriguez	Day DT												
Matthew Jacobs	Day ST	160	160	160	160	160	160	160	160	160	160	160	
Matthew Jacobs	Day OT	34	34	34	34	34	34	34	34	34	34	34	
Matthew Jacobs	Day DT												
Robert Ritter	Day ST								68	68	68	68	68
Robert Ritter	Day OT												
Robert Ritter	Day DT												
Steven Brown	Day ST	34	34	34			34	34	34	34	34	34	34
Steven Brown	Day OT												
Steven Brown	Day DT												

2031

Name		1	2	3	4	5	6	7	8	9
Corey Kesler		160	160	157	160	160	160			
Juan Le Roy	Day ST	160	160	160	160	160	160			
Juan Le Roy	Day OT	34	34	34	34	34	34			
Juan Le Roy	Day DT									
Adriana Paucean	Day ST									
Adriana Paucean	Day OT									
Adriana Paucean	Day DT									
Tino Rodriguez	Day ST									
Tino Rodriguez	Day OT									
Tino Rodriguez	Day DT									
Andy Rodriguez	Day ST									
Andy Rodriguez	Day OT									
Andy Rodriguez	Day DT									
Matthew Jacobs	Day ST									
Matthew Jacobs	Day OT									
Matthew Jacobs	Day DT									
Robert Ritter	Day ST	68	68	68						
Robert Ritter	Day OT									
Robert Ritter	Day DT									
Steven Brown	Day ST	34	34	34	34					
Steven Brown	Day OT									
Steven Brown	Day DT									

TABLE1.5-2 Anticipated Staffing Levels per Team Member per Phase

SYPHON RESERVOIR CMS

CONSTRUCTION SUMMARY SCHEDULE TO SUPPORT CM STAFFING PLAN			
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Dewatering for Dam Excavation	17	Feb-26	Jul-27
Habitat mitigation	49	Mar-26	Mar-30
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I/O 36" pipe through dam foundation	5	Dec-26	Apr-27
Foundation treatment (scrap clean, de	6	Jan-27	Jun-27
Import of filter and drain materials	18	Feb-27	Jul-28
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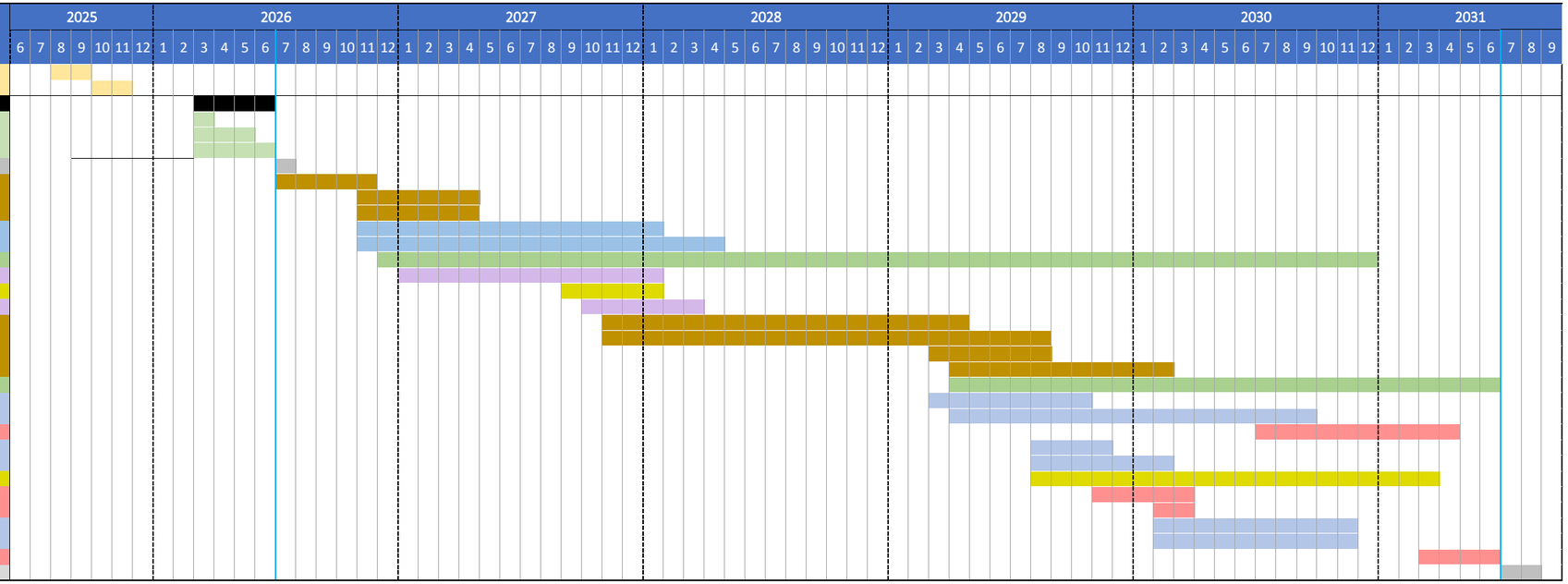
Water treatment facility M/E/I	10	Oct-29	Jul-30
I/O Sloping intake structure	4	Nov-28	Feb-29
Dam control building structure	7	Nov-28	May-29
Spillway 60-inch spillway outlet pipe	20	Nov-28	Jun-30
I/O Sloping intake M/E/I	5	Feb-29	Jun-29
Dam control building M/E/I	2	May-29	Jun-29
Spillway inlet structure	10	May-29	Feb-30
Spillway energy dissipation structure	10	May-29	Feb-30
Start-up and testing	4	Jun-30	Sep-30
Construction Report and Documentatic	3	Oct-30	Dec-30



				2025	2026	2027	2028	2029	2030	2031	TOTAL PROJECT
				LABOR HOURS							LABOR HOURS
Electrical Inspector	William Moss	Gannett Fleming	Day ST					34 34	34 34 34	34 34 34 34 34 34	544
			Day OT								-
			Day DT								-
Coatings Inspector	Aurelio Corral	RMA	Day ST						34 34	34 34	136
			Day OT								-
			Day DT								-
Partnering											**249**
Project Manager	Arun Parsons	COWI			3 3 3 3 3	3 3 3 3 3	3 3 3 3 3	3 3 3 3	3 3 3 3 3	3 3	54
Construction Manager	Chris Fowler	Gannett Fleming			3 3 3 3 3	3 3 3 3 3	3 3 3 3 3	3 3 3 3	3 3 3 3 3	3 3	54
Construction Contract Manager	Ajinkya Sarawade	COWI			3 3 3 3 3	3 3 3 3 3	3 3 3 3 3	3 3 3 3	3 3 3 3 3	3 3	54
Resident Engineer	Mike Jubran	COWI			3 3 3 3 3	3 3 3 3 3	3 3 3 3 3	3 3			33
Quality Assurance Manager	Corey Kesler	Gannett Fleming			3 3 3 3 3	3 3 3 3 3	3 3 3 3 3	3 3 3 3	3 3 3 3 3	3 3	54
Post Construction Services											**1,120**
Construction Manager	Chris Fowler	Gannett Fleming								40 40	80
Resident Engineer	William Moss	Gannett Fleming								160 160	320
Quality Assurance Manager	Corey Kesler	Gannett Fleming								40 40	80
Cost Engineer	Adam Kanaan	COWI								160 160	320
Document Controller	Victor Enriquez	COWI								80 80	160
AutoCAD Coordinator	Noel Fortez	COWI								80 80	160

2. Scope

The COWI-Gannett Fleming Team will largely follow the Scope of Work as outlined in the RFP (**C. Scope of Work**). Below and on the following pages, we have clearly indicated our proposed modifications as redlines and welcome the opportunity to discuss these modifications with IRWD.

C. Scope of Work

The major tasks in the scope of work are listed below.

Task 1 - Final Design Phase

1. General Project Review: The CMT shall review the Contract Documents in preparation for the Bid Phase and Construction Phase. This general review is intended to allow the CMT to become fully immersed in the Project prior to issuing Notice to Proceed to the Contractor.
2. Review Final Design: The CMT shall review the design package prior to the Design Team finalizing the Contract Documents and IRWD advertising for the construction. The design review shall include, at a minimum, a constructability review that focuses on major Project elements that may significantly contribute to construction risk (e.g., schedule, change orders, safety, etc.).

   a) Temporary On-Site Office Facilities: The Contract Documents will include provisions for the Contractor to provide temporary facilities for the CMT that will have an on-site presence. The CMT shall review the Contract Documents and confirm the adequacy and identify missing elements of the temporary facilities, such as construction trailer and office equipment, that should be included in the Contractor's scope of work. The findings will be presented to IRWD for consideration and possible revisions to the Contract Documents. IRWD anticipates that the CMT will provide their own laptops, cell phones, on-site transportation equipment, and necessary equipment for inspections and testing.

   b) Temporary On-site Geotechnical Laboratory Review: After reviewing the scope of the Project, the CMT shall consider the benefits to having an on- site geotechnical laboratory.

      The CMT's proposal shall describe the benefits, explain if the CMT intends on having the laboratory on-site, and specifically explain what soils testing would be performed on-site and off-site. Pending IRWD's review of the proposals and selection of the CMT, the Contract Documents may be revised to include on-site or off-site geotechnical laboratories for the Project. IRWD intends on deciding on the location of the geotechnical laboratory during the proposal phase so the CMT's construction services contract can include equipping the temporary laboratory with the appropriate equipment, to perform the following tests on site.

      - Proctor Density D 1557, DWR S10
      - Water Content D 2216
      - Sieve Analysis (Gradation) C136, C117
      - Atterberg Limits D 4318
      - Sand Equivalent D 2914, CT 217

      The Final Design review shall also include the following.

      - Reviewing the front-end documents and schedule constraints to consider the overall reasonableness,
      - Reviewing the front-end documents to ensure the CMT's document control system and processes are appropriately described, and
      - Reviewing the Construction Documents to identify items that may add value to the overall Project.

Task 2 - Bid Phase Services

1. Pre-Bid Meeting Attendance: Necessary staff from the CMT shall attend the pre- bid meeting in preparation to supporting the bid phase.
2. Addenda Support: The CMT shall support the District, where required, in the response to bidder questions. IRWD and the Design Team will be responsible for coordinating the bidder questions and responses with support from the CMT. Response to bidder questions will be formally issued through an addendum that IRWD will review prior to formally issuing through IRWD's bidding platform, PlanetBids. All addenda will be issued by IRWD.
3. Miscellaneous Construction Phase Preparation: During the bid phase, the CMT may need to organize materials and resources to promptly provide Construction Management Services once IRWD's Board awards the construction contract. The Miscellaneous Construction Phase Preparation may include, but is not necessarily limited to, procuring office or laboratory equipment that is not included in the Contractor's scope of work and is required for the CMT to provide their services.

   The CMT's proposal shall specifically identify the major items included in this task.

Task 3 - Construction Phase

1. Construction Management:

   a) Project Management: The CMT shall manage personnel on their team and recommend adjusting staffing levels to IRWD at various phases of the construction project to effectively manage the provided services and budget.

   b) Quality Assurance/Quality Control: The CMT shall be responsible for ensuring QA/QC on the Project. The testing requirements, including identifying the responsible party for completing the tests, are listed in the Contract Documents. Where the District is referenced as the responsible party, the CMT shall infer that to mean that the CMT will complete the test and appropriately document the results.

   c) Submittals and RFI's: The CMT shall be responsible for coordinating the prompt and on schedule review and responses of submittals, Requests for Information (RFI's), and all other construction related communications. It is anticipated that the Design Engineer (i.e., AECOM or subconsultant on the Design Team), will be the primary reviewer for most construction submittals and RFI's. It is the District's expectation that the CMT be the primary reviewer for construction submittals that do not require the review of the Design Team. Regardless of the primary reviewer, the CMT shall review the submittals and RFI's for overall completeness and addressing of previous comments, constructability, potential for cost impacts, sequencing, scheduling, consistency, and documentation control. Submittals, including resubmittals, shall be actively tracked to ensure the engaged CMT is striving to continuously advance the Project. Submittals shall be reviewed for conformance with the Contract Documents, IRWD's Construction Manual (where applicable), and other relevant Project related work that may impact the subject of the submittal. Occasionally, District staff may contribute to the review of submittals and RFI's.

   d) Correspondences: The CMT shall be the lead preparer of all construction related correspondences. For all technical related correspondences, the Design Team may be utilized to support the process. Occasionally, District staff may contribute to the development and review of construction related correspondences.

   e) Coordination of Field Activities: The CMT shall lead the coordination of field activities required to successfully complete the Project, including but not limited to, coordinating inspections, field meetings, third party topographic surveying, field investigations, regulatory audits and site visits with vendors.

   f) Coordination with External Entities: The CMT shall lead the coordination with external agencies which include, but may not be limited to, Air Quality Management District (AQMD), Orange County Fire Authority (OCFA), Division of Safety of Dams (DSOD), Southern California Edison (SCE), Regional Water Quality Control Board (RWQCB), Bureau of Reclamation, State Water Resources Control Board (SWRCB), City of Irvine, and Crean Lutheran High School.

IRWD intends on contracting with other consultants to support the Project. The other contracts through IRWD that the CMT will need to coordinate with may include but is not limited to the following.

1) *Environmental Consultant:* The Environmental Consultant will ensure compliance with the EIR.
2) *Risk Management Consultant:* IRWD's Dam Safety Program includes Risk Informed Decision Making (RIDM), which IRWD has carried out throughout the design phase of the Project. IRWD intends on keeping the Risk Management Team engaged on a limited basis throughout the construction of the dam. The CMT will be tasked with managing the Project changes that may impact dam safety and summarizing the changes to the Risk Management Team and coordinating the access to additional information to continue the management of dam safety risk.
3) *Design Team:* IRWD will contract with AECOM and intends on continuing their engineering services through the end of construction.

g) Permit Compliance: The CMT shall thoroughly understand the obtained, or to be obtained, permits for the Project and ensure compliance. Where external agencies, environmental consultants, the Design Team, the District, or other impacted parties require involvement to successfully comply with the permit, the CMT shall coordinate with the parties to satisfy the requirements of the permit. When required, the CMT shall obtain, organize, and provide necessary information to satisfy the permits.

h) Implement a Construction Risk Management Plan: The CMT will implement a construction-focused risk management process to identify potential risks during construction, identify strategies to avoid or mitigate them before they occur, and take specific actions to implement those strategies.

1) In preconstruction

- The CMT will establish a Construction Risk Management Plan (CRMP) detailing the roles, responsibilities and processes outlined below, for approval by IRWD. The CRMP would take into account the role played by IRWD's current Risk Management Consultant and aim to dovetail efforts and avoid duplication.
- The CMT will develop an initial list of construction risks that may have impacts to Project schedule, cost, safety, permit compliance, and public perception.
- The CMT will host a workshop with the Designer, Risk Management Consultant and IRWD to review the initial list and gain input, and together identify the best strategies to avoid or mitigate each risk and assign action items and actions owners for each strategy.
- The CMT develop a Risk Register to compile the information on risks, strategies and actions.
- The CMT assign the Resident Engineering staff to regularly coordinate with action owners and drive forward the actions to be taken for risk avoidance and mitigation.

2) In Construction

- The CMT host quarterly meetings with IRWD and the Designer to review the current Risk Register, consider which risks can be removed and which new risks should be added, and update the necessary actions for avoidance and mitigation.
- The current Risk Register would be provided with each monthly Construction Progress Report.

2. Inspections and Materials Testing: Multiple forms of inspections are required for the Project. Geotechnical, civil, structural, and electrical are the main inspection disciplines required for the Project to ensure compliance with the Contract Documents. The CMT shall provide the required inspections services throughout the various phases of the Project.

Materials testing and inspections are also required throughout the Project. The materials testing services will include, at a minimum, all geotechnical testing and material testing as stipulated in the Contract Documents or

as required to ensure QA/QC. The Contract Documents identify testing requirements for the Contractor and the District. The CMT shall infer that where the District is listed, that the CMT will satisfy the requirement.

3. Environmental: The EIR for the Project identifies mitigation measures that the Project must comply with. The CMT shall understand the mitigation measures and ensure the Project complies with the measures and environmental commitments described in the EIR. Where the mitigation measure or environmental commitment requires coordination with other parties, such as, but not limited to, the environmental consultant or specialty service (e.g., biologist, archaeologist, palynologist, etc.) the CMT shall coordinate the services. IRWD will contract directly with the environmental consultant to provide field environmental services.
4. Meetings: Various types of meetings will occur throughout construction of the Project. The CMT will be responsible for preparing for the meetings including preparing agenda, distributing the agenda to the meeting participants in advance of the meeting, documenting the outcome with meeting minutes and following up with identified action items to ensure progress. Meeting agenda and minutes shall be distributed to meeting attendees within five (5) business days of the meeting. At a minimum, the anticipated meetings include the following.

   a) Pre-construction Meeting: The CMT shall prepare for, coordinate, manage and lead the meeting.

   b) Weekly Construction Meeting: The weekly construction meetings will be led by the Contractor and the CMT shall actively participate and facilitate the meeting, including any necessary follow-up.

   c) Monthly Project Management Meeting: The CMT will be responsible for preparing monthly reports and reviewing them with the District. Monthly Project Management meetings will be established to review the monthly reports and Project related items.

   d) Other Project Meetings: Other types of meetings may include but are not limited to, meetings with external agencies, kick-off meetings for certain phases of work, submittal review meetings, meetings with vendors, focused issue meetings, etc.

5. Reporting: Reporting on various activities is required throughout the Project. The CMT shall prepare and submit the following routine reports, at a minimum. The CMT should review the anticipated routine reports and identify additional routine reports in their proposal that may be required or add value to the Project.

   a) Daily Inspection Reports: Inspection Reports shall be completed and submitted to IRWD and other necessary recipients within one business day following the inspection. The Inspection Reports shall include, at a minimum, well written descriptions with sufficient detail describing the work performed, documentation of compliance or non-compliance with the Contract Documents, photos, safety concerns, and other items relevant to the work. The daily inspections shall include review and evaluation of the Crean Lutheran High School Athletics Complex to ensure the effectiveness of dust mitigation and control measures.

   b) Monthly Reports: Monthly Report shall include, at a minimum, progress report summary, spend rate, outstanding issues, change orders, schedule, a dashboard tracking the length of each submittal/RFI review to monitor timely completion of reviews, and other information that the District should be aware of.

   c) Quarterly Reports: The Quarterly Reports will be a higher-level summary of the Monthly Reports and will become the basis for District staff's quarterly report to the District's Engineering and Operations Committee and/or Board of Directors. The CMT will assist in gathering or developing additional information such as gathering construction photos that represent construction progress or issues, developing exhibits or charts, and assisting in developing PowerPoint slides, to support District staff's presentation and written report.

      1) Drone Documentation: The CMT will utilize a drone on a monthly basis to photograph the Project. The monthly drone photos will be provided with the CMT's monthly and quarterly reports to keep IRWD and other stakeholders informed, and will also provide a basis for resolution of schedule issues, change orders, or claims.

d) Non-conformance Reports: As part of the CMT's construction oversight and QA/QC, they shall identify and document instances of non- conformance with the Contract Documents. The Non-conformance Reports shall specifically identify the deviation from the Contract Documents or industry standards and serve as formal notice for non- conforming work. The CMT shall actively track non-conformance issues and collaborate with the Contractor to resolve the issues.

e) Structural Observation Reports: Structural Observation Reports shall be completed and submitted as the nature of the work requires. Issues identified in the report shall be promptly reviewed with the Contractor and addressed.

f) Grant Reports: The Project is partly funded with grants from the United States Department of Interior, Bureau of Reclamation (Reclamation) through the WaterSMART program and grants from the SWRCB Water Recycling Funding Program. As part of receiving grants, regular information gathering, site visits, and assistance with report preparation to Reclamation and SWRCB are required and included in the CMT's scope of work. IRWD will serve as the primary contact with the two external agencies and lead the reporting effort, with support from the CMT.

The CMT will be responsible for tracking and ensuring compliance with the grant funding requirements.

In addition to the routine reports, the CMT shall also prepare all other investigation, monitoring, and test reports required to sufficiently document the project and ensure compliance with the Contract Documents. Additional reporting requirements include, but are not limited to, Final Geotechnical Report. We anticipate that the CMT's report to document the project and ensure compliance with the contract documents will be comprised of a final construction report with all relevant compliance inspection and monitoring records, materials testing, and record drawings.

6. Progress Payments: The CMT will be responsible for reviewing the Contractor's regularly submitted progress payments and recommending that IRWD pay the Contractor for the completed work. The review of the progress payment shall include the following items, at a minimum.

a) Completeness Review: The CMT shall ensure the Contractor submits a complete progress payment request with all the required backup information such as certified payroll, backup invoices, and an updated construction schedule.

b) Progress Review: The CMT shall review the progress pay items with the Contractor to ensure the progress payment represents the construction progress. The review shall also include the adequacy of backup information that supports the pay request, verification of quantities and suitability of storage for items that are partly paid for but not yet installed, and all other contract requirements related to progress payments.

c) Labor Compliance Review: The CMT shall review the certified payroll documents to confirm it represents the labor performed for the period the Contractor is requesting payment. The certified payroll documents, which typically trail the progress payment by a couple of months, shall be regularly tracked. IRWD will serve as the primary contact with the Department of Interior Relations (DIR) and also track and regularly review labor compliance documents.

7. Contract Change Orders: The CMT will be responsible for receiving, reviewing, negotiating, responding to, and recommending Contract Change Orders to IRWD. Contract Change Order recommendations will require a justification memorandum that explains the circumstance, the original condition stipulated in the Contract Documents, reason for the change, and references to the relevant Contract Documents.
8. Claims: If claims are submitted through the course of the Project, the CMT will be required to review and track the claims and actively seek to resolve claims in coordination with IRWD.
9. Schedule Review: The Contractor is required to submit updated construction schedules with each progress payment request. The Contractor is also required to submit recovery schedules if elements of the Project appear to

impact the contract completion date. The CMT shall review the updated construction schedule or recovery schedule and work with the Contractor to ensure the Project continuously progresses for a timely completion. The CMT shall conduct time impact analysis throughout the course of the Project and at least on a quarterly basis.

Other schedules will be submitted throughout the Project which may focus on certain components of the overall Project such as, grout curtain sequence schedule, startup schedule, and concrete pour schedules. The CMT shall critically and constructively review the submitted schedules.

10. Document Control: The CMT will be responsible for managing all documents related to the Project that are prepared by or processed through the CMT. This includes, but is not limited to, submittals, RFI's, correspondences, field directives, notices of non-conformance, inspection reports, permits, test results, monitoring results, record drawings and other construction related documentation. All documents shall be electronically searchable and legible. IRWD, including this Project, is subject to Public Records Request and therefore all documents should be completed with the understanding it may be reviewed by the public.

    The CMT will utilize Procore as the document control system for this Project and the management of the online account is included in the CMT's scope of work. The online document control system that the CMT provides must allow access to the CMT, IRWD, the Contractor, Design Team, and other agents thereof that are regularly involved with construction of the Project.

    The CMT shall establish a meaningful and intuitive method for naming and cataloging photos taken throughout the Project. The system shall enable staff to quickly retrieve the photos in the future based on the area, activity, phase of the project, and date.

11. Quality Assurance/Quality Control Plan: The CMT will be responsible for establishing and implementing a program to monitor and ensure the quality of construction. The potential for defects, deficiencies, or substandard craftsmanship shall be closely monitored. Unacceptable work shall be rejected with a formal notice of non-conforming work and the issue tracked until successfully corrected to the satisfaction of IRWD or the entity having jurisdiction. Except for minor variations in the work, the CMT is not authorized to change, alter, relax, or release any requirements of the Contract Documents.

    Construction staking is included in the Contractor's scope of work and therefore surveying services is considered a small portion of the CMT's services. The occasion may arise where a third-party topographic survey is necessary for QA/QC. The CMT will engage a third-party topographic surveyor to:

    a) Perform an initial site survey to verify baseline survey points
    b) Perform monthly surveys during dam excavation and construction to verify line and grade of excavated works for volumetric quantity determinations
    c) Perform periodic as-built surveys to verify as built position of completed works.

12. Safety: Safety is a core value at IRWD. The Contract Documents are setup where the Contractor is responsible for establishing, maintaining, monitoring, and implementing their own Site-Specific Safety Plan. While the CMT will be required to follow the Contractor's Site-Specific Safety Plan, the CMT is also required to establish and submit their own Safety Plan and protocols to ensure a safe work environment that includes monitoring the Contractor's implementation of their Site-Specific Safety Plan. A component of the CMT's Safety Plan will include the preparation of a safety orientation for all visitors (e.g., external agencies, site visitors, etc.) and a mechanism for documenting completion of the required safety orientation. The onsite safety orientation shall also consider all on-site safety hazards, including Personal Protective Equipment requirements throughout the construction site (e.g., large grading equipment with limited visibility towards the beginning of construction and hazardous chemical towards the end of construction with the construction and startup of the treatment facility). The CMT and Contractor will be

responsible for their respective subconsultants/subcontractors and any third-tier subs and required to ensure all on-site personnel and visitors comply with the Contractor's and CMT's Site- Specific Safety Plan.

13. Training: Various elements of the Project will require training. At a minimum, the training for the Project includes safety training, equipment training, operational training, document control training, and all other training stipulated in the Contract Documents. The CMT will be responsible for coordinating the training with appropriate personnel including IRWD, external agencies, and visitors.

14. ~~Public Relations: The Project is surrounded by IRWD customers and customer service is a core value at IRWD. IRWD anticipates occasionally conducting community meetings, assembling construction related information to share with the public, and coordinating tours for the public, including but limited to Crean Lutheran High School. The CMT shall assist in Public Relations as requested by IRWD.~~

15. Partnering: IRWD and/or the Contractor may request partnering to further the cooperative project environment. Partnering may include a variety of forms such as hiring a third-party facilitator, formal group or one-on-one meetings, individual evaluations, and other methods devised to gather information and enrich the working relationships. If IRWD or the Contractor arrange for Partnering opportunities, the CMT will be required to participate

Training, Commissioning, and Startup Services

1. Startup: The Project includes startup and commissioning of the equipment, instrumentation, monitoring, and control systems. The Contract Documents include IRWD's standard startup requirements. The CMT will be the lead reviewer of the Contractor-prepared startup plan. The CMT shall thoroughly understand IRWD's startup requirements and collaborate with the Contractor to develop a startup plan that meets the contract requirements. The CMT, in collaboration with the Contractor, shall ensure a fully complete and functioning facility is transitioned to IRWD.

   It is anticipated that the Owner-witnessed factory testing and field testing will be completed by the CMT .

2. Training: Training shall be provided for all equipment, instruments, processes, procedures, and systems as described in the Contract Documents or deemed necessary to successfully complete the Project and transfer the Project to IRWD.

3. Final Permitting: The CMT shall assist in closing out permits for the Project including the Certificate to Operate with DSOD and all other permits listed in the Contract Documents.

Task 4 - Post Construction Services

1. Project Closeout: At the end of the Project, the CMT shall conduct a project closeout to assemble all pertinent documents into the official record and transfer the documents to IRWD. IRWD anticipates that the project closeout will include the following activities, at a minimum.
   a) A final audit of files, calculations, and modifications to the construction documents to confirm that submittal reviews, RFIs and other pertinent information have been adequately addressed by all parties.
   b) Obtain pertinent files from subconsultants and incorporate them into the final project documents.
   c) Ensure all the operations and maintenance manuals are received, the construction punch list is complete, spare parts and warranties are obtained.
   d) Provide final record drawings in PDF and AutoCAD format. The Design Team will perform the revisions to the AutoCAD and the CMT will be responsible for ensuring the final record drawings incorporate all the Project changes and accurately reflect the as-built condition.
   e) Provide electronic versions of all documents.

3. Project Team

3.1. TEAM ORGANIZATION

COWI will manage the CMT contract with IRWD and be the single point of accountability for that role. Together, COWI and Gannett Fleming will integrate fully at the CMT level, working together to perform the scope of services. We have strategically selected 5 additional subconsultants to enhance our CMT for this project. We have a long-standing history with many of these firms, and have proven to be valuable partners who bring significant and relevant experience, proximity, and quality services.

The COWI-Gannett Fleming Team has worked in California since the 1980s. Our commitment and dedication to California communities deepened when COWI opened its Oakland office in 1988 and Gannett Fleming opened its first office in the state 1989. This presence has grown to include 290+ employees across 10 offices throughout the state. 50+ of these individuals have dedicated their careers to construction management and inspection. With COWI's additional 50 Oakland employees and the local support from our subconsultants, we offer the total spectrum of CM services for clients when it comes to their water supply needs.

The success of this Project will rely on the leadership of its Project Leadership and specialized expertise of its CM staff. Our CMT will provide a construction management approach that considers the urban environment, site access and constraints, the environmental conditions of the site, cost, and dam safety. We will work in concert with the District and other stakeholders to construct safe, cost-effective improvements within budget and schedule requirements.

- COWI/GANNETT FLEMING
- IRVINE RANCH WATER DISTRICT
- SUBCONSULTANTS
- SYPHON RESERVOIR

20+
OFFICES
IN ORANGE COUNTY

STAFF LESS THAN
8
MILES
FROM SYPHON RESERVOIR

3.1.1. JV Partnership

COWI and Gannett Fleming have a successful track record of providing design and CM services to local clients. During our 20-year history of collaborating, we have worked together on more than 15 major projects, supporting clients including BART, NYCDEP, Con Edison, and Amtrak. Our firms share a similar vision: to build stronger infrastructure and, as a result, even stronger communities. This Project is seeks to do just that, and we are eager to be part of that story. ***By joining together, COWI and Gannett Fleming bring double the resources, construction management expertise, responsiveness, and commitment to the success of this project.***

COWI

Firm Name: COWI

Covered Scope: Project Management, Preconstruction Services, Constructability Review, Bid Support, Contract Management, QA, Resident Engineering

Why COWI?

- Nearly 4 decades of experience supporting dam, spillway, water tunnel, locks and gate systems, intake and outlet structures, and fish passage facility projects in California
- Established relationships with DSOD and FERC through numerous dam and spillway projects in recent years to efficiently navigate regulatory compliance through construction completion
- A trusted partner to federal, state, and municipal agencies clients in California and along the West Coast

GANNETT FLEMING

Firm Name: Gannett Fleming, Inc.

Covered Scope: Project Management, Preconstruction Services, Constructability Review, Bid Support, Risk Management, CM, Safety, Claims, Contract Management, Inspections

Why Gannett Fleming?

- National expertise managing large-scale construction projects for dams, reservoirs, and other water infrastructure
- Local Construction Manager and support staff to provide robust, responsive construction services in support of IRWD milestones
- Extensive geographic and regulatory knowledge required to perform construction services in California
- Proven expertise as underscored by their Engineering News-Record's Top Design Firms Ranking in Dams and Reservoirs category (#10) and many dam rehabilitation national awards

COWI | GANNETT FLEMING

20+
Year History of Collaboration

40+
Years working in California

145+
Years working on dams

900+
Dam Improvement Projects

100+
Dam CM Projects

Table 3.1-1. COWI and Gannett Fleming Relevant Project Experience.

PROJECT NAME, LOCATION, CLIENT	YEAR COMPLETED	RELEVANT PROJECT CHARACTERISTICS: SCOPE OF WORK: FINAL DESIGN REVIEW	BID PHASE SUPPORT	CONSTRUCTION MANAGEMENT	CONSTRUCTION INSPECTIONS	CM QUALITY ASSURANCE	RISK	MATERIALS TESTING/ SPECIAL INSPECTIONS	I&C	STRUCTURAL/ MECHANICAL	ENVIRONMENTAL IMPACTS /COMPLIANCE	PROJECT CONTROLS	PUBLIC RELATIONS	DSOD OR EQUIV. COORDINATION	UNIQUE FEATURES: DAM EXCAVATION	DAM GROUTING	DAM CONSTRUCTION	INLET/OULET CONSTRUCTION	TREATMENT FACILITY CONSTRUCTION	SPILLWAY CONSTRUCTION	EARTHEN DAM	URBAN SETTING	NOISE CONTROL	TRAFFIC CONTROL	DUST CONTROL
Anderson Dam Tunnel Project, CA, *Valley Water*	Ongoing	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●
Howard Hanson Dam and Fish Passage, WA, *USACE, Seattle District*	Ongoing	●	●		●				●	●								●	●							
Lake Fordyce Dam Seepage Mitigation, Confidential Location, *Confidential Client*	Ongoing	●	●	●	●		●		●			●		●		●	●	●								
C-43 West Basin Storage Reservoir Construction Support Services, Hendry County, FL, *South Florida Water Management District*	Ongoing			●	●	●		●				●						●	●		●	●				
Lake Williams Dam Rehabilitation, York County, PA, *York Water Company*	2023	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●		●	●		●	●	●
C.W. Bill Young Reservoir Renovation, Tampa, FL, *Tampa Bay Water*	2023	●	●	●	●	●	●		●	●	●	●		●		●	●	●	●	●	●	●		●	●	●
Dredging of Flushing Bay, NY, *New York City Department of Environmental Protection (NYCDEP)*	2022	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●				●	●	●	●		●
Briones Reservoir Intake Tower, CA, *East Bay Municipal Utility District (EBMUD)*	2021	●	●		●					●				●			●	●					●	●		
Gene Wash & Copper Basin Dam, CA, *Metropolitan Water District*	2021	●	●	●	●				●	●				●				●	●							
Chickamauga Cofferdam, TN, *USACE / Tennessee Valley Authority (TVA)*	2021	●		●	●	●		●		●				●		●	●					●				
Gilboa Dam Reconstruction, New York, NY, *NYCDEP*	2020	●	●		●					●		●				●	●	●								
Lafayette Reservoir Outlet Tower, CA, *EBMUD*	2020	●	●		●					●				●			●	●					●	●		
Olmstead Locks and Dam, OH, *USACE, Louisville District*	2020	●	●							●																
Orovile Dam Spillway Recovery CA, *CA DWR*	2019	●								●							●			●	●	●				
Isabella Lake Dam Safety Modifications, Kern County, CA, *USACE, Sacramento District*	2018				●											●		●								
Tempe Town Lake Dam Replacement, Tempe, AZ, *City of Tempe*	2018	●	●	●	●				●	●	●								●		●			●	●	●
Bel Air Reservoir Impoundment, Bel Air, MD, *Maryland American Water (MAW)*	2018	●	●	●	●	●			●	●	●	●		●			●	●	●	●	●	●				
Buckeye Lake Dam Improvements, Licking County, OH, *Ohio Department of Natural Resources*	2018	●	●	●	●	●	●		●	●	●	●		●			●	●				●				
Chabot Dam Seismic Upgrade, CA, *EBMUD*	2018	●	●						●	●				●					●		●					
Folsom Dam Auxilliary Spillway, CA, *USACE / U.S. Bureau of Reclamation (USBR)*	2017	●	●		●	●		●		●		●				●		●		●	●	●	●	●	●	●
Ruskin Dam Modifications, BC, *BC Hydro*	2015	●			●					●				●				●		●						
Braddock Dam Gated Spillway, PA, *USACE / USBR*	2015	●	●		●					●				●			●	●								
San Vicente Dam, CA, *San Diego County Water Authority (SDCWA)*	2014	●			●					●									●							
Nesbitt Dam Rehabilitation, Spring Brook, PA, *Pennsylvania American Water Company (PAWC)*	2011	●	●	●	●			●	●	●	●	●		●				●			●	●				
Hunting Run Dam, Motts Run Dam, Motts Run WTP, and Rappahannock River Intake, Spotsylvania County, VA, *Spotsylvania County Utilities Department*	2004	●	●	●	●			●	●	●	●	●		●	●	●	●	●	●	●	●	●				

3.1.2. Subconsultants

To provide responsive, high-quality service to IRWD, our CMT has enlisted the support of 5 subconsultants to leverage the right talent, experience, and resources for this next phase of this Project. Ardurra, CAPO, and RMA Companies will provide capacity in the areas of public engagement, field inspections, civil engineering, and project controls. Our two specialty subconsultants, Ninyo & Moore and Psomas, will provide specialized expertise in special inspections/materials testing and surveying. We have a long-standing history with many of these firms, and have proven to be valuable partners who bring significant and relevant experience, proximity, and quality services. This Team provides redundancy in scope areas, making sure we have ample coverage and resources. Most of our subconsultants have offices within IRWD's territory and have the local experience needed to successfully execute the services under this contract. A summary of our subconsultant's qualifications are listed below. Staff qualifications are included in **Section 3.2.b. Personnel Capabilities**.

5 Subconsultants

60+ Projects with IRWD

20+ Projects with COWI and/or Gannett Fleming

300+ Resources Local to Orange County

ARDURRA

Firm Name: Ardurra

Local Office: 1960 East Grand Avenue, Suite 300, El Segundo, CA 90245

Primary Role: Public Relations; Labor Compliance

Why Ardurra?

- 10+ years of experience providing labor compliance for capital improvement projects with various funding sources
- Routinely partners with COWI and Gannett Fleming, bringing an ease of collaboration throughout the project lifecycle
- Directly supports public outreach for significant water infrastructure projects in the region, including the SDCWA's Emergency Storage Project (Olivenhain Dam and San Vicente Dam Raise)

Relevant Projects

- On-Call Public Works/Capital Improvement Program, IRWD
- Sewer Facilities and Access Improvements at the Woods, IRWD
- San Vincente Dam Raise, partnered with COWI
- Rincon Del Diablo Municipal Water District PDB for new Administration and Maintenance Building, partnered with Gannett Fleming

CAPO PROJECTS GROUP

Firm Name: CAPO

Local Office: 942 Calle Negocio # 300, San Clemente, CA 92673

Primary Role: Project Controls - Cost/Schedule Management/Bid Support

Why Capo?

- Contributed to hundreds of large-scale civil, infrastructure, and commercial construction projects nationwide
- Provides experts in critical and sub-critical path analysis, constructability evaluation, time, cost and construction sequence examination
- Helps clients like IRWD understand and manage complex construction schedules and earned value cost reporting
- Employs delay claims mitigation and analysis experts to help verify project impacts are understood and mitigated proactively

Relevant Projects

- San Vincente Dam Raise, partnered with COWI
- Trampas Canyon Dam & Reservoir
- Chimney Hollow Reservoir
- Pipestem Spillway Modification

RMA Group

Firm Name: RMA Companies

Local Office: 12130 Santa Margarita Court, Rancho Cucamonga, CA 91730

Primary Role: QA Inspections; Safety Management

Why RMA?

- 60+ years of experience supporting clients across California with geotechnical, materials testing, and special inspection services in support of critical infrastructure projects
- 250+ multi-certified materials technicians and licensed engineering professionals within California
- Rancho Cucamonga location maintains full-service, nationally-accredited materials laboratories that can perform necessary tests required (~35 minutes from Syphon Reservoir)
- Provides comprehensive digital reporting by using iPads in the field and their Testing and Inspection Management (TIMS)™ application

Relevant Projects

- Dam and Leveel Safety Advisor Engineering On-Call, partnered with Gannett Fleming
- CM/I Services for Francis Scott Key Bridge Reconstruction, partnered with Gannett Fleming

Ninyo & Moore

Firm Name: Ninyo & Moore

Local Offices:
475 Goddard, Suite 200, Irvine, CA 92618
7888 Cherry Avenue, Unit I, Fontana, CA 92336

Primary Role: Special Inspections, Materials Testing

Why Ninyo & Moore?

- Deep understanding of IRWD processes, having worked with the District since 2000
- Previous experience with construction observation and materials testing at the Syphon Reservoir project site
- Successfully completed work on hundreds of dam, reservoir, W/WWTPs, trunk sewer, lift and pump station, storm drain, sewers, recycled water, and pipeline projects throughout California

Relevant Projects

- 65+ projects with IRWD, including geotechnical investigations at Syphon Reservoir, geotechnical support at San Joaquin Reservoir, and materials testing at Fleming Reservoir
- Laboratory testing and field inspections for the Oroville Spillway Emergency Recovery for California Department of Water Resource (DWR)

PSOMAS

Firm Name: Psomas

Local Office: 1650 Spruce Street, Suite 400, Riverside, CA 92507

Primary Role: Surveying

Why Psomas?

- 70+ assignments with IRWD, including work on the Santiago Creek Dam Outlet Tower and Spillway Project
- Advanced technological capabilities, including 3D laser scanning, FAA Certified Remote Pilots for small Unmanned Aerial Systems, and subsurface utility detection services
- Deep bench of 190+ surveying, GIS, and photogrammetric staff firmwide

Relevant Projects

- Pipeline Replacement along El Cariso Trail Construction Management for Elsinore Valley Municipal Water District (EVMWD), partnered with Gannett Fleming
- Septic to Sewer Conversion for EVMWD, partnered with Gannett Fleming
- Regulatory Permitting for the Santiago Creek Dam Outlet Tower and Spillway Improvement Project for IRWD

3.1.3. CMT Organizational Structure for Successful Project Delivery

We approach the Project with the same sense of ownership and attention to detail as we would a project owner. **CM Project Manager Arun Parsons, PE, CCM** will be responsible for the performance of our Team, establishing priorities and strategic objectives during scope planning, evaluating staff assignments and workload, and managing resources for the duration of the contract. He will work closely with IRWD to oversee the schedule, budget, and quality of this project, and committed to be in Orange County as the project requires.

Construction Manager Chris Fowler will serve as a secondary point of contact for IRWD, supporting Arun with day-to-day project oversight as he will be in Orange County full-time. He will oversee tasks and deliverables associated with each phase, which will then be filtered up through Arun.

Project Principals Jack Gerwick, PE (COWI) and **Ed Durazo** (Gannett Fleming) will make sure schedules and budgets are in alignment with IRWD's overall goals.

Our proposed organizational structure is presented in the following organizational charts: **(1)** Final Design and Bid Phase, and **(2)** Construction.

A schedule showing the anticipated hours each team member will contribute to the project during the various phases of work can be found in **Section 1.5**.

Organizational Guiding Principles

Set a foundation for longevity and stability.

Our key leads across the board have the career-capacity, local affiliation, and commitment to see the project through to completion. We have also assigned deputies for each key role, so that if turnover does occur the team maintains stability and functionality. In such a situation, the deputy would either be promoted to the vacant role or fill it temporarily until a permanent replacement is found, based on discussion with IRWD.

Free the CM to Focus on the Job.

Our CM Project Manager and Principals-in-Charge will work closely with IRWD's CM Contract Manager to manage the CM contract, allowing our CM to focus on working with IRWD's Project Management Team, managing the CMT and delivering the construction project.

Keep "heads up."

We have provided strong discipline leads for functional areas so the Construction Manager can "keep their head up", maintaining a full view of the project, anticipating issues, and coordinating the team to stay ahead of the project curve. Similarly, we have assigned subordinate task leads within functional areas to spread the load of organization and administration, allowing key team members to "keep their heads up" and provide effective leadership.

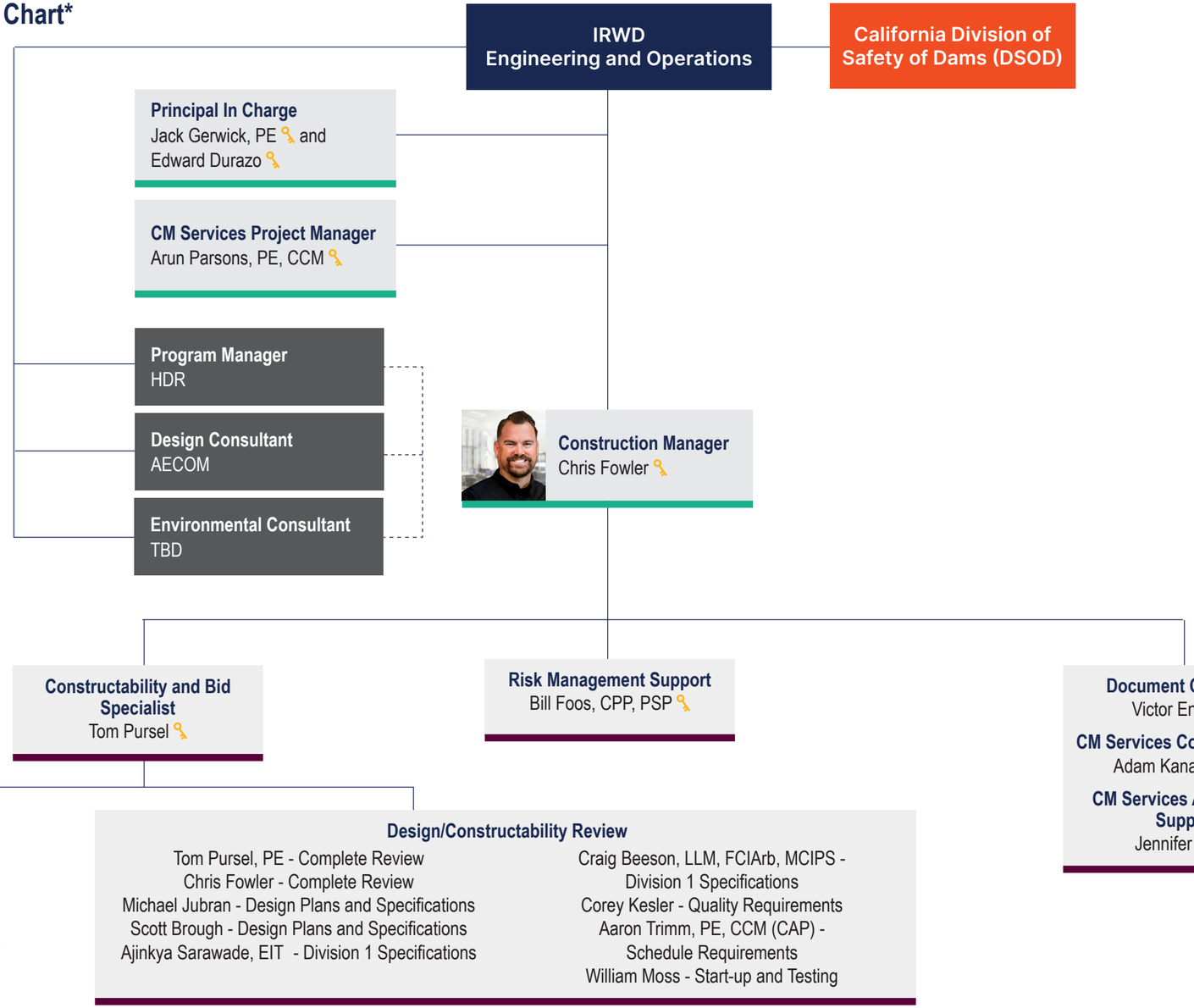
No Slow Shifts.

We have assigned experienced and responsible team members to oversee all work shift activities. **Resident Engineer Mike Jubran** brings 40 years of large dam construction experience in CA and globally, and has the experience to deal appropriately with issues as they arise to keep the work moving (or exercise stop-work authority).

Know where the "bench" is.

Our organizational charts include back-up staff to demonstrate our team's bench strength, for example in the areas of contract administration, resident engineering, and field inspection where the project may require additional resource. Our team can also bring additional resources to bear beyond those shown on the charts. We commit that a lack of CM resources will never be a hinderance for the Project.

Final Design and Bid Phase Organizational Chart*



*All Final Design and Bid Phase tasks will be performed off-site.

LEGEND

- IRWD
- Regulator
- Other City Consultants
- CM Team: Management
- CM Team: Preconstruction Services
- CM Team: Resident Engineering
- CM Team: Quality Assurance
- CM Team: Specialty Support Services
- Solid lines represent authority and reporting structure
- Dashed lines represent lines of communication only not authority or reporting
- Key Personnel

(ARD) - Ardurra
(CAP) - CAPO
(RMA) - RMA Companies
(N&M) - Ninyo & Moore
(PSM) - Psomas

Construction Organizational Chart

IRWD
Engineering and Operations

California Division of Safety of Dams (DSOD)

Principal In Charge
Jack Gerwick, PE and
Edward Durazo

CM Services Project Manager
Arun Parsons, PE, CCM

Program Manager
HDR

Design Consultant
AECOM

Environmental Consultant
TBD

Construction Manager
Chris Fowler

★ Full-Time On-Site Staff

Construction Contract Manager
★ Ajinkya Sarawade, EIT*

Scheduler
Autumn Hall (CAP)
Aaron Trimm, PE, CCM (CAP)

Cost Estimator
Trevor Kroesch (CAP)

Cost Engineers
Jason Dong
★ Adam Kanaan, PMP
Omkar Thombare

Document Controller
Victor Enriquez*

CM Services Accounting Support
Jennifer Kegel

Grant Funding and Labor Compliance Support
Jennifer Saldivar
Erica Berger (ARD)

Resident Engineer
★ Michael Jubran*

Assistant REs
Thomas Michael*
★ William Moss*

AutoCAD Technician
Noel Fortez

Quality Assurance Manager
★ Corey Kesler*

CM Safety Manager
Robert Nunez (RMA)

Risk Management Support
Bill Foos, CPP, PSP

Claims Support
Craig Beeson, LLM, FCIArb, MCIPS

Technical Advisors
Scott Brough
Tom Pursel, PE
Aaron Trimm, PE, CCM (CAP)

INSPECTIONS, SPECIAL INSPECTIONS, SURVEYING & MATERIALS TESTING

Chief Inspector
★ Juan Le Roy*

Inspectors
Slawek Dymerski, PE, GE (RMA)
Johnny Rodriguez, PE (RMA)
Jim Bishop (RMA)
Bruce Fike* (RMA)
Tyler Witte* (RMA)
Richard Staal* (RMA)
Paul Medina, ICC* (N&M)
Steve Eck* (N&M)

General Civil, ME&P
Steven Brown*
Matthew Jacobs (N&M)
Garreth Saiki, PE, GE (N&M)

Electrical/ I&C/ Cathodic
William Moss*

Geotechnical, Geology & Foundation Grouting
Adriana Paucean, PEng*
Eric Hackenberg, PG*
Tino Rodriguez (N&M)
Andy Rodriguez (N&M)
Michael Putt, PG, CEG (N&M)

Concrete
Matthew Jacobs (N&M)
Tino Rodriguez (N&M)
Andy Rodriguez (N&M)
Garreth Saiki, PE, GE (N&M)

Structural
Andy Rodriguez (N&M)
Garreth Saiki, PE, GE (N&M)

Welding
Robert Ritter (N&M)

Coatings
Aurelio Corral (RMA)
Jeff Dollarhide (RMA)

Startup Coordinator
William Moss*

Construction Materials Testing
Tino Rodriguez (N&M)
Andy Rodriguez (N&M)

QA Field Surveying
Will Estepa, PLS* (PSM)

LEGEND

- IRWD
- Regulator
- Other City Consultants
- CM Team: Management
- CM Team: Preconstruction Services
- CM Team: Resident Engineering
- CM Team: Quality Assurance
- CM Team: Specialty Support Services
- Solid lines represent authority and reporting structure
- Dashed lines represent lines of communication only not authority or reporting
- Key Personnel
- * - On-site Personnel, to be scheduled as appropriate for specific duties

(ARD) - Ardurra
(CAP) - CAPO
(RMA) - RMA Companies
(N&M) - Ninyo & Moore
(PSM) - Psomas

3.2. PERSONNEL CAPABILITIES

Working closely with IRWD staff, the COWI-Gannett Fleming Team will leverage its extensive local construction management experience and national award-winning reservoir expertise to reliably execute the construction of Syphon Reservoir – on time and within budget. This Team covers the necessary aspects of constructing reservoir improvements. COWI and Gannett Fleming have a long, successful history of partnering and teaming together on similar projects, including NYCDEP's Gilboa Dam Reconstruction. This ease of communication and coordination on large-scale civil works projects will translate to the Project, benefiting IRWD with a leadership team that has mutual respect, is well-established, and knows what it takes to get the job done.

3.2.1. Key Personnel

IRWD needs a leadership team to take full initiative and ownership of these construction improvements — from multi-agency coordination requirements to environmental compliance to project cost control — with support from experienced staff and approval from you and key stakeholders. Our CMT strives to deliver construction solutions that are technically sound, of high quality, and provide the best value. In collaboration with our clients, we develop solutions that minimize risk, extend the service life of facilities, and minimize maintenance and operation costs and efforts while maximizing the use of available funds. This approach is dependent on key personnel involvement from project start to completion.

As the CM Project Manager, Arun Parsons, PE, CCM will serve as the project leader and primary point of contact. Arun understands the challenges and intricacies inherent to a project of this scale and complexity, bringing a successful track record managing hundreds of staff, addressing technical intricacies, and controlling costs for similar programs.

Construction Manager Chris Fowler will approach this Project through a constructability lens, having worked as a former Contractor with IRWD on several projects. He brings more than 20 years of experience in heavy civil construction, which includes project operations and general management experience for both public works and private sector projects throughout California. This perspective allows Chris to stay two steps ahead of contractors when tackling technical and schedule challenges, and will serve as an asset to tackling project issues and maintaining schedule.

We offer to IRWD the benefit of two Principals-in-Charge to make sure both COWI and Gannett Fleming are maintaining open collaboration, instilling strategic leadership, mobilizing critical resources, and verifying the highest standards of quality and efficiency in project delivery. Jack Gerwick brings two decades of expertise in heavy-civil infrastructure projects, having started his career at a construction firm before progressing through various engineering roles to his current position as Senior Vice President and Senior Market Director at COWI. Ed Durazo has worn many hats throughout his 30+-year career: contractor, project/construction manager, contract manager, and QA oversight for dozens of water/wastewater projects. He has a proven track record delivering comprehensive, well-defined CM approaches to clients across Southern California.

Together, this leadership team will oversee ***14 other committed key personnel as well as a dedicated pool of more than 30 professionals***, with expertise to provide practical, responsive solutions throughout the contract.

The following pages highlight our key personnel's qualifications and experience. Resumes for these individuals are included at the end of this section under **3.3. Key Personnel Resumes**. A summary of qualifications for team members can be found under **3.2.b. CMT Staff Qualifications**.

The Syphon Reservoir Improvements project is our priority. While our key personnel and support staff may have other active/pending dam projects, ***we are available*** to hit the ground running and ***committed to the success*** of this construction project.

CM Management Team

ARUN PARSONS, PE, CCM

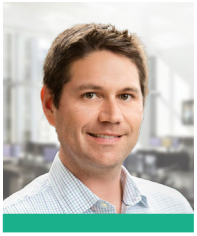
CM Services Project Manager

- 23+ years of experience performing construction management and project management for heavy-civil public-works projects
- 12 years focusing on the delivery of large dams and water resources projects in California, bringing a deep understanding and proven track record of state regulation/compliance
- Proven success managing large-scale water infrastructure CM programs, including the 8-year, $823M Calaveras Dam Replacement Project
- Regularly manages and coordinates the performance of subconsultants, including 10 during construction of Calaveras Dam (~$86M CM fee)
- Project management and construction management roles on numerous other California dams including Alameda Creek Diversion Dam, Oroville Dam, Anderson Dam Tunnel, and Los Vaqueros Dam

CHRIS FOWLER

Construction Manager

- Lives locally in Chino Hills, just a 30-minute drive from the Syphon Dam site, allowing Chris to be fully present and engaged for the project duration, and available at all times to respond to emergencies
- 20+ years of experience in public works construction projects in Orange County, including several projects valued at more than $100M
- Deep knowledge of the local construction environment, including labor laws, resource availability, traffic patterns, City and County ordinances, material suppliers and hauling routes
- Served as Contractor on several projects with IRWD, bringing an understanding of IRWD's expectations and processes for construction projects, as well as local knowledge as a resident of the Chino Hills community
- Extensive background in trenchless construction methods, including micro-tunneling, pipe ramming, HDPE slip lining, CIPP, and pipe bursting, with a track record of successfully managing complex underground installations
- Managed projects requiring advanced tunneling techniques, including micro-tunneling and jack & bore installations, verifying precision in execution and overcoming groundwater and soil challenges
- Manages and oversees earthmoving operations, grading, trenching, backfill, and compaction, as well as working with reinforced concrete structures, junction boxes, storm drains, pump stations, and large-diameter pipelines for major infrastructure projects



JACK GERWICK, PE

Principal-in-Charge

- 23+ years of expertise in heavy-civil infrastructure project with extensive experience in construction management and design of dams, bridges, and flood protection systems
- Served as Principal-in-Charge on significant infrastructure projects, including the Anderson Dam Tunnel Project, overseeing contract management, staffing, and service delivery
- Strong background in construction management and engineering design, verifying practical, constructible solutions for large-scale infrastructure projects, such as the Gene Wash and Copper Basin Reservoir rehabilitations

ED DURAZO

Principal-in-Charge

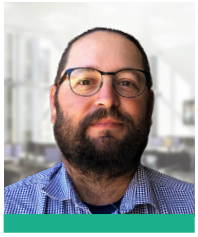
- 30+ years of experience in the water/wastewater industry, serving as a contractor, project/ construction manager, contract manager, and providing quality assurance oversight
- Led multiple large-scale infrastructure projects across Southern California, overseeing contract administration, construction management, inspection, utility coordination, and project closeouts
- Managed high-value infrastructure programs, including a $100M capital improvement program and a $150M micro-tunneling project, verifying adherence to quality, schedule, and budget
- Developed and maintained strategic relationships with public agencies, utility authorities, and industry stakeholders to support long-term growth in the construction management sector

Resident Engineering

MIKE JUBRAN

Resident Engineer

- Resident Engineer on 35+ dam projects across the U.S. and internationally, covering embankment, concrete, RCC, rockfill, and asphaltic core dams including several dams in CA overseen by DSOD
- RE for the San Vincente Dam Raise, Oroville Spillways Recovery, and currently for the Anderson Dam Tunnel Project, which will be complete in 2025
- Senior advisor on major projects like the Anderson Dam Tunnel Project and the Oroville Spillways Recovery, overseeing contract management, quality control, environmental compliance, and risk management
- Managed submittals, RFIs, design changes, and regulatory coordination for projects like the San Vicente Dam Raise, verifying compliance with oversight agencies such as DSOD
- Played a key role in the construction of critical infrastructure, such as supervising the placement of more than 1 million cubic yards of concrete for the Oroville Spillways and leading field inspections for conformance to contract requirements



THOMAS MICHAEL

Assistant Resident Engineer - Outlet Works

- Provided resident and assistant resident engineering services for 5+ major dam, reservoir, and spillway projects, verifying compliance with construction and regulatory standards
- Supported the Oroville Dam Emergency Response, coordinating testing and inspection for the Flood Control Outlet Spillway reconstruction under an expedited schedule
- Managed field inspections, submittal reviews, and quality control for major water resource projects, veifying safe and efficient execution of critical infrastructure improvements
- 20+ years of expertise in resident engineering, construction inspection, and contract administration for dams, reservoirs, spillways, and water treatment facilities, verifying structural integrity, environmental compliance, and quality control throughout project phases

WILLIAM MOSS, CCM

Startup Coordinator and Assistant Resident Engineer - WTP

- 6+ years of experience as an electrical field engineer, startup coordinator and electrical inspector for water treatment facilities, flow control facilities and desalination plants
- Experienced in project management and QA, overseeing procurement, subcontractors, and compliance with design and safety standards
- Skilled in multidisciplinary coordination across electrical, HVAC, fire alarm, security, and fiber optic systems to verify seamless project execution
- Strong technical background in industrial automation and facility optimization, including large-scale system upgrades and logistics improvements

Construction Contract Administration

AJINKYA SARAWADE

Construction Contract Manager

- Expertise in managing construction contracts, verifying project efficiency, and overseeing change management, quality assurance, cost management, and field engineering
- Experienced in budgeting, procurement, payment management, and impact analysis for large-scale water infrastructure projects, including the Anderson Dam Tunnel
- Played a key role in design tracking, cost reporting, and construction execution for projects like the Faraday Repower Project, verifying seamless collaboration among contractors, designers, and stakeholders

AUTUMN HALL

Scheduler

- 8+ years of experience developing and maintaining Critical Path Method (CPM) schedules for heavy civil construction projects, including dams, reservoirs, and WWTPs
- Managed scheduling for multi-million dollar capital improvement projects, including an $800M infrastructure program for Inland Empire Utilities Agency, coordinating 80+ active projects
- Led scheduling efforts for major infrastructure projects, such as the $500M Chimney Hollow Dam, $300M LA World Airport LULEP Program, and $120M SBCTA Mount Vernon Viaduct Project, verifying timely updates, impact assessments, and compliance with project milestones

TREVOR KROESCH

Cost Estimator

- 16+ years of experience in civil construction cost estimating, scheduling, and project controls, verifying project budgets align with expected costs and completion timelines
- Served as Lead Estimator for major infrastructure projects, including the $1.5–$4B Maryland I-495/I-270 PPP, $3.5B Sound Transit Light Rail project, and $1.4B Crenshaw/LAX Transit Corridor Project, analyzing cost structures and value engineering options
- Provided independent cost estimates and constructability analysis for public agencies such as the San Diego County Water Authority, Inland Empire Utilities Agency, and Port of Long Beach, supporting contract negotiations and bid pricing assessments

Quality Management

COREY KESLER

Quality Assurance Manager

- USACE-certified Quality Manager with 31 years of experience constructing public works water projects.
- Extensive experience working with CMT Construction Manager, Chris Fowler.
- Organized, forward-thinking, natural leader with proven effectiveness leading field teams in the execution of large heavy civil projects.
- Constructed numerous dam improvements projects including zoned embankments, concrete spillways, jack and bore pipelines, inlet/outlet works, large gates, fish ladders, cofferdams, and control systems.
- Constructed numerous water treatment plants including pump stations, disinfection, filtration and UV treatment, chemical storage and chemical feed, power and control systems and associated yard piping and sitework.

JUAN LE ROY

Chief Inspector

- USACE-certified Quality Manager with 23 years of experience constructing public works projects in California.
- Proven capabilities in the organization and management of field teams including scheduling of inspections, processing of quality documentation and auditing of internal team processes.
- Extensively experienced and certified in AASHTO, ACI, NICET and Caltrans testing methods and standards.
- Experienced in mobilization of onsite laboratories, training technicians on new procedures, and quality control of reporting.
- Trusted Quality Control Manager for the City of San Diego's Pure Water Program.

Safety Management

ROBERT NUNEZ

CM Safety Manager

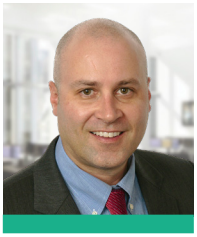
- 15 years of industry experience, including 6 years in Safety Management for heavy civil works in California, with a focus on developing project-specific plans for safety management to meet industry standards and regulations, and developing the necessary systems and approaches for effective implementation.
- Experienced with both internal safety compliance auditing, and site-based safety hazard assessments; and in investigating workplace accidents and incidents, including identifying root causes, implementing corrective actions, and providing report documentation.
- Experienced in creating and conducting safety training classes for both site-specific and corporate applications; and in developing emergency response plans and conducting drills to ensure preparedness for potential emergencies.

Specialty Support Services

TOM PURSEL, PE

Constructability Review Lead and Technical Advisor

- 33+ years overseeing construction, rehabilitation, and upgrade of earth embankment dams, spillways, and water storage reservoirs, verifying regulatory compliance and structural integrity
- In the last 10 years, has led or overseen construction services for 23 dam/reservoir projects, including earth embankments up to 135 feet high and five miles long and reservoir capacities up to 15.5 Bgal
- Led major dam safety and rehabilitation projects, including Nesbitt Dam and Beaverdam Creek Dam, focusing on spillway capacity improvements, seepage mitigation, and RCC armoring
- Provided technical guidance on dam safety compliance, working with agencies like USACE, state water authorities, and environmental regulators to meet industry standards
- Conducted constructability reviews and risk assessments for large water storage facilities, verifying efficient design, cost control, and long-term operational sustainability



SCOTT BROUGH

Contractor Bidding and Technical Advisor

- Applies construction oversight and inspection services from a portfolio of 50+ dam and water supply projects
- Provides expert consultation on dam rehabilitation, spillway modifications, and foundation improvements, addressing seepage, stability, and structural concerns to enhance long-term performance
- Familiar with current dam safety design criteria and experienced in the construction of various projects to address dam safety concerns
- Regularly coordinates with federal, state, and local regulatory agencies and assists with community relations for politically and environmentally sensitive projects

AARON TRIMM

Scheduling Support

- 18+ years of experience in scheduling, construction management, and change order management for major water infrastructure projects, including RCC dams, pump stations, and large-diameter pipelines
- Lead Scheduler for San Vicente Dam Raise Project ($170M) – Managed schedule reviews, forensic schedule analysis, and time impact assessments for the world's tallest RCC dam raise, overseeing 600,000 cubic yards of RCC placement and 1.25 million cubic yards of excavation. Played a key role in legal claims and dispute resolution post-construction
- Experienced in schedule analysis, delay claims, and forensic time impact assessments, supporting both contractors and owners in major water infrastructure and dam projects across California and Colorado

BILL FOOS

Risk Management

- 44+ years specializing in risk assessments, security planning, and emergency response for dams, reservoirs, and spillways, with a strong focus on California projects
- Managed risk and vulnerability assessments for the Oroville Hydropower Water Management Complex, strengthening dam security and emergency preparedness
- Led security compliance and risk mitigation efforts for major California dam systems, including Florence Lake, Shaver Lake Main, Big Creek Dams, Vermillion, and Huntington Dam, verifying FERC and NERC compliance
- Directed EAP exercises for multiple California water districts, coordinating multi-agency emergency response drills for dam failure and flood risk scenarios

CRAIG BEESON

Claims Manager

- 26+ years of experience handling claims, contract administration, and dispute resolution for large-scale water, marine, and bridge projects, verifying fair settlements and risk mitigation
- Provided claims oversight and negotiation leadership for the Anderson Dam Tunnel Project, assessing contractor variations, drafting position papers, and representing the owner in DRB hearings
- As Commercial Director for the New Fraser River Tunnel and Mt. Vernon Viaduct projects, led contract administration, claim assessments, and resolution strategies, verifying compliance with best practices and dispute avoidance measures
- Experienced in handling claims under FIDIC, NEC3/NEC4, JCT, and bespoke contracts, using expertise in arbitration, expert witness roles, and contract law to resolve complex disputes efficiently

REBECCA COLE

Director, Community Relations

- 26 years of communications experience, comprising managing public affairs and community relations programs for infrastructure improvement programs, including developing and implementing award-winning public affairs programs for local governmental agencies across Southern California.
- Specializes in public outreach in water projects—including drinking, recycled, wastewater, Indirect Potable Reuse, emergency water storage and conservation—involving collaboration with government agencies and cities to navigate the changing landscape of our desert region.
- Managed public relations for the the $832M Emergency Storage Project for San Diego County Water Authority, including a system of reservoirs, pipelines and pump stations to facilitate water availability in the event of a natural disaster; managed the public affairs for the EIR-EIS and construction relations.
- Is currently managing the East County Advanced Water Purification (AWP) Project for Padre Dam MWD, leading the public outreach team to build support and manage construction relations for the Project; managed the project's award-winning groundbreaking and ribbon cutting events.

3.2.2. CMT Staff Qualifications

Our CMT has selected the following personnel based on their relevant project experience, specific technical skills and expertise, and availability to contribute to Syphon Reservoir's success. A schedule showing the hours each team member will contribute across each phase of the project has been included with our larger staffing discussion under **Section 1**.
A summary of CMT personnel qualifications can be found below and on the following pages in **Table 3.2-1**.

A schedule detailing the number of hours each proposed team member will contribute during the various phases of work has been included within our larger staffing discussion under Section 1.

Table 3.2.-1. Personnel Capabilities.

NAME / ROLE / FIRM	YEARS OF EXPERIENCE	APPLICABLE REGISTRATIONS	STAFF QUALIFICATIONS: CAPABILITIES: FINAL DESIGN REVIEW	BID PHASE SUPPORT	CONSTRUCTION MANAGEMENT	CONSTRUCTION INSPECTIONS	CM QUALITY ASSURANCE	RISK	MATERIALS TESTING/ SPECIAL INSPECTIONS	I&C	STRUCTURAL/MECHANICAL	ENVIRONMENTAL IMPACTS / COMPLIANCE	PROJECT CONTROLS	PUBLIC RELATIONS	DSOD OR EQUIV. COORDINATION	PROJECT EXPERIENCE: DAM EXCAVATION	DAM GROUTING	DAM CONSTRUCTION	INLET/OULET CONSTRUCTION	TREATMENT FACILITY CONSTRUCTION	SPILLWAY CONSTRUCTION	EARTHEN DAM	URBAN SETTING	NOISE CONTROL	TRAFFIC CONTROL	DUST CONTROL	TIME COMMITTED: NUMBER OF MONTHS ENGAGED	PERCENTAGE OF TIME COMMITTED DURING INVOLVEMENT*
Arun Parsons / CM Services Project Manager / COWI	23	PE CCM	●	●	●		●	●				●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	69	25
Chris Fowler / Construction Manager / Gannett Fleming	20		●	●	●	●	●	●					●	●	●				●	●	●		●	●	●	●	●	69	100
Edward Durazo / Principal-in-Charge / Gannett Fleming	31		●	●	●	●	●								●					●			●					69	N/A
Jack Gerwick / Principal-in-Charge / COWI	23	PE	●	●	●		●	●			●				●			●	●		●		●					69	N/A
Ajinkya Sarawade / Construction Contract Manager / COWI	10	EIT	●	●	●	●	●	●	●		●	●	●		●				●	●	●	●	●	●	●	●	●	69	100
Michael Jubran / Resident Engineer / COWI	38		●		●	●	●	●	●				●		●	●	●	●	●		●	●	●	●	●	●	●	69	100
Juan Le Roy / Chief Inspector / Gannett Fleming	23		●		●	●	●		●	●	●	●						●	●	●		●	●	●	●	●	●	60	100
Robert Nunez / CM Safety Manager / RMA	15		●		●			●																●	●	●		60	50
Bill Foos / Risk Management Support / Gannett Fleming	44	CPP PSP						●		●	●	●								●			●					Optional	N/A
Craig Beeson / Claims Support / COWI	26	FCIARB MCIPS ICIOB LLM MBA		●	●			●					●						●	●		●						60	6

** For additional details on proposed staffing levels, please see Section 1.*

Table 3.2.-1. Personnel Capabilities continued.

NAME / ROLE / FIRM	YEARS OF EXPERIENCE	APPLICABLE REGISTRATIONS	STAFF QUALIFICATIONS: CAPABILITIES: FINAL DESIGN REVIEW	BID PHASE SUPPORT	CONSTRUCTION MANAGEMENT	CONSTRUCTION INSPECTIONS	CM QUALITY ASSURANCE	RISK	MATERIALS TESTING/ SPECIAL INSPECTIONS	I&C	STRUCTURAL/MECHANICAL	ENVIRONMENTAL IMPACTS / COMPLIANCE	PROJECT CONTROLS	PUBLIC RELATIONS	DSOD OR EQUIV. COORDINATION	STAFF QUALIFICATIONS: PROJECT EXPERIENCE: DAM EXCAVATION	DAM GROUTING	DAM CONSTRUCTION	INLET/OULET CONSTRUCTION	TREATMENT FACILITY CONSTRUCTION	SPILLWAY CONSTRUCTION	EARTHEN DAM	URBAN SETTING	NOISE CONTROL	TRAFFIC CONTROL	DUST CONTROL	TIME COMMITTED: NUMBER OF MONTHS ENGAGED	PERCENTAGE OF TIME COMMITTED DURING INVOLVEMENT*
Scott Brough / Contractor Bidding Support / Gannett Fleming	25		●	●	●	●	●	●		●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	1	12
Tom Pursel / Constructability and Bid Specialist / Gannett Fleming	33	PE		●	●	●	●	●		●		●	●	●	●	●	●	●	●	●	●	●	●	●	●		7	19
Aaron Trimm / Technical Advisor (Scheduling) / CAPO	15	PE: CA CCM	●	●	●	●	●	●					●			●	●	●	●	●	●	●	●	●	●	●	62	6
Yolanda Art / Public Relations / Ardurra	18													●													60	12
Autumn Hall / Scheduler / CAPO	8			●	●								●			●	●	●	●	●	●	●	●	●	●	●	60	44
Trevor Kroesch / Cost Estimator / CAPO	15		●	●	●			●			●		●			●	●	●	●	●	●	●	●	●	●	●	57	33
Jason Dong / Cost Engineer / COWI	6	EIT	●		●	●	●				●				●	●			●		●	●	●	●	●	●	60	100
Adam Kanaan / CM Services Contract Admin / COWI	11	PMP			●			●					●	●	●	●			●		●	●	●	●	●	●	69	100
Omkar Thombare / Cost Engineer / COWI	10		●		●	●	●				●					●				●	●	●	●	●	●	●	0	0
Victor Enriquez / Document Controller / COWI	34	QSP		●	●	●	●		●		●		●		●	●			●		●	●	●	●	●	●	64	100
Jennifer Kegel / CM Services Accounting Support / COWI	18				●								●														69	5
Jennifer Saldivar / Grant Funding / Gannett Fleming	23				●	●	●						●							●				●			Backup	N/A
Erica Berger / Labor Compliance Admin / Ardurra	5												●														Backup	N/A
Thomas Michael / Assistant Resident Engineer / Gannett Fleming	20			●	●	●	●			●	●	●							●			●				●	23	100
William Moss / Assistant Resident Engineer / Startup Coordinator / Gannett Fleming	6	CCM				●	●																				31	100

** For additional details on proposed staffing levels, please see Section 1.*

Table 3.2.-1. Personnel Capabilities continued.

NAME / ROLE / FIRM	YEARS OF EXPERIENCE	APPLICABLE REGISTRATIONS	STAFF QUALIFICATIONS: CAPABILITIES: FINAL DESIGN REVIEW	BID PHASE SUPPORT	CONSTRUCTION MANAGEMENT	CONSTRUCTION INSPECTIONS	CM QUALITY ASSURANCE	RISK	MATERIALS TESTING/ SPECIAL INSPECTIONS	I&C	STRUCTURAL/MECHANICAL	ENVIRONMENTAL IMPACTS / COMPLIANCE	PROJECT CONTROLS	PUBLIC RELATIONS	DSOD OR EQUIV. COORDINATION	STAFF QUALIFICATIONS: PROJECT EXPERIENCE: DAM EXCAVATION	DAM GROUTING	DAM CONSTRUCTION	INLET/OULET CONSTRUCTION	TREATMENT FACILITY CONSTRUCTION	SPILLWAY CONSTRUCTION	EARTHEN DAM	URBAN SETTING	NOISE CONTROL	TRAFFIC CONTROL	DUST CONTROL	TIME COMMITTED: NUMBER OF MONTHS ENGAGED	PERCENTAGE OF TIME COMMITTED DURING INVOLVEMENT*
Noel Fortez / AutoCAD Technician / COWI	34		●		●											●		●	●		●	●	●				2	47
Corey Kesler / QA Manager / Gannett Fleming	31		●		●	●	●		●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	60	100
Slawek Dymerski / Inspector / RMA	31	PE: CA GE: CA			●	●		●	●										●	●	●							Backup	N/A
Johnny Rodriguez / Inspector / RMA	7	PE: CA			●	●		●	●										●	●	●							Backup	N/A
Jim Bishop / Inspector / RMA	20+				●	●		●	●										●	●	●	●						Backup	N/A
Bruce Fike / Inspector / RMA	10					●			●										●	●	●	●			●			Backup	N/A
Tyler Witte / Inspector / RMA	10+					●			●										●	●	●	●						Backup	N/A
Richard Staal / Inspector / RMA	10+					●			●										●	●	●							Backup	N/A
Paul Medina / Inspector / N&M	11	ICC							●																			Backup	N/A
Steve Eck / Inspector / N&M	30								●																			Backup	N/A
Steven Brown / General Civil, ME&P / Gannett Fleming	31	ACI CWI				●	●				●							●										16	20
Matthew Jacobs / Inspector / N&M	18								●																			21	100
Garreth Saiki / General Civil, ME&P / N&M	38	PE: CA GE: CA							●																			Backup	N/A
Adriana Paucean / Geotechnical, Geology & Foundation Grouting / Gannett Fleming	18	PEng				●				●							●	●	●			●	●					32	100
Eric Hackenberg / Geotechnical, Geology & Foundation Grouting / Gannett Fleming	18	PG			●		●			●	●	●					●	●	●				●					20	52
Tino Rodriguez / Geotechnical, Geology & Foundation Grouting / N&M	38								●																			22	100

** For additional details on proposed staffing levels, please see Section 1.*

Table 3.2.-1. Personnel Capabilities continued.

NAME / ROLE / FIRM	YEARS OF EXPERIENCE	APPLICABLE REGISTRATIONS	STAFF QUALIFICATIONS: CAPABILITIES: FINAL DESIGN REVIEW	BID PHASE SUPPORT	CONSTRUCTION MANAGEMENT	CONSTRUCTION INSPECTIONS	CM QUALITY ASSURANCE	RISK	MATERIALS TESTING/ SPECIAL INSPECTIONS	I&C	STRUCTURAL/MECHANICAL	ENVIRONMENTAL IMPACTS / COMPLIANCE	PROJECT CONTROLS	PUBLIC RELATIONS	DSOD OR EQUIV. COORDINATION	STAFF QUALIFICATIONS: PROJECT EXPERIENCE: DAM EXCAVATION	DAM GROUTING	DAM CONSTRUCTION	INLET/OULET CONSTRUCTION	TREATMENT FACILITY CONSTRUCTION	SPILLWAY CONSTRUCTION	EARTHEN DAM	URBAN SETTING	NOISE CONTROL	TRAFFIC CONTROL	DUST CONTROL	TIME COMMITTED: NUMBER OF MONTHS ENGAGED	PERCENTAGE OF TIME COMMITTED DURING INVOLVEMENT*
Andy Rodriguez / Geotechnical, Geology & Foundation Grouting / N&M	26								●																			22	100
Michael Putt / Geotechnical, Geology & Foundation Grouting / N&M	28								●																			Backup	N/A
Richard Ritter / Welding / N&M	33								●																			13	40
Aurelio Corral / Coatings / RMA	5					●			●												●							4	20
Jeff Dollarhide / Coatings / RMA	10+					●			●												●							Backup	N/A
Will Estepa / QA Field Surveying / Psomas	26	PLS: CA					●																					Lump Sum Pricing	N/A

** For additional details on proposed staffing levels, please see Section 1.*

		Fee by Project Phase			Fee by Calendar Year						
	Project Total	Final Design and Bid Phase	Construction Phase	Post-Construction Phase	2025	2026	2027	2028	2029	2030	2031
CM Fee Total:	**$ 25,402,073**	**$ 454,342**	**$ 24,660,347**	**$ 287,384**	**$ 320,025**	**$ 2,141,320**	**$ 4,651,410**	**$ 5,491,237**	**$ 5,660,657**	**$ 4,674,694**	**$ 2,462,730**
Labour Total:	**$ 24,298,323**	**$ 446,467**	**$ 23,564,472**	**$ 287,384**	**$ 315,300**	**$ 2,051,068**	**$ 4,429,563**	**$ 5,233,259**	**$ 5,423,514**	**$ 4,509,377**	**$ 2,336,241**
Project Management	$ 1,116,998	$ 82,121	$ 999,464	$ 35,413	$ 48,504	$ 127,516	$ 192,492	$ 197,305	$ 202,237	$ 207,293	$ 141,650
Final Design and Bid Phase Services	$ 312,902	$ 312,902	$ 0	$ -	$ 232,151	$ 80,750	$ -	$ -	$ -	$ -	$ -
Construction Risk Management	$ 284,368	$ 51,445	$ 232,923	$ -	$ 34,645	$ 29,722	$ 52,980	$ 54,305	$ 55,662	$ 57,054	$ -
Construction Management	$ 9,527,993	$ -	$ 9,527,993	$ -	$ -	$ 903,174	$ 1,816,422	$ 1,892,281	$ 1,939,588	$ 1,988,077	$ 988,452
Resident Engineering	$ 2,777,749	$ -	$ 2,777,749	$ -	$ -	$ 318,576	$ 625,490	$ 641,127	$ 747,733	$ 348,531	$ 96,291
Safety Management	$ 1,072,251	$ -	$ 1,072,251	$ -	$ -	$ 100,737	$ 206,511	$ 211,674	$ 216,965	$ 222,390	$ 113,975
Training, Commissioning, and Startup Services	$ 327,905	$ -	$ 327,905	$ -	$ -	$ 37,015	$ 20,695	$ 21,212	$ 46,203	$ 74,287	$ 128,493
QA/ QC Program and Construction Inspections	$ 8,559,563	$ -	$ 8,559,563	$ -	$ -	$ 449,762	$ 1,499,330	$ 2,199,321	$ 2,200,499	$ 1,598,608	$ 612,042
Partnering	$ 66,623	$ -	$ 66,623	$ -	$ -	$ 3,815	$ 15,643	$ 16,034	$ 14,626	$ 13,137	$ 3,366
Post Construction Services	$ 251,971	$ -	$ -	$ 251,971	$ -	$ -	$ -	$ -	$ -	$ -	$ 251,971
ODCs Total:	**$ 1,103,750**	**$ 7,875**	**$ 1,095,875**	**$ -**	**$ 4,725**	**$ 90,252**	**$ 221,847**	**$ 257,979**	**$ 237,143**	**$ 165,316**	**$ 126,488**
Field Vehicle Rental	$ 387,200	$ -	$ 387,200	$ -	$ -	$ 33,000	$ 79,200	$ 79,200	$ 85,800	$ 77,000	$ 33,000
Out-Of-Town Travel	$ 68,972	$ 7,875	$ 61,097	$ -	$ 4,725	$ 6,300	$ 12,978	$ 13,367	$ 13,768	$ 14,181	$ 3,652
Temporary Relocation of Specialty Staff	$ 84,582	$ -	$ 84,582	$ -	$ -	$ -	$ 30,900	$ 31,827	$ 21,855	$ -	$ -
QA Surveying	$ 208,049	$ -	$ 208,049	$ -	$ -	$ 18,018	$ 30,925	$ 63,705	$ 43,744	$ -	$ 51,657
Construction Materials Testing	$ 354,948	$ -	$ 354,948	$ -	$ -	$ 32,934	$ 67,844	$ 69,879	$ 71,976	$ 74,135	$ 38,180

				2025		2026		2027		2028		2029		2030		2031		TOTAL PROJECT	
				Hours	Fee	Hours	Fee	Hours	Fee	Hours	Fee	Hours	Fee	Hours	Fee	Hours	Fee	LABOR HOURS	LABOR FEES
Role	**Name**	**Firm**	**PW Hrs.**	**1,219**	**$315,300**	**9,254**	**$2,051,068**	**20,332**	**$4,429,563**	**24,128**	**$5,233,259**	**24,520**	**$5,423,514**	**19,742**	**$4,509,377**	**9,875**	**$2,336,241**	**109,070**	**$24,298,323**
CM Team Leadership				**488**	**$ 128,411**	**1,327**	**$ 339,976**	**2,252**	**$ 586,787**	**2,252**	**$ 601,457**	**2,252**	**$ 616,493**	**2,252**	**$ 631,905**	**1,215**	**$ 349,308**	**12,038**	**$ 3,254,337**
Principal In Charge	Jack Gerwick	COWI		-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -
Principal In Charge	Ed Durazo	Gannett Fleming		-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -
Project Manager	Arun Parsons	COWI		216	$ 60,480	283	$ 79,240	332	$ 95,284	332	$ 97,666	332	$ 100,108	332	$ 102,610	175	$ 55,439	2,002	$ 590,827
Construction Manager	Chris Fowler	Gannett Fleming		272	$ 67,931	1,044	$ 260,736	1,920	$ 491,503	1,920	$ 503,790	1,920	$ 516,385	1,920	$ 529,295	1,040	$ 293,869	10,036	$ 2,663,510
Safety				**12**	**$ 2,583**	**476**	**$ 102,459**	**968**	**$ 213,571**	**968**	**$ 218,910**	**968**	**$ 224,383**	**968**	**$ 229,993**	**468**	**$ 113,975**	**4,828**	**$ 1,105,874**
CM Safety Manager	Robert Nunez	RMA		12	$ 2,583	476	$ 102,459	968	$ 213,571	968	$ 218,910	968	$ 224,383	968	$ 229,993	468	$ 113,975	4,828	$ 1,105,874
Resident Engineering				**116**	**$ 30,808**	**1,280**	**$ 337,773**	**2,136**	**$ 597,603**	**2,136**	**$ 612,544**	**2,848**	**$ 741,086**	**1,580**	**$ 366,792**	**1,304**	**$ 306,317**	**11,400**	**$ 2,992,922**
Resident Engineer	Mike Jubran	COWI		92	$ 25,760	984	$ 275,520	1,920	$ 551,040	1,920	$ 564,816	1,280	$ 385,958	-	$ -	-	$ -	6,196	$ 1,803,094
Assistant RE - WTP & Startup Coordinator	William Moss	Gannett Fleming		24	$ 5,048	296	$ 62,253	216	$ 46,563	216	$ 47,728	1,568	$ 355,128	1,580	$ 366,792	1,144	$ 272,215	5,044	$ 1,155,727
AutoCAD Coordinator	Noel Fortez	COWI		-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	160	$ 34,102	160	$ 34,102
Contract Administration				**227**	**$ 49,079**	**3,739**	**$ 733,778**	**6,840**	**$ 1,382,724**	**6,960**	**$ 1,447,741**	**6,960**	**$ 1,483,934**	**6,960**	**$ 1,521,033**	**3,948**	**$ 872,871**	**35,634**	**$ 7,491,161**
Construction Contract Manager	Ajinkya Sarawade	COWI		82	$ 19,566	990	$ 236,228	1,920	$ 469,593	1,920	$ 481,333	1,920	$ 493,367	1,920	$ 505,701	960	$ 259,172	9,712	$ 2,464,961
Scheduler	Autumn Hall	CAPO		-	$ -	448	$ 99,286	624	$ 141,749	624	$ 145,293	624	$ 148,925	624	$ 152,648	184	$ 46,137	3,128	$ 734,038
Cost Estimator	Trevor Kroesch	CAPO		-	$ -	-	$ -	120	$ 29,706	240	$ 60,897	240	$ 62,419	240	$ 63,980	120	$ 32,790	960	$ 249,791
Cost Engineer	Adam Kanaan	COWI		-	$ -	660	$ 132,619	1,320	$ 271,870	1,320	$ 278,667	1,320	$ 285,633	1,320	$ 292,774	980	$ 222,797	6,920	$ 1,484,360
Labor Compliance Administrator	Erica Berger	Ardurra		-	$ -	120	$ 20,147	240	$ 41,302	240	$ 42,335	240	$ 43,393	240	$ 44,478	120	$ 22,795	1,200	$ 214,450
Document Controller	Victor Enriquez	COWI		-	$ -	1,080	$ 155,979	1,920	$ 284,228	1,920	$ 291,333	1,920	$ 298,617	1,920	$ 306,082	1,120	$ 183,012	9,880	$ 1,519,250
CM Services Contract Administrator	Adam Kanaan	COWI		105	$ 21,099	345	$ 69,324	600	$ 123,577	600	$ 126,667	600	$ 129,833	600	$ 133,079	400	$ 90,937	3,250	$ 694,516
CM Services Accounting Support	Jennifer Kegel	COWI		40	$ 8,414	96	$ 20,194	96	$ 20,699	96	$ 21,217	96	$ 21,747	96	$ 22,291	64	$ 15,232	584	$ 129,794
Quality Assurance				**72**	**$ 16,089**	**2,124**	**$ 450,432**	**7,624**	**$ 1,502,078**	**11,300**	**$ 2,202,138**	**10,980**	**$ 2,203,387**	**7,470**	**$ 1,601,568**	**2,748**	**$ 633,026**	**42,318**	**$ 8,608,719**
Quality Assurance Manager	Corey Kesler	Gannett Fleming		72	$ 16,089	960	$ 214,520	1,920	$ 439,766	1,920	$ 450,760	1,920	$ 462,029	1,920	$ 473,580	1,040	$ 262,935	9,752	$ 2,319,678
Chief Inspector	Juan Le Roy	Gannett Fleming	Day ST	-	$ -	960	$ 184,235	1,920	$ 377,681	1,920	$ 387,123	1,920	$ 396,801	1,920	$ 406,721	960	$ 208,445	9,600	$ 1,961,006
			Day OT	-	$ -	204	$ 51,678	408	$ 105,940	408	$ 108,588	408	$ 111,303	408	$ 114,085	204	$ 58,469	2,040	$ 550,062
			Day DT	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -
Geotech Inspector	Adriana Paucean	Gannett Fleming	Day ST	-	$ -	-	$ -	1,920	$ 310,423	1,920	$ 318,183	1,280	$ 217,425	-	$ -	-	$ -	5,120	$ 846,032
			Day OT	-	$ -	-	$ -	408	$ 87,074	408	$ 89,250	272	$ 60,988	-	$ -	-	$ -	1,088	$ 237,312
			Day DT	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -
Materials Testing Technician	Tino Rodriguez	Ninyo & Moore	Day ST	-	$ -	-	$ -	320	$ 53,121	1,920	$ 326,694	1,280	$ 223,241	-	$ -	-	$ -	3,520	$ 603,056
			Day OT	-	$ -	-	$ -	68	$ 14,900	408	$ 91,638	272	$ 62,619	-	$ -	-	$ -	748	$ 169,157
			Day DT	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -
Materials Testing Technician	Andy Rodriguez	Ninyo & Moore	Day ST	-	$ -	-	$ -	320	$ 53,121	1,920	$ 326,694	1,280	$ 223,241	-	$ -	-	$ -	3,520	$ 603,056
			Day OT	-	$ -	-	$ -	68	$ 14,900	408	$ 91,638	272	$ 62,619	-	$ -	-	$ -	748	$ 169,157
			Day DT	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -

				2025		2026		2027		2028		2029		2030		2031		TOTAL PROJECT	
				Hours	Fee	Hours	Fee	Hours	Fee	Hours	Fee	Hours	Fee	Hours	Fee	Hours	Fee	LABOR HOURS	LABOR FEES
Concrete Inspector	Matthew Jacobs	Ninyo & Moore	Day ST	-	$ -	-	$ -	-	$ -	-	$ -	1,600	$ 279,051	1,760	$ 314,630	-	$ -	3,360	$ 593,681
			Day OT	-	$ -	-	$ -	-	$ -	-	$ -	340	$ 78,274	374	$ 88,254	-	$ -	714	$ 166,527
			Day DT	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -
Welding Inspector	Robert Ritter	Ninyo & Moore	Day ST	-	$ -	-	$ -	272	$ 45,153	68	$ 11,570	-	$ -	340	$ 60,781	204	$ 37,380	884	$ 154,884
			Day OT	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -
			Day DT	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -
Mechanical Inspector	Steven Brown	Gannett Fleming	Day ST	-	$ -	-	$ -	-	$ -	-	$ -	68	$ 10,396	340	$ 53,278	136	$ 21,844	544	$ 85,517
			Day OT	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -
			Day DT	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -
Electrical Inspector	William Moss	Gannett Fleming	Day ST	-	$ -	-	$ -	-	$ -	-	$ -	68	$ 15,401	340	$ 78,930	136	$ 32,361	544	$ 126,692
			Day OT	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -
			Day DT	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -
Coatings Inspector	Aurelio Corral	RMA	Day ST	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	68	$ 11,310	68	$ 11,592	136	$ 22,902
			Day OT	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -
			Day DT	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -
Specialty Support Services				**304**	**$ 88,330**	**308**	**$ 86,649**	**512**	**$ 146,799**	**512**	**$ 150,469**	**512**	**$ 154,231**	**512**	**$ 158,087**	**192**	**$ 60,745**	**2,852**	**$ 845,310**
Constructability and Bid Specialist	Tom Pursel	Gannett Fleming		192	$ 57,600	24	$ 7,200	-	$ -	-	$ -	-	$ -	-	$ -	-	$ -	216	$ 64,800
Risk Management Support	Bill Foos	Gannett Fleming		60	$ 16,800	92	$ 25,760	128	$ 36,736	128	$ 37,654	128	$ 38,596	128	$ 39,561	-	$ -	664	$ 195,107
Senior Advisor - Dam Construction	Scott Brough	Gannett Fleming		20	$ 4,574	48	$ 10,978	96	$ 22,506	96	$ 23,068	96	$ 23,645	96	$ 24,236	48	$ 12,421	500	$ 121,429
Senior Advisor - Dam Construction	Tom Pursel	Gannett Fleming		-	$ -	48	$ 14,400	96	$ 29,520	96	$ 30,258	96	$ 31,014	96	$ 31,790	48	$ 16,292	480	$ 153,275
Senior Advisor - Scheduling	Aaron Trimm	CAPO		24	$ 6,956	48	$ 13,911	96	$ 28,518	96	$ 29,230	96	$ 29,961	96	$ 30,710	48	$ 15,739	504	$ 155,025
Claims Support	Craig Beeson	COWI		8	$ 2,400	48	$ 14,400	96	$ 29,520	96	$ 30,258	96	$ 31,014	96	$ 31,790	48	$ 16,292	488	$ 155,675

Annual Cost Escalation*
3%

** This is not the same as billing rate escalation, which is capped at 2.5%*

This is an estimate of how the price of direct costs will fluctuate in future, based on economic factors.

It is possible that actual direct cost escalation will exceed 3%, and it is assumed that IRWD will reimburse allowable direct costs at the cost incurred.

Cost Type	Notes	Firm	Unit	2025-2026 Unit Rate	2027 Unit Rate	2028 Unit Rate	2029 Unit Rate	2030 Unit Rate	2031 Unit Rate
Construction Materials Testing	Reference Ninyo & Moore price proposal (Feb 11, 2025). We are pricing Option 2 with Mobile Laboratory. Field Services are priced elsewhere as labor fees. This price includes Onsite and Offsite laboratory testing ($101,080), Project Coordination (202,400), Final Report Preparation ($25,870) = Total $329,350. For simplicity, we spread this cost across the construction duration of 60 months = $5,489/mo. and apply anticipated cost escalation		Monthly	$ 5,489	$ 5,654	$ 5,823	$ 5,998	$ 6,178	$ 6,363
Field Surveying - Verify Control	Reference Psomas pricing sheet (can be provided upon request).	Psomas	Per surveying event, all inclusive	$ 8,010	$ 8,250	$ 8,498	$ 8,753	$ 9,015	$ 9,286
Field Surveying - Verify Bid Item Quantities	Reference Psomas pricing sheet (can be provided upon request).	Psomas	Per surveying event, all inclusive	$ 5,004	$ 5,154	$ 5,309	$ 5,468	$ 5,632	$ 5,801
Field Surveying - Perform As-Built Surveys	Reference Psomas pricing sheet (can be provided upon request).	Psomas	Per surveying event, all inclusive	$ 44,560	$ 45,897	$ 47,274	$ 48,692	$ 50,153	$ 51,657
Field Vehicle Rental	Reference Quote from Ford (can be provided upon request). Agreement would lock price for 7 years; no annual escalation. Rental vehicles would be provided for CM staff to conduct construction observation activities around the job site.	COWI	Per vehicle, per month	$ 1,100	$ 1,100	$ 1,100	$ 1,100	$ 1,100	$ 1,100
Out-of-Town Travel	Priced per trip assuming 1 individual, coach flight ($600), 2 nights hotel ($500), rental vehicle 2 days ($200), sundries 2 days ($200) = $1,500	General	Individual trip, all inclusive	$ 1,575	$ 1,622	$ 1,671	$ 1,721	$ 1,773	$ 1,826
Temporary Relocation of Specialty Staff	Priced per individual per month assuming apartment rent ($2,000/mo.) and travel home once per month ($500/mo.). No other costs would be billed to IRWD, such as per-diem, vehicle etc.	General	Per individual per month	$ 2,500	$ 2,575	$ 2,652	$ 2,732	$ 2,814	$ 2,898

Annual Escalation % *
2.5%

* RFP page 14: "The rate schedule shall include maintaining the bill rates through the end of 2026. Thereafter, an annual escalation based on the Los Angeles-Long Beach-Anaheim Consumer Price Index for all Urban Consumers (CPI-U) and up to 2.5% may be provided if requested by the CMT."

** Over Time, Double Time and Second Shift billing rates are calculated from current Orange County DIR Prevailing Wage guidance. Further explanation can be provided upon request.

** Annual escalation of Prevailing Wage rates is mandated by California DIR and may exceed 2.5% annually. It is assumed that IRWD will support mandated escalation of Prevailing Wage rates.

			Calendar Years 2025 & 2026 *						
				For Prevailing Wage Roles **					
				1st SHIFT (Day Shift)			2nd SHIFT (Night Shift)		
Classification	Name	Firm	BILLING RATE W Markup	BILLING RATE Straight Time	BILLING RATE Over Time	BILLING RATE Double Time	BILLING RATE Straight Time	BILLING RATE Over Time	BILLING RATE Double Time
CM Team Leadership									
Principal In Charge	Jack Gerwick	COWI	$ 300						
Principal In Charge	Ed Durazo	Gannett Fleming	$ 300						
Project Manager	Arun Parsons	COWI	$ 280						
Construction Manager	Chris Fowler	Gannett Fleming	$ 250						
Safety									
CM Safety Manager	Robert Nunez	RMA	$ 215						
Resident Engineering									
Resident Engineer	Mike Jubran	COWI	$ 280						
Assistant RE - Outlet Works	Thomas Michael	Gannett Fleming	$ 184						
Assistant RE - WTP & Startup Coordinator	William Moss	Gannett Fleming	$ 210						
AutoCAD Coordinator	Noel Fortez	COWI	$ 188						
Contract Administration									
Construction Contract Manager	Ajinkya Sarawade	COWI	$ 239						

Classification	Name	Firm	Calendar Years 2025 & 2026 *							
			BILLING RATE W Markup	For Prevailing Wage Roles **						
				1st SHIFT (Day Shift)			2nd SHIFT (Night Shift)			
				BILLING RATE Straight Time	BILLING RATE Over Time	BILLING RATE Double Time	BILLING RATE Straight Time	BILLING RATE Over Time	BILLING RATE Double Time
Scheduler	Autumn Hall	CAPO	$ 222						
Cost Estimator	Trevor Kroesch	CAPO	$ 242						
Cost Engineer	Jason Dong	COWI	$ 182						
Cost Engineer	Omkar Thombare	COWI	$ 196						
Labor Compliance Administrator	Nancy Cambra	Ardurra	$ 153						
Document Controller	Victor Enriquez	COWI	$ 144						
Public Relations Administrator	Yolanda Art	Ardurra	$ 140						
CM Services Contract Administrator	Adam Kanaan	COWI	$ 201						
CM Services Accounting Support	Jennifer Kegel	COWI	$ 210						
Quality Assurance									
Quality Assurance Manager	Corey Kesler	Gannett Fleming	$ 223						
Chief Inspector	Juan Le Roy	Gannett Fleming	$ 192	$ 192	$ 253	$ 315	$ 194	$ 256	$ 318
Civil Inspector	Slawek Dymerski	RMA	$ 151	$ 151	$ 199	$ 247	$ 152	$ 201	$ 250
Civil Inspector	Johnny Rodriguez	RMA	$ 151	$ 151	$ 199	$ 247	$ 152	$ 201	$ 250
Civil Inspector	Jim Bishop	RMA	$ 151	$ 151	$ 199	$ 247	$ 152	$ 201	$ 250
Civil Inspector	Bruce Fike	RMA	$ 151	$ 151	$ 199	$ 247	$ 152	$ 201	$ 250
Civil Inspector	Tyler Witte	RMA	$ 151	$ 151	$ 199	$ 247	$ 152	$ 201	$ 250
Civil Inspector	Richard Staal	RMA	$ 151	$ 151	$ 199	$ 247	$ 152	$ 201	$ 250
Civil Inspector	Paul Medina	Ninyo & Moore	$ 162	$ 162	$ 214	$ 266	$ 164	$ 216	$ 268
Civil Inspector	Steve Eck	Ninyo & Moore	$ 162	$ 162	$ 214	$ 266	$ 164	$ 216	$ 268
Concrete Inspector	Matthew Jacobs	Ninyo & Moore	$ 162	$ 162	$ 214	$ 266	$ 164	$ 216	$ 268

Classification	Name	Firm	Calendar Years 2025 & 2026 *							
			BILLING RATE W Markup	For Prevailing Wage Roles **						
				1st SHIFT (Day Shift)			2nd SHIFT (Night Shift)			
				BILLING RATE Straight Time	BILLING RATE Over Time	BILLING RATE Double Time	BILLING RATE Straight Time	BILLING RATE Over Time	BILLING RATE Double Time
Concrete Inspector	Tino Rodriguez	Ninyo & Moore	$ 162	$ 162	$ 214	$ 266	$ 164	$ 216	$ 268
Geotech Inspector	Adriana Paucean	Gannett Fleming	$ 158	$ 158	$ 208	$ 259	$ 159	$ 210	$ 261
Geotech Inspector	Andy Rodriguez	Ninyo & Moore	$ 162	$ 162	$ 214	$ 266	$ 164	$ 216	$ 268
Geologist	Eric Hackenberg	Gannett Fleming	$ 150						
Geologist	Michael Putt	Gannett Fleming	$ 150						
Materials Testing Technician	Tino Rodriguez	Ninyo & Moore	$ 162	$ 162	$ 214	$ 266	$ 164	$ 216	$ 268
Materials Testing Technician	Andy Rodriguez	Ninyo & Moore	$ 162	$ 162	$ 214	$ 266	$ 164	$ 216	$ 268
Mechanical Inspector	Steven Brown	Gannett Fleming	$ 142	$ 142	$ 187	$ 233	$ 143	$ 189	$ 235
Mechanical Inspector	Gareth Saiki	Ninyo & Moore	$ 162	$ 162	$ 214	$ 266	$ 164	$ 216	$ 268
Electrical Inspector	William Moss	Gannett Fleming	$ 210	$ 210	$ 278	$ 345	$ 212	$ 280	$ 348
Welding Inspector	Robert Ritter	Ninyo & Moore	$ 162	$ 162	$ 214	$ 266	$ 164	$ 216	$ 268
Coatings Inspector	Aurelio Corral	RMA	$ 151	$ 151	$ 199	$ 247	$ 152	$ 201	$ 250
Coatings Inspector	Jeff Dollarhide	RMA	$ 151	$ 151	$ 199	$ 247	$ 152	$ 201	$ 250
Specialty Support Services									
Grant Funding Specialist	Jennifer Saldivar	Gannett Fleming	$ 250						
Labor Compliance Specialist	Erica Berger	Ardurra	$ 168						
Senior Advisor - Dam Construction	Scott Brough	Gannett Fleming	$ 229						
Senior Advisor - Dam Construction	Tom Pursel	Gannett Fleming	$ 300						
Claims Support	Craig Beeson	COWI	$ 300						
Senior Advisor - Scheduling	Aaron Trimm	CAPO	$ 290						
Risk Manager	Bill Foos	Gannett Fleming	$ 280						

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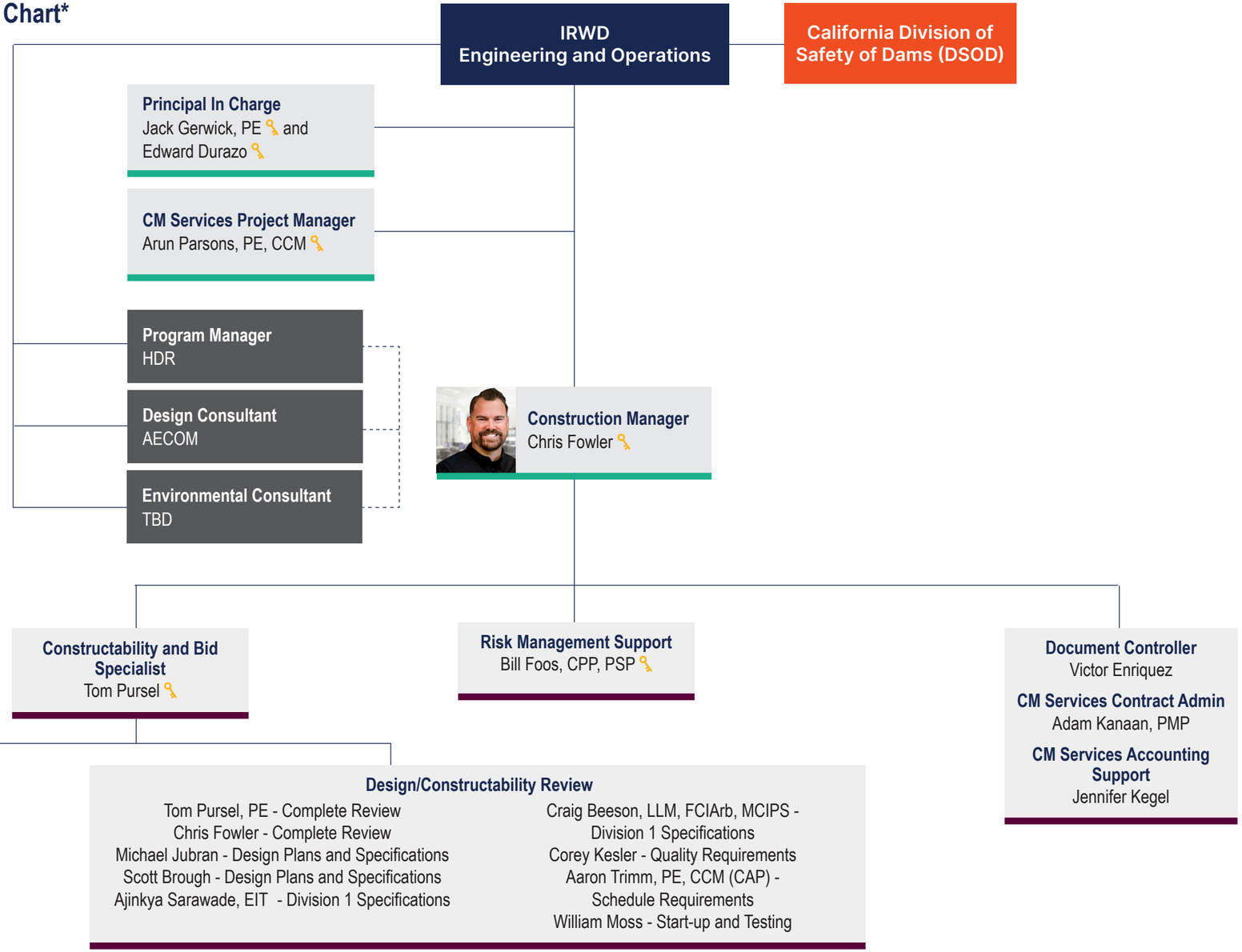
Final Design and Bid Phase Organizational Chart*



*All Final Design and Bid Phase tasks will be performed off-site.

LEGEND

- IRWD
- Regulator
- Other City Consultants
- CM Team: Management
- CM Team: Preconstruction Services
- CM Team: Resident Engineering
- CM Team: Quality Assurance
- CM Team: Specialty Support Services
- Solid lines represent authority and reporting structure
- Dashed lines represent lines of communication only not authority or reporting
- Key Personnel

(ARD) - Ardurra
(CAP) - CAPO
(RMA) - RMA Companies
(N&M) - Ninyo & Moore
(PSM) - Psomas

Construction Organizational Chart

IRWD
Engineering and Operations

California Division of Safety of Dams (DSOD)

Principal In Charge
Jack Gerwick, PE and
Edward Durazo

CM Services Project Manager
Arun Parsons, PE, CCM

Program Manager
HDR

Design Consultant
AECOM

Environmental Consultant
TBD

Construction Manager
Chris Fowler

★ Full-Time On-Site Staff

Construction Contract Manager
★ Ajinkya Sarawade, EIT*

Scheduler
Autumn Hall (CAP)
Aaron Trimm, PE, CCM (CAP)

Cost Estimator
Trevor Kroesch (CAP)

Cost Engineers
Jason Dong
★ Adam Kanaan, PMP
Omkar Thombare

Document Controller
Victor Enriquez*

CM Services Accounting Support
Jennifer Kegel

Grant Funding and Labor Compliance Support
Jennifer Saldivar
Erica Berger (ARD)

Resident Engineer
★ Michael Jubran*

Assistant REs
Thomas Michael*
★ William Moss*

AutoCAD Technician
Noel Fortez

Quality Assurance Manager
★ Corey Kesler*

CM Safety Manager
Robert Nunez (RMA)

Risk Management Support
Bill Foos, CPP, PSP

Claims Support
Craig Beeson, LLM, FCIArb, MCIPS

Technical Advisors
Scott Brough
Tom Pursel, PE
Aaron Trimm, PE, CCM (CAP)

INSPECTIONS, SPECIAL INSPECTIONS, SURVEYING & MATERIALS TESTING

Chief Inspector
★ Juan Le Roy*

Inspectors
Slawek Dymerski, PE, GE (RMA)
Johnny Rodriguez, PE (RMA)
Jim Bishop (RMA)
Bruce Fike* (RMA)
Tyler Witte* (RMA)
Richard Staal* (RMA)
Paul Medina, ICC* (N&M)
Steve Eck* (N&M)

General Civil, ME&P
Steven Brown*
Matthew Jacobs (N&M)
Garreth Saiki, PE, GE (N&M)

Electrical/ I&C/ Cathodic
William Moss*

Geotechnical, Geology & Foundation Grouting
Adriana Paucean, PEng*
Eric Hackenberg, PG*
Tino Rodriguez (N&M)
Andy Rodriguez (N&M)
Michael Putt, PG, CEG (N&M)

Concrete
Matthew Jacobs (N&M)
Tino Rodriguez (N&M)
Andy Rodriguez (N&M)
Garreth Saiki, PE, GE (N&M)

Structural
Andy Rodriguez (N&M)
Garreth Saiki, PE, GE (N&M)

Welding
Robert Ritter (N&M)

Coatings
Aurelio Corral (RMA)
Jeff Dollarhide (RMA)

Startup Coordinator
William Moss*

Construction Materials Testing
Tino Rodriguez (N&M)
Andy Rodriguez (N&M)

QA Field Surveying
Will Estepa, PLS* (PSM)

LEGEND

- IRWD
- Regulator
- Other City Consultants
- CM Team: Management
- CM Team: Preconstruction Services
- CM Team: Resident Engineering
- CM Team: Quality Assurance
- CM Team: Specialty Support Services
- Solid lines represent authority and reporting structure
- Dashed lines represent lines of communication only not authority or reporting
- Key Personnel
- * - On-site Personnel, to be scheduled as appropriate for specific duties

(ARD) - Ardurra
(CAP) - CAPO
(RMA) - RMA Companies
(N&M) - Ninyo & Moore
(PSM) - Psomas

July 15, 2025
Prepared by: L. Rigby
Submitted by: J. Colston / K. Burton
Approved by: Paul A. Cook

ENGINEERING AND OPERATIONS COMMITTEE

REPORT ON WATER QUALITY RELATIVE TO PUBLIC HEALTH GOALS

SUMMARY:

Staff is presenting the 2025 Report on Water Quality Relative to Public Health Goals, a triennial report required by the California Health and Safety Code summarizing constituents detected in IRWD's water supply at levels exceeding applicable Public Health Goals or Maximum Contaminant Level Goals during calendar years 2022, 2023 and 2024. Staff recommends that a public hearing regarding the report be held on August 11, 2025, at IRWD's Regular Board meeting to accept any public comments that may be provided regarding the report.

BACKGROUND:

The California Health and Safety Code, Section 116470, requires public water systems with more than 10,000 service connections to prepare a written report that provides information regarding the detection of any contaminants above the Public Health Goals adopted by the State Office of Environmental Health Hazard Assessment, or the Maximum Contaminant Level Goals set by the United States Environmental Protection Agency. These reports are intended to provide information to the public in addition to the Consumer Confidence Report that is provided annually to each customer. The California State Water Resources Control Board Division of Drinking Water does not require public water systems to take any action to reduce or eliminate any exceedance of a public health goal.

A public water system that is required to prepare a Public Health Goal Report is also required to hold a public hearing for the purpose of accepting and responding to public comments regarding the report. The public hearing may be part of any regularly scheduled meeting. Due to the detection of a number of contaminants in the potable water system above the Public Health Goals, IRWD is required to prepare a Public Health Goal Report and hold a public hearing. The report has been prepared and is provided as Exhibit "A", and a public hearing regarding the report will be held on August 11, 2025, at IRWD's Regular Board meeting to accept any public comments that may be provided regarding the report.

FISCAL IMPACTS:

None.

ENVIRONMENTAL COMPLIANCE:

Not applicable.

RECOMMENDATION:

That a public hearing regarding the Report on Water Quality Relative to Public Health Goals be held on August 11, 2025, at IRWD's Regular Board meeting to accept any public comments that may be provided regarding the report.

LIST OF EXHIBITS:

Exhibit "A" – Report on Water Quality Relative to Public Health Goals PWS #3010092

Exhibit "A"

IRVINE RANCH WATER DISTRICT
REPORT ON WATER QUALITY
RELATIVE TO PUBLIC HEALTH GOALS
JULY 1, 2025
PWS #3010092

BACKGROUND:

Provisions of the California Health and Safety Code[1] specify that larger (>10,000 service connections) water utilities prepare a special report by July 1, 2025, if the utilities' water quality measurements have exceeded any Public Health Goals (PHGs). PHGs are non-enforceable goals established by the California Environmental Protection Agency's (Cal- EPA's) Office of Environmental Health Hazard Assessment (OEHHA). The law also requires that where OEHHA has not adopted a PHG for a constituent, the water suppliers are to use the Maximum Contaminant Level Goals (MCLGs) adopted by United States Environmental Protection Agency (USEPA). Only constituents that have a primary drinking water standard and for which either a PHG or MCLG has been set are to be addressed.[2]

The law specifies what information is to be provided in the report.[3]

If a constituent was detected in IRWD's water supply in 2022, 2023 or 2024 at a level exceeding an applicable PHG or MCLG, this report provides the information required by law. Included is the numerical public health risk associated with the MCL and the PHG or MCLG, the category or type of risk to health that could be associated with each constituent, the best treatment technology available that could be used to reduce the constituent level, and an estimate of the cost to install that treatment if it is appropriate and feasible.

What Are PHGs?

PHGs are set by OEHHA and are based solely on public health risk considerations. None of the practical risk-management factors that are considered by the USEPA or the California State Water Resources Control Board Division of Drinking Water (DDW) in setting drinking water standards (MCLs) are considered in setting the PHGs. These factors include analytical detection capability, treatment technology available, and benefits and costs. The PHGs are not enforceable and are not required to be met by any public water system. MCLGs are the federal equivalent to PHGs.

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[1] California Health and Safety Code Section 116470
[2] Table of Regulated Constituents with MCLs, PHGs or MCLGs
[3] See footnote 1 above

Water Quality Data Considered:

All water quality data collected by the IRWD system from 2022 to 2024 for purposes of determining compliance with drinking water standards was considered. Additional data was collected by the Orange County Water District (OCWD) on behalf of IRWD for groundwater wells within the jurisdiction of the OCWD. This data was summarized in the Annual Consumer Confidence Reports which were distributed to all customers in 2022, 2023 and 2024.

Guidelines Followed:

The Association of California Water Agencies (ACWA) formed a workgroup that prepares guidelines for water utilities to use in preparing these required reports, and these guidelines were used in the preparation of this report including the cost estimates. No guidance is available from state regulatory agencies.

Best Available Treatment Technology and Cost Estimates:

Both the USEPA and DDW adopt what are known as Best Available Technologies (BATs) which are the best-known methods of reducing contaminant levels to the MCL. Costs can be estimated for such technologies. However, since many PHGs and all MCLGs are set much lower than the MCL, it is not always feasible or even possible to determine what treatment is needed to further reduce a constituent to the PHG or MCLG, many of which are set at zero. Estimating the costs to reduce a constituent to zero is difficult because it is not possible to verify by analytical means that the level has been lowered to zero. In some cases, installing treatment to try and further reduce very low levels of one constituent may have adverse effects on other aspects of water quality.

CONSTITUENTS DETECTED THAT EXCEED A PHG OR A MCLG:

The following is a discussion of constituents that were detected in one or more of the IRWD's drinking water sources at levels above the PHG, or above the MCLG. Note that while a constituent may be detected above the PHG or MCLG, that does not mean that it was served to the public at that concentration or level. All of IRWD's wells are either treated or blended with other wells or sources of water (imported and local). Perchlorate, nitrate/nitrite nitrogen, and nitrate nitrogen were detected in one or more source wells above the PHG. However, the existing treatment processes in place reduced the concentration of these constituents to nondetectable levels or to levels less than the PHG. No further assessment of these constituents is needed.

Arsenic:

The PHG for arsenic is 0.004 parts per billion (ppb). The MCL, or drinking water standard, for arsenic is 10 ppb. There were nine detections in Dyer Road Wellfield (DRWF) wells at the following levels: 3ppb in DRWF Well 1, 2 ppb in DRWF Well 2, 3 ppb in DRWF Well 4, 10.6 ppb in DRWF Well 5, 2.1 ppb in DRWF Well 10, 2.2 ppb in DRWF Well 11, 2 ppb in DRWF Well 12, 2.3 ppb in DRWF Well 17, and 5.7 ppb in DRWF Well 18. The water from all DRWF wells in operation is blended prior to entering the drinking water distribution system. The highest concentration of arsenic measured at the entry point to the distribution system was 3.38 ppb (below the drinking water MCL).

There was arsenic detected in five Irvine Desalter Project (IDP) wells at the following levels: 5.7 ppb in IDP Well 76, 4.3 ppb in IDP Well 77, 4.9 ppb in IDP Well 107, 6.6 ppb in IDP Well 110 and 5.6 ppb in IDP Well 115. The highest concentration of arsenic detected in product water from the IDP Potable Treatment Plant (IDP/PTP) was 2.49 ppb. These levels were below the MCL.

Arsenic was detected in imported water treated at the Baker Water Treatment Plant (BWTP); the highest level detected was 4.89 ppb.

Best Available Technology

The category of health risk associated with arsenic, and the reason that a drinking water standard was adopted for it, is that some people who drink water containing arsenic above the MCL over many years may experience skin damage or circulatory system problems and may have an increased risk of cancer. The numerical health risk for cancer at a PHG of 0.004 ppb is 1x10-6 (1 in 1,000,000). The numerical health risk for cancer at an MCL of 10 ppb is 2.5x10-3 (2.5 in 1,000).

The BATs for arsenic to lower the level below the PHG are Reverse Osmosis (RO), Ion Exchange (IE), activated alumina, lime softening, electrodialysis reversal, oxidation/filtration or coagulation/filtration. RO or IE would be required to attempt to lower the arsenic levels to below the PHG. The IDP Potable Treatment Plant (PTP) is an RO facility which reduces arsenic levels in water from the IDP wells, though the plant would need to be operated with 0% bypass to achieve a concentration closer to the PHG. The estimated cost to install and operate such a treatment system on DRWF Wells 4, 5, 6 and 18 that would reliably reduce the arsenic levels to below the PHG would be approximately $20,960,000 per year including annualized capital and O&M costs. The estimated cost to install and operate such a treatment system at the BWTP that would reliably reduce the arsenic level to the PHG would be approximately $9,396,000 per

year including annualized capital and O&M costs. This would result in an assumed increased cost for each customer of $253 per year.

Coliform Bacteria:

Drinking water samples collected from the potable distribution system were positive for total coliform bacteria in the months of May 2022, September 2022, July 2023, October 2023, April 2024, and August 2024; the percent positives were 0.7%, 0.4%, 0.8%, 0.3%, 0.3%, 0.4%, and 0.4%, respectively. All total coliform positive samples were negative for E. coli bacteria. The MCL for coliform is 5% positive samples of all samples per month, and the MCLG is zero percent positive samples. The reason for the coliform drinking water standard is to minimize the possibility of the water containing pathogens (organisms that cause waterborne disease). Because coliform is only a surrogate indicator of the potential presence of pathogens, it is not possible to state a specific numerical health risk. While the USEPA normally sets MCLGs "at a level where no known or anticipated adverse effects on persons would occur", they indicate that they cannot do so with coliforms.

Coliform bacteria are an indicator organism that are ubiquitous in nature and are not generally considered harmful. They are used because of ease in monitoring and analysis. If a positive sample is found, it indicates a potential problem that needs to be investigated and follow up sampling done. It is not at all unusual for a system to have an occasional positive sample. It is difficult, if not impossible, to ensure that a system will never get a positive sample, or that inadvertent contamination of a sample will not occur.

Chlorine is added as a disinfectant at sources to ensure that the water served is microbiologically safe. The chlorine residual levels are carefully controlled to provide the best health protection without causing the water to have undesirable taste and odor or increasing the concentration of Disinfection Byproducts (DBP). The one single action that would most likely decrease the possibility of a system having positive coliform results would be to significantly increase the disinfectant residual. This would likely result in increased DBPs that have adverse health consequences. The limits to the amount of disinfectant residual allowed in the distribution system are the maximum residual disinfectant levels (MRDLs) as established by the Disinfectants and Disinfection Byproducts Rule (D/DBPR). This careful balance of treatment processes is essential to continue supplying our customers with safe drinking water.

Other equally important measures that have been implemented include: an effective cross-connection control program, maintenance of a disinfectant residual throughout our system, an effective monitoring and surveillance program, and maintaining positive pressures in our distribution system. Our system has already taken all of the steps described by DDW as "best

available technology" for coliform bacteria in Section 64447, Title 22, California Code of Regulations.

Fluoride:

The PHG for fluoride is 1 ppm (part per million). The MCL, or drinking water standard, for fluoride is 2 ppm. We have detected fluoride above the PHG in two of IRWD's 27 wells at the following levels: 1.15 ppm in DRWF Well C8 and 1.59 ppm in DRWF Well C9. The level detected was below the MCL. The category of health risk associated with fluoride, and the reason that a drinking water standard was adopted for it, is that people who drink water containing fluoride above the MCL throughout their lifetime could experience an increased risk of musculoskeletal disease and tooth mottling. The numerical health risk for cancer at a PHG of 1 ppm is not applicable. The numerical health risk for cancer at a MCL of 2 ppm is not applicable. The water is blended with water pumped from up to sixteen other wells located in the DRWF prior to delivery to the drinking water distribution system. The highest level of fluoride detected in the blended DRWF water was 0.83 ppm and the average level of fluoride in the blended DRWF was 0.59 ppm. Since the fluoride level in the blended DRWF water consistently does not exceed the PHG and the optimal level of fluoride in drinking water to prevent dental caries (or cavities) is 0.7 ppm no further treatment is necessary, so no cost estimate has been prepared.

Gross Alpha (excluding Uranium):

OEHHA has not established a PHG for gross alpha activity. The MCLG for gross alpha activity is 0 picocuries per liter (pCi/l). The MCL, or drinking water standard, for gross alpha activity is 15 pCi/l. Gross alpha activity was detected in five wells throughout the system at the following levels: 3.46 pCi/l in DRWF Well 1, 3.12 pCi/l in IDP Well 13, 3.33 pCi/l in IDP Well 76, 3.09 pCi/l in IDP Well 77, and 3.26 pCi/l in IDP Well 110. All levels were below the MCL.

Gross alpha activity was detected in imported water purchased from the MWD, and the highest level was 3 pCi/l. Gross alpha activity was detected in Well 21/22 Desalter product water and the highest level was 4.6 pCi/l. All levels were below the MCL.

The category of health risk associated with gross alpha activity, and the reason that a drinking water standard was adopted for it, is that people who drink water containing gross alpha activity above the MCL throughout their lifetime could experience an increased risk of cancer. The numerical health risk for an MCLG of 0 pCi/l is 0. Since gross alpha activity is not a specific chemical contaminant, but rather a group of radioactive elements, the numeric health risk at the

MCL of 15 pCi/l depends on the specific alpha emitting radionuclides present and is estimated to range from 1.0x10-3 (1 in 1,000) to 1.9x10-4 (1.9 in 10,000).

The BATs for gross alpha activity to lower the level below the MCL are RO, IX, lime softening or coagulation/filtration. RO or IX would be required to attempt to lower the gross alpha activity level to the MCLG. The IDP/PTP is an RO facility that reduces gross alpha activity levels in water from the IDP wells. The estimated cost to install and operate such a treatment system at the BWTP that would reliably reduce the gross alpha activity level to as close to the MCLG as possible would be approximately $9,396,000 per year including annualized capital and O&M costs. The estimated cost to install and operate such a treatment system at each MWD turnout that would reliably reduce the gross alpha activity level approaching the MCLG would be approximately $248,541,000 per year including annualized capital and O&M costs. This would result in an assumed increased cost for each customer of $2,149 per year.

Gross Beta Activity:

OEHHA has not established a PHG for gross beta activity. The MCLG for gross beta activity is 0 pCi/l. The MCL or drinking water standard for gross beta activity is 50 pCi/l. Gross beta activity was detected in imported water purchased from the MWD and the highest level detected was 7 pCi/l and 13.9 pCi/l at Well OPA 1. All levels were below the MCL.

The category of health risk associated with gross beta activity, and the reason that a drinking water standard was adopted for it, is that people who drink water containing gross beta activity above the MCL throughout their lifetime could experience an increased risk of cancer. The numerical health risk for an MCLG of 0 pCi/l is 0. Since gross beta activity is not a specific chemical contaminant, but rather a group of radioactive elements, the numeric health risk at the MCL of 50 pCi/l depends on the specific beta emitting radionuclides present and is estimated to range from 2.3x10-3 (2.3 in 1,000) to 4.5x10-4 (4.5 in 10,000).

The BATs for gross beta activity to lower the level below the MCL are RO, IX, lime softening or coagulation/filtration. RO or IX would be required to attempt to lower the gross beta activity level closer to the MCLG. The estimated cost to install and operate such a treatment system at each MWD turnout that would reliably reduce the gross beta activity level closer to the MCLG would be approximately $248,541,000 per year including annualized capital and O&M costs. This would result in an assumed increased cost for each customer of $2,071 per year.

Hexavalent Chromium:

The PHG for hexavalent chromium is 0.02 ppb. The MCL for hexavalent chromium is 10 ppb. Hexavalent chromium was detected in fourteen Dyer Road Wellfield wells at the following

concentrations: 1.05 ppb in DRWF Well 1, 0.5 ppb in DRWF Well 2, 0.39 ppb in DRWF Well 4, 0.43 ppb in DRWF Well 7, 0.49 ppb in DRWF 10, 0.92 ppb in DRWF Well 11, 0.84 ppb in DRWF Well 12, 0.1.54 ppb in DRWF Well 13, 1.3 ppb in DRWF Well 14, 0.75 ppb in DRWF Well 15, 0.43 ppb in DRWF Well 16, 0.86 ppb in DRWF Well 17, 0.48 ppb in DRWF Well 18, and 0.1 ppb in DRWF Well C8. The water from all DRWF wells in operation is blended prior to entering the IRWD's drinking water distribution system. Hexavalent chromium was detected in three IDP wells at the following levels: 1.05 ppb in IDP Well 76, 0.32 ppb in IDP Well 107, and 0.21 ppb in IDP Well 110. The highest concentration of hexavalent chromium detected in product water from the IDP/PTP was 0.05 ppb. Hexavalent chromium was detected at 0.75 ppb in Well 21, 0.24 ppb in Well 22, and 0.3 ppb in OPA Well 1. Hexavalent chromium was detected in treated imported water produced at the BWTP; the highest level detected was 0.02 ppb, equivalent to the PHG.

The category of health risk associated with hexavalent chromium, and the reason a drinking water standard was adopted for it, is that people who consume water containing hexavalent chromium above the regulatory limit throughout their lifetime could experience an increased risk of cancer, primarily stomach cancer. The California OEHHA has established a PHG of 0.02 ppb, which corresponds to a one-in-a-million (1×10^{-6}) lifetime cancer risk. The estimated numerical health risks for hexavalent chromium at higher concentrations range from approximately 1×10^{-3} (1 in 1,000) to 1.9×10^{-4} (about 2 in 10,000), depending on the level of exposure. The BATs for hexavalent chromium to lower the level below the PHG are Ion Exchange (IX) – weak base anion resin, RO, and coagulation/filtration. IX or RO would be required to attempt to lower the hexavalent chromium level below the PHG. The estimated cost to install and operate an IX – weak base anion resin treatment would be approximately $142,946,478.00 per year including annualized capital and O&M costs. This would result in an assumed increased cost for each customer of $1,145 per year.

Uranium:

The PHG for uranium is 0.43 pCi/l. The MCL, or drinking water standard, for uranium is 20 pCi/l. Uranium was detected in nine wells at the following levels: 1.28 pCi/l in DRWF Well 13, 1.63 pCi/l in DRWF Well 16, 1.01 pCi/l in DRWF Well 17, 1.2 pCi/l in OPA Well 1, 5.78 pCi/l in IDP Well 76, 5.71 pCi/l in IDP Well 77, 5.89 pCi/l in IDP Well 107, 5.96 pCi/l in IDP Well 110, 5.01 pCi/l in IDP Well 115, 1.03 pCi/l in Well 21, and 0.91 pCi/l in Well 22. The IDP/PTP is an RO facility which reduces uranium levels in water from the IDP wells.

Uranium was detected in the IDP/PTP product water at a level of 3.4 pCi/l. Uranium was detected in product water from the BWTP, the highest level detected was 2.2 pCi/l. Uranium was detected in imported water purchased from the MWD, the highest level detected was 3 pCi/l. These levels were below the MCL.

The category of health risk associated with uranium, and the reason that a drinking water standard was adopted for it, is that people who drink water containing uranium above the MCL throughout their lifetime could experience kidney problems or an increased risk of cancer. The numerical health risk for cancer at a PHG of 0.43 pCi/l is 1x10-6 (1 in 1,000,000). The numerical health risk for cancer at a MCL of 20 pCi/l is 5x10-5 (5 in 100,000). The BATs for uranium to lower the level below the MCL are RO, IX, lime softening or coagulation/filtration. RO or IX would be required to attempt to lower the uranium level to below the PHG. The IDP/PTP and the Well 21/22 Desalter are RO facilities which reduce uranium levels in water from the IDP wells and Well 22, though the plants would probably need to be operated with 0% bypass to meet the PHG. The estimated cost to install and operate such a treatment system at the BWTP that would reliably reduce the uranium level to the MCLG would be approximately $9,396,000 per year including annualized capital and O&M costs. The estimated cost to install and operate such a treatment system at each MWD turnout that would reliably reduce the uranium level to the MCLG would be approximately $248,541,000 per year including annualized capital and O&M costs. This would result in an assumed increased cost for each customer of $2,149 per year.

Combined Treatment Cost:

Since the same technology is utilized to treat all of the constituents included in this report each of the locations above would only require a single treatment facility to reduce levels of all of these constituents to below the PHG or MCLG. The estimated cost to install and operate such a treatment system on DRWF Wells 4, 5 6 and 18 that would reliably reduce the levels of arsenic to levels below the PHG or MCLG would be approximately $20,960,000 per year including annualized capital and O&M costs. The estimated cost to install and operate such a treatment system at the BWTP that would reliably reduce the gross alpha activity and uranium levels (and chlorite levels, also) to the PHG or MCLG would be approximately $9,396,000 per year including annualized capital and O&M costs. The estimated cost to install and operate such a treatment system at each MWD turnout that would reliably reduce the gross alpha activity, gross beta activity and uranium levels to the PHG or MCLG would be approximately $248,541,000 per year including annualized capital and O&M costs. This would result in an assumed increased cost for each customer of $2,324 per year to lower the levels of Arsenic, gross alpha activity, gross beta activity and uranium to levels below the PHG or MCLG.

SUMMARY OF PHG EXCEEDENCES:

CONTAMINANT	UNITS	PHG [MCLG]	MCL	Level of Detection
Arsenic	ppb	0.004	10	ND – 10.6
Coliform Bacteria	% Present	0	5	0 – 0.8
Fluoride	ppm	1	2	ND – 1.59
Gross Alpha Activity	pCi/L	[0]	15	ND – 4.6
Gross Beta Activity	pCi/L	[0]	50	ND – 13.9
Hexavalent Chromium	ppb	0.02	10	ND – 1.54
Uranium	pCi/L	0.42	20	ND – 5.96

As noted above, perchlorate, nitrate/nitrite nitrogen, and nitrate nitrogen were detected in one or more source wells above the PHG. However, the existing treatment processes in place reduced the concentration of these constituents to nondetectable levels or to levels less than the PHG. No further assessment of these constituents is needed for this report.

RECOMMENDATIONS FOR FURTHER ACTION:

The drinking water quality of the Irvine Ranch Water District meets all DDW and USEPA drinking water standards set to protect public health. To further reduce the levels of the constituents identified in this report that are already significantly below the health based MCLs established to provide “safe drinking water”, additional costly treatment processes would be required. The effectiveness of the treatment processes to provide any significant reductions in constituent levels at these already low values is uncertain. The health protection benefits of these further hypothetical reductions are not at all clear and may not be quantifiable. Therefore, no action is proposed.

REFERENCE:

1. California Health & Safety Code: Section 116470 (b)
2. Table of Regulated Constituents with MCLs, PHGs or MCLGs
3. Health Risk Information for Public Health Goal Report, February 2025

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