RESOLUTION 25/26-11

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE BEAR VALLEY COMMUNITY SERVICES DISTRICT AUTHORIZING THE GENERAL MANAGER TO EXECUTE A CONTRACT WITH STANTEC CONSULTING SERVICES, INC. TO COMPLETE A WATER MASTER PLAN IN AN AMOUNT NOT TO EXCEED $449,950

The Board of Directors desires to hire a consultant to complete a comprehensive study and develop a system-wide master plan for its water system, which has never been conducted, and to develop a 20-year capital improvement plan.

The water system was constructed in the early 1970s to serve approximately 3,700 parcels. The system includes 120 miles of water mainline pipe ranging in size from two- to 16-inch, 21 potable wells, six lakefill wells, 19 pressure zones, 17 booster pumping stations with 77 pumps, 43 gravity storage tanks, seven hydro-pneumatic tanks, 653 fire hydrants, two Warf heads, 1,300 system valves, 171 air-vacs, and 108 dead ends.

The District received four proposals, and staff determined that the Stantec Consulting Services, Inc. proposal as the most responsive and responsible. The Infrastructure Committee discussed the proposals and agreed with staff.

The Board of Directors of the Bear Valley Community Services District resolves that General Manager is authorized to execute a contract with Stantec Consulting Services, Inc. to complete a Water Master Plan in an amount not to exceed $449,950

PASSED, APPROVED AND ADOPTED on September 11, 2025, by the following vote:

AYES:	Lewis, Tabor, Hernandez, Paparella, Frevert
NOES:	None
ABSENT:	None
ABSTAIN:	None

Geva Frevert, President
Bear Valley Community Services District

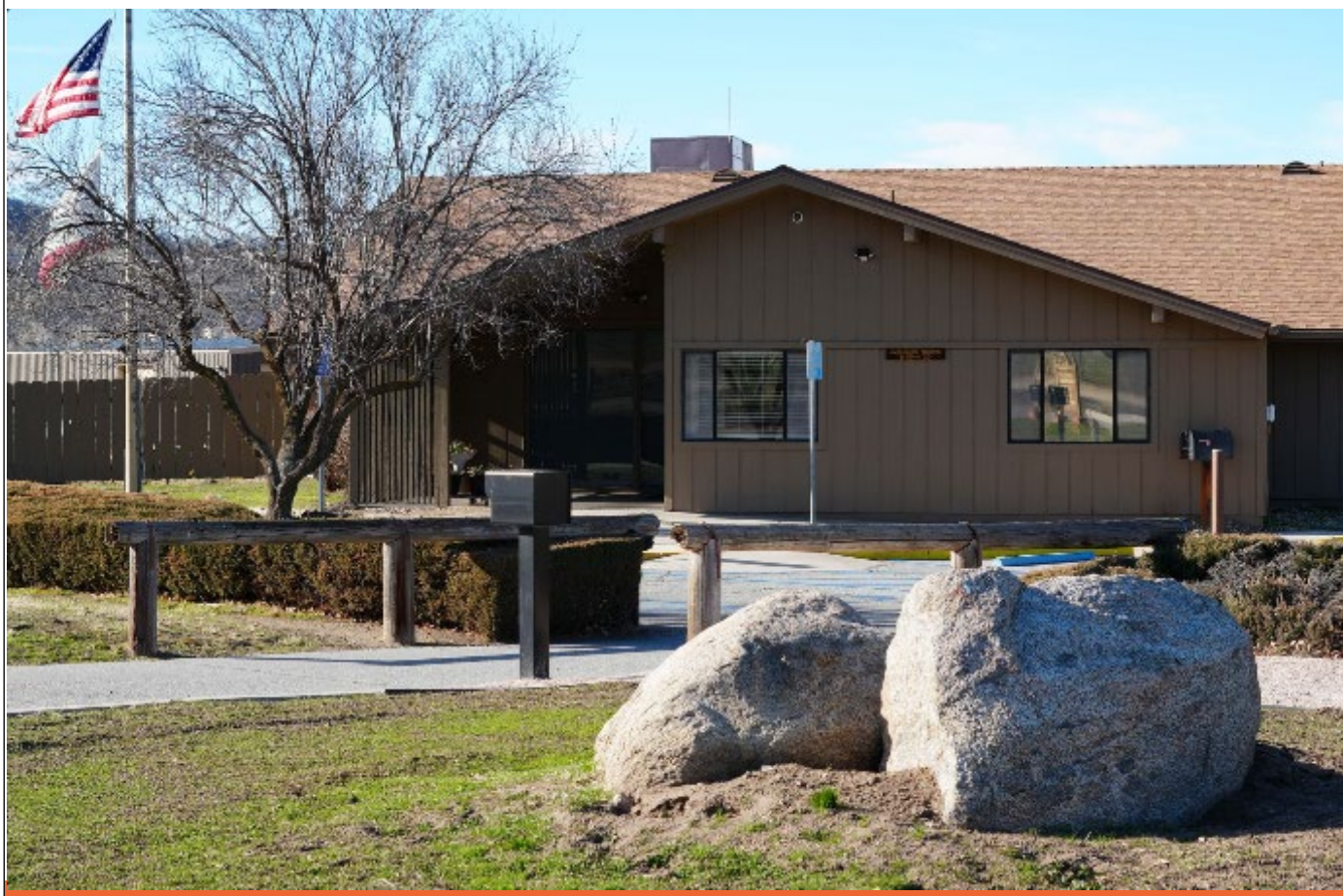
ATTEST:

I hereby certify that the above Resolution No. 25/26-11 was duly introduced, read, and adopted by the District at a regularly noticed meeting held on September 11, 2025.

Denise Jelleschitz,
Secretary of the Board of Directors

Bear Valley Community Services District

Request for Proposals for a Water System Master Plan



August 4, 2025

Stantec Consulting Services Inc.

A. Table of Contents

Stantec Consulting Services Inc.
38 Technology Drive, Suite 200
Irvine CA 92618-5310

August 4, 2025

Bear Valley Community Services District
Public Works Department
Attn: Dawn Smith
Public Works Administrative Specialist II
28999 S. Lower Valley Road
Tehachapi, CA 93591

Reference: Proposal for Professional Engineering Services for a Water System Master Plan

Greetings Dawn,

In response to your Request for Proposal for a Water System Master Plan (WSMP), Stantec Consulting Services Inc. (Stantec) is pleased to provide you with our proposal. We understand that you are looking for an experienced consultant to prepare your WSMP including a hydraulic water model and report documenting the water system strategic planning of the entire service area. This WSMP will provide a comprehensive plan that incorporates assessment review of the existing system facilities with recommended policies and best practices for capital improvements and costs with funding opportunities identified to allow for the proper planning and management of the system. The WSMP will then become a roadmap for Bear Valley Community Services District (BVCSD) in maintaining and implementing necessary improvements while increasing reliability and sustainability. Therefore, you will need an experienced, knowledgeable, and professional team that can successfully support the modeling and planning scope of services required. Stantec is that team.

Locally led with regional support: Stantec is well represented locally, and we bring the depth of experience that comes with more than 450 water resource specialists in California for more than 70 years. We pride ourselves on our ability to provide the resources of an international company for any local project. This ability is the result of strong project management and a commitment to providing the right people with the right experience on the right project, regardless of location.

Customized team with relevant experience specific to this Project: We selected our team members based on their expertise and availability to successfully meet the objectives for your Project. Our team is led by **Jeff Dunn, PE** as our Project Manager and supported by expert staff who are intimately familiar with executing the scope of services proposed and together with many of our proposed team members herein have worked on 10 water and infrastructure master planning studies in the last 5 years for clients such as Cucamonga Valley Water District, Irvine Ranch Water District, and Cities of Fullerton, Manhattan Beach, Orange, and Anaheim. Our team will be guided by our Regional Leader for California, **Tama Snow, PE** for Quality Assurance/Quality Control and provide technical advisory support. Our team has the background and experience required for successful WSMP completion.

Our Commitment: To complete a WSMP, we understand the importance of selecting a committed team that is highly qualified, collaborative and efficient. We have qualified technical experts, engineers, and local subconsultants that we have worked with over the last five years in delivering similar master plans throughout Southern California. We maintain a high level of care that fosters repetitive and long-standing working relationships with our clients such as the Inland Empire Utilities Agency, Metropolitan Water District

Reference: Proposal for Professional Engineering Services for a Water System Master Plan

of Southern California (MWD), Eastern Municipal Water District (EMWD), Ontario, and Irvine Ranch Water District.

Our Funding Expertise: We have an in-house funding group and have assigned **Ben Stewart** to lead the funding and financial analysis effort. In the past ten years, this group has helped clients secure more than $4 billion for their projects from federal, state, philanthropic, and local funding sources. We know how alternative funding and financing can play a critical role in advancing capital improvement plans and sustainable and equitable financial management. We provide financial and funding consulting services to dozens of communities across California including Palmdale Water District, Santa Clarita Valley Water Agency, the City of San Diego, Los Angeles Sanitation (LASAN) and the City of Sacramento.

We have reviewed and examined the information in the Request for Proposal. We have also reviewed your sample agreement provided with proposed RFP/contract terms and believe that should we be selected for this assignment, we will be able to conclude a mutually satisfactory contract with you.

Our proposal herein and our proposed fee estimated that is provided separately is binding for a 90-calendar day period. The proposal is signed by Jeff Dunn, PE who is authorized to negotiate and execute binding legal documents on behalf of Stantec. We have also included Addendum No. 1 which has been signed by Jeff Dunn.

Thank you for giving us the opportunity to submit our proposal. If you have any questions or wish to discuss the information presented, all correspondence and communications should be directed to Jeff Dunn at the address provided on this letterhead or phone number or email listed below.

Respectfully,

Stantec Consulting Services Inc.

Jeff Dunn PE
Principal
Mobile: 9495213110
jeff.dunn@stantec.com

stantec.com

ADDENDUM NO. 1

TO REQUEST FOR PROPOSAL FOR PROFESSIONAL ENGINEERING SERVICES FOR WATER SYSTEM MASTER PLAN

July 11, 2025

This **Addendum No. 1** consists of three pages, and must be signed, dated, and submitted along with the Bid Documents. There was a deadline of June 30, 2025, for questions to be submitted to the District. This addendum will be a question-and-answer addendum, based on all questions submitted by the deadline.

General Questions

1. **Budget**
   - Q. What is the District's budget for this master planning effort?
     - A. *The District identified a budget of $250,000 in FY 2025/26 with additional resources in FY 2026/27. However, it is more important to the District that the master plan be comprehensive and complete than keeping it to a specific budget.*
   - Q. If the District's budget is not sufficient to cover the selected consultant's proposed fee, will the District work collaboratively with the selected firm to refine the scope to align with available funds?
     - A. *Yes, the District will work with the selected firm to refine the scope to fit within the District's available resources.*

Task 1 – Project Kickoff and Public Engagement

2. **Public Engagement Strategy**
   - Q. What other District efforts (current or planned) would require coordination or overlap with the public engagement strategy for the Master Plan?
     - A. *Bear Valley Roads Project (Provost & Pritchard), Mid Valley Wells Project (Provost & Pritchard),*

Task 3 – Data Collection and Analysis

3. **GIS Data Availability and Pressure Zone Mapping**
   - Q. Does the District currently maintain a GIS database of the water system?
     - A. *Partially. It is approximately 80% complete. Not all service lines are identified.*
   - Q. Are pipelines and related assets tagged with pressure zone identifiers?
     - A. *Pressure zones are in there. 80% complete. No valves field identified, valves according to as-builts are in GIS*
   - Q. How complete is the District's attribute inventory for valves, hydrants, and pipelines (e.g., diameter, material, installation year)?
     - A. *We have about 80% input into GIS based on As-builts. Nothing is field verified as of now.*

4. **Field Support**
    Q. Will the District make system operators available to accompany the consultant during field visits and/or respond to information requests as needed?
    A. *Yes*

5. **SCADA System and Operational Data**
    Q. Does the District have a SCADA system that collects and stores operating data?
        1. If so:
            a. Which facilities (e.g., tanks, pumps, PRVs) are connected to SCADA?
            b. Can SCADA data be exported into Microsoft Excel
    A. *No, our SCADA system is outdated and only relays tank levels.*

6. **Water Metering**
    Q. Does the District use an automated meter reading system (drive-by, cellular or radio data collection)?
    A. *No, we manually read our water meters*

Task 3.1 – Hydraulic Model Development and Scenario Analysis

7. **Existing Hydraulic Model**
    Q. Have there been any past water system modeling efforts? Are the reports/model files available?
    A. *No*

8. **Preferred Software Platform**
    Q. Does the District have a preferred hydraulic modeling platform, or should the consultant recommend one?
    A. *Consultant recommendation*

9. **Land Use and Growth Projections**
    Q. Does the District have current and future land use plans available?
        1. If so, in what formats are they provided (e.g., GIS shapefiles, PDFs)?
        A. *No, however, only strictly residential lots remain*
    Q. Are 20-year growth projections available for use in future demand modeling?
    A. *Based on the current land use plan for Bear Valley Springs, the District anticipates that the growth will be less than 1% each year.*

10. **Scenario Planning Inputs**
    Q. Does the District have specific "what-if" scenarios it would like to see analyzed in the model (e.g., fire flow simulations, tank or pump outages, drought/reduced supply, growth buildout)?
    A. *Fire Flow simulations and growth buildout would be nice to see.*

    Q. Should the consultant propose additional scenarios for consideration?
    A. *Yes*

Task 4 – Capital Improvement Plan (CIP)

11. **Pavement Overlay Coordination**
    - Q. Does the District maintain a GIS or tabular database of upcoming pavement overlay or road rehabilitation projects to help coordinate with pipeline replacement planning?
      - A. *Yes, we have tabular*

12. **CIP Planning Horizon Confirmation**
    - Q. Please confirm the District desires:
      1. A detailed **5-year Capital Improvement Plan**, and
      2. A long-range **20-year CIP** including phasing and prioritization.
      - A. *Yes to both*
    - Q. Does Bear Valley CSD have a water system model?
      - A. *Not currently*
    - Q. Does Bear Valley CSD have a map of all the existing piping and appurtenant facilities such as wells, pump stations, pressure reduction stations, and water storage reservoirs?
      - A. *We have as-builts and have the information from them input into our GIS system. However, most have not been field verified.*

Except as expressly amended hereby, all terms and conditions of the Contract Documents shall remain in full force and effect.

IN WITNESS WHEREOF, the parties hereto have executed this Addendum on August 4, 2025.

CONTRACTOR/CONSULTANT

By _____
Principal, Stantec

BEAR VALLEY COMMUNITY SERVICES DISTRICT

By _____
Chester Chapman, Public Works Director

***REMINDER:* Bids are due 2:00:00 p.m. August 4, 2025, 2: p.m. at the Bear Valley Community Services District Office.**

C. Executive Summary

We have reviewed the scope of services contained in the Request for Proposals (RFP), Stantec is capable and qualified to develop a master plan, hydraulic water model, and Capital Improvement Program (CIP) for the Bear Valley Community Services District (District). Our scope of services and approach to the scope of services is described in detailed in our proposal, with assumptions made as necessary to provide a best fit of services to meet the objectives and budgetary considerations.

Qualifications

Stantec is a leading provider of water resources planning and engineering services throughout the world, and we consistently rank in the Top 5 Design Firms for Water/Wastewater and currently are No. 2 in Water by Engineering News Record (2024). In partnership with our clients, we provide best-in-class solutions by leveraging strong local teams with a solid understanding of issues along with global expertise. We have planned, designed, built, and managed many of the largest and most technologically advanced projects in the world.

Our local water resources professionals provide a wide variety of services throughout California, including integrated water resources master planning, recycled water and sewer collection system analyses and master planning, water and wastewater treatment, civil design, watershed management, operations and yield modeling, condition assessments, integrated ground and surface water modeling, hydrology and hydrogeology, aquifer recharge, storage and recovery, conjunctive use of surface water and groundwater, and database management.

Our planning approaches and analyses, including innovative alternative solutions, have been a key factor in our successful planning studies. One of our strengths is the added value that our in-house resources bring to each planning project. This enables us to offer value-added services such as survey/geomatics, GIS expertise, funding and financial planning analyses, asset management, and condition assessment.

Experience

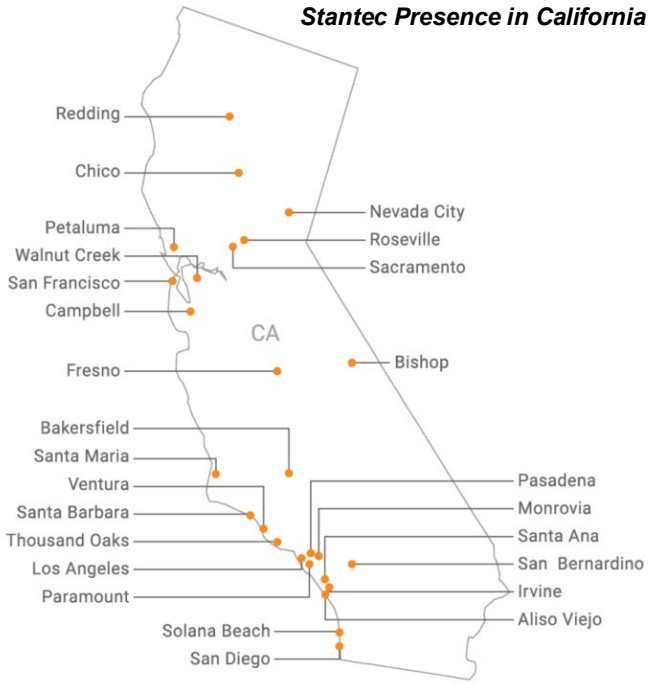
Stantec staff offers a thorough understanding of the requirements, procedures, and protocols required by the request for proposals for the Water System Master Plan (WSMP) and is committed to delivering quality professional services as dictated by the scope of work. We have worked closely with regional and neighboring agencies over the past decade on several planning projects and design projects including water and recycled water planning studies and treatment systems designs. Recently our local staff have worked together on a Water Master Plan for the West Valley Water District, an Integrated Master Plan with Cucamonga Valley Water District and Water Master Plan for the City of Fullerton to name just a few. Our Project Manager has also worked over the past decade with Irvine Ranch Water District, City of Ontario and Inland Empire Utilities Agency on many of their planning and modeling projects.

Project Team

Our proposed local team brings decades of experience in working together as a team on various planning studies and water master plans specifically. Our team has worked together on updating water master plans throughout southern California for our clients including City of Anaheim, City of Orange, City of Manhattan Beach, City of Fullerton, Cucamonga Valley Water District, and subarea master plans for Irvine Ranch Water District.

As described in detail in our Project Team, our team is led and managed by local experts in water master planning and supported with specialists throughout the State of California as needed.

Stantec Presence in California



Our proposed Project Manager, Jeff Dunn, PE is a Principal Engineer with over 30 years of experience and leads Stantec's California Planning and Modeling Group. Our Quality Assurance/Quality Control and Technical Advisor, Tama Snow, PE is a Vice President overseeing our water team in California and has over 33 years of experience in water resources planning and design.

Proven Successful Approach

Our approach to has been proved to be successful on several other recent and similar master plan projects with clients throughout southern California. Our approach focuses on assisting the District to continue providing a reliable water supply to its customers, seeking opportunities to increase local well supplies, providing a plan for system sustainability while maintaining affordability. This focus will yield a reliable, resilient and sustainable CIP strategy while meeting regulatory requirements.

Reliability

We will review the condition of the existing distribution system and make recommendations as necessary for a rehabilitation and replacement program that can be prioritized. We will evaluate the existing groundwater supply and wells with a focus on developing recommendations for increasing the District's local groundwater supply with increased reliability in well sources. By creating and calibrating a hydraulic model of the distribution system, we evaluate the system's ability to continue operation without interruption under various demand and supply conditions. Increasing local supplies will be play a large role in the system's reliability.

Performance

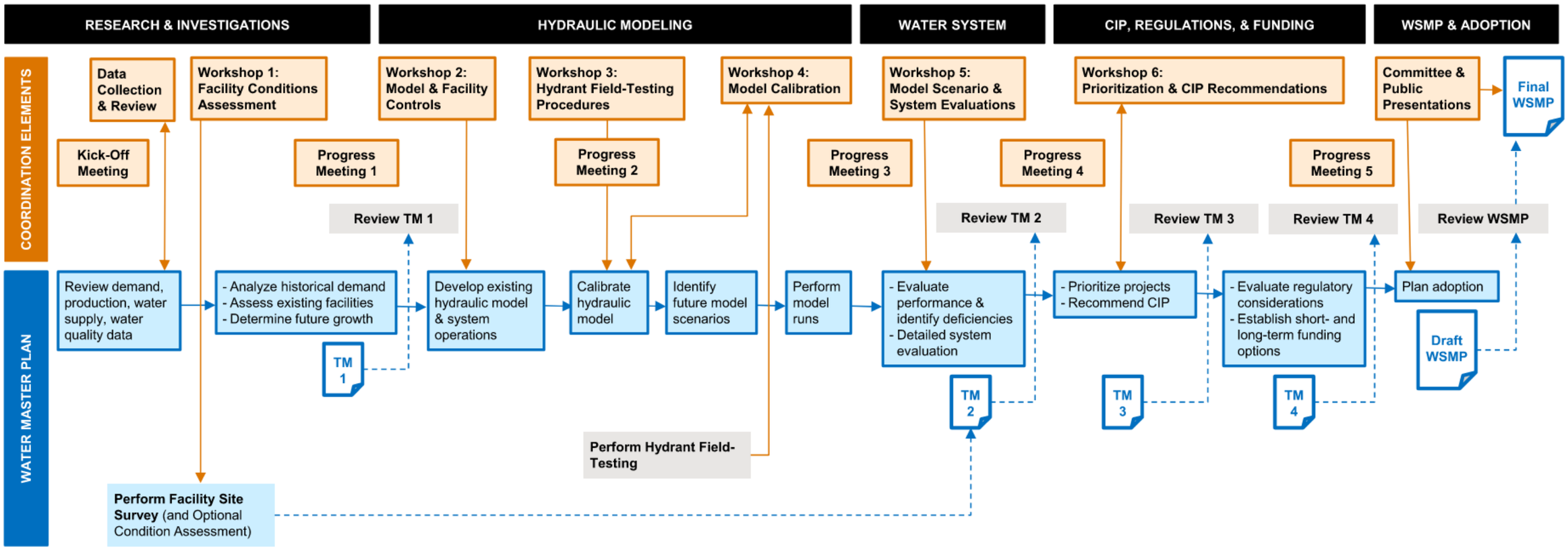
Performance criteria will be established and reviewed with the District, which focus on the level of service desired for the water distribution system while maximizing the useful infrastructure. Based on the performance criteria, we will evaluate the performance of the water distribution system to provide high quality water through an energy efficient conveyance system delivering optimum system pressure to its customers. Evaluations for fire protection and capability of the system will be conducted to ensure they meet current fire hydrant flow and pressure requirements.

Sustainability

Our evaluations will consider the District's ability to meet demand and provide a high level of service to its customers into the future while considering the affordability to maintain and operate their system. Through a prioritized risk-based CIP, with appropriate funding opportunities identified, a strategic plan will be developed to sustain the water supply and distribution system for many years to come.

Work Plan

We have prepared the Work Plan below to complete the scope of work defined in our proposal. The Work Plan will be adjusted as the project progresses and we receive input from the District.



POTENTIAL WATER SYSTEM MASTER PLAN (WSMP) CHAPTERS TO BE SUBMITTED AS TECHNICAL MEMORANDA (TM)

TM 1

Chapter 1: Introduction
Chapter 2: Service Area Characteristics
Chapter 3: Existing Water Distribution System
Chapter 4: Water Supply & Reliability Evaluation

TM 2

Chapter 5: Hydraulic Model & Calibration
Chapter 6: Water System Evaluations

TM 3

Chapter 7: Capital Improvement Program

TM 4

Chapter 8: Regulatory Analysis
Chapter 9: Funding Opportunities

D. Project Approach

Project Understanding

The Bear Valley Community Services District (District) is pursuing its first Water System Master Plan (WSMP), which will provide the District with a comprehensive Capital Improvement Program (CIP) and realistic implementation plan, as well as a hydraulic water model and master planning document. Our understanding of the District's goals include:

- Increase sustainable and local water supply
- Develop reliable and resilient infrastructure
- Establish a long-term road map for successful management of water resources and facilities

Based on our experience and expertise, we've included value-added services to the scope of work in order to meet the District's goals while building on and enhancing all the things they are doing well.

Increase Sustainable and Local Water Supply

The District meets its water demands through 21 groundwater wells and 6 lake fill wells. There are also six wells in the Cummings Valley supplying water from the Cummings Basin managed by the Tehachapi Cummings County Water District (TCCWD). That water is purchased from TCCWD and imported into the District. However, the costs associated with the Cummings Valley wells are increasing. Therefore, one of the District's goals include striving to maximize their local supplies.

While only 5 of the District's groundwater wells are active, the majority of groundwater wells are inactive primarily due to poor water quality, signifying a need to augment the District's wells and increase current supply to meet increased future demands. It has been over a decade (2013) since the District's last well analysis and supply assessment.

We have teamed with Thomas Harder & Co. (TH&Co) as our hydrogeologist to review the existing groundwater quality and characteristics including condition of the existing wells, in particular those that are not active to bring them back in service potentially as well as maintaining and increasing the life expectancy of the active wells. Recommendations will be needed to increase well capacity and redundancy in a strategic and cost-effective manner. Rehabilitation of existing wells including any treatment recommendations will be compared against the costs of drilling new wells.

Develop Reliable and Resilient Infrastructure

The District currently serves approximately 3,000 customers through its water delivery system that consists of 43 reservoirs, 36 booster pumping stations with 77 pumps, 17 pressure reducing stations, 5 active (of 21) groundwater wells, 7 hydropneumatic tanks, 653 fire hydrants, 2 Warf heads, 1,300 valves, 108 dead ends,171 air-vacs, and 110 miles of delivery pipes spread across 19 pressure zones. Thorough investigations are needed to confirm fire protection capacity, supply redundancy and facility reliability to maintain adequate service pressures, water quality and supply without costly interruptions. A water system of this complexity requires an experienced team to conduct the WSMP so the District can be confident in the capital improvements that will be necessary over the next 20 years.

Management Approach

Our systematic approach to managing projects is the Project Management Framework (Framework) — aligned with the Project Management Institute's Project Management Body of Knowledge and used continuously throughout Stantec's projects successfully.

It provides a structure that incorporates work efforts, schedule, financial controls, quality assurance/control (QA/QC), and ultimate project delivery.

Project manager Jeff Dunn will perform project management activities using the Framework. Jeff has 30+ years of expertise in managing and developing over 25 water master plans for local cities and public agencies, including recent Water Master Plan Updates for the City of Fullerton, City of Orange, City of Anaheim, and the Cucamonga Valley Water District.

The scope of work on the following pages showcases our clear understanding of the project and serves as a roadmap to successfully execute this project. Drawing from our team's years of experience and many similar projects, the following describes how we will manage the scope of services to stay on schedule and remain within the level of effort proposed. The status of scope, schedule and budget are discussed at all team meetings and frequent internal check-ins with the project manager.

Scope Changes – Each team member understands the scope of work. Tasks that are requested or

identified as being necessary that are outside the original scope of work are discussed at team meetings and internal check-ins and tracked in a change log.

Level of Effort – Level of effort is managed by setting clear expectations on the deliverables and the schedule.

Schedule – At the on set of the project, Stantec will submit a detailed and thorough data request. Our experience has shown that data collection can be a time-consuming task impacting the schedule, so we will clearly communicate specific information in a timely manner and prioritize data to help keep the project moving. A data collection tracking log will also be used. Frequent internal team check-ins will be held to coordinate and answer questions. The project schedule is maintained by regular meetings, clear understanding of data needs and goals at project initiation. Any potential changes or impacts to the schedule will be communicated to the District.

Progress – We frequently monitor progress to ensure deliverables are complete and ready for submission to the District. Stantec will submit a project status report to the District accompanied with the monthly invoice to provide an accurate accounting of work performed, work progress, and budget status. The monthly invoice will include the budget summary spreadsheet that provides a Task-by-Task breakdown of project billing.

Quality Control and Quality Assurance (QA/QC) – The high quality of our team's work depends on the competence and capabilities of individual employees and on the blending of their talents to meet specific project requirements. Stantec has proposed a talented team to deliver your planning documents and values the necessity for a sound technical approach to delivering final work products. There are three components to our team's quality management:

- Quality Planning–Identify the appropriate quality standards relevant to each proposed project, formal acceptance and determination of the means to satisfy them
- Quality Assurance–Evaluate the overall project performance on a regular basis to provide confidence the project will satisfy the relevant quality standards
- Quality Control–Monitor specific project results to determine if these comply with relevant quality standards and identify ways to eliminate causes of unsatisfactory performance

We have made a significant investment in our overall quality management process to achieve our goals for client service. Adherence to Stantec's quality management procedures is an integral and inseparable part of our basic project management activities. Our practice places great emphasis on prevention (quality assurance), while maintaining checks and balances for inspection (quality control).

We will perform quality control reviews for accuracy, conformance, and integrity of the submittal led by Tama Snow. Prior to submitting to the District, our project manager will sign off on the final submittals to certify accuracy and completeness.

Responsiveness – Our team takes pride in our ability to be responsive to our clients' requests and expectations, which is attributed to our long standing working relationships with our clients. Our goal is to have a collaborative and effective working relationship.

Communication – Jeff will be the point of contact for overall communications regarding project management. The appropriate team member will facilitate meetings, workshops, and additional forms of communication between the District, subconsultants, and the Project Team to ensure the scope of work and schedule are achieved. Stantec will prepare all meeting and workshop agenda, material, and meeting notes.

Staff Substitution – Staff listed in the proposal will not be substituted or added unless a key team member encounters unexpected circumstances where they would need to be replaced. If such circumstances are encountered, we will communicate this to the District.

Technical Approach

We understand the District's primary objectives in the WSMP is to identify and prioritize needed water system improvements that incorporates a comprehensive understanding of the estimated costs and funding requirements to implement the Capital Improvements that will be necessary to support a reliable and sustainable water system and supply for the next 20-years. Recognizing the recent rate adjustments made by the District, our approach is designed to maximize the return on that investment by identifying cost-effective, phased capital improvements that align with both current needs and future growth, while considering current projects the District is already implementing (i.e. Mid-Valley Wells, Oakflat Booster Station, Oakflat Water Main Replacement). Stantec will deliver a water system master plan that recommends best practices, capital improvements and other measures for the proper management of the water service within the District. Provisions for proper management of the water system will focus on optimum reliability and resiliency, while meeting regulatory requirements and local supply goals. To meet these objectives, we have tailored our approach to provide the District with the following:

- Water Supply and Demand Analysis to support the District with the goal of reliable, local, and sustainable supplies to meet the anticipated demands. Our hydrogeologist will review groundwater and well supply recommendations.
- A fully calibrated hydraulic model, that provides a reliable planning tool to evaluate the useful life of the District's water distribution system due to aging as well as performing analyses for water supply, fire flow storage capacity, and pump station capacity.
- Comprehensive CIP that will include an implementation strategy that prioritizes projects taking into consideration improvements driven by capacity deficiencies and level of risk based on the condition of existing facilities. Each capital improvement identified and recommended will include a project description, cost, initiation triggers, and anticipated construction timeline.
- Regulatory review evaluating current, new, or anticipated regulations including water conservation, drought planning, and water quality (arsenic, chromium-6, PFAS, etc.).
- Funding opportunities, in a addition to a brief review of your rates, will be reviewed that could potentially apply to the improvements within the CIP from State and Federal funding programs as well as regional partnerships that may be available.

Reliable Planning Tool

As the District progresses through implementation of its CIP, it will be important to have a hydraulic model that will allow for the flexibility to plan for unforeseen changes to the implementation of the CIP or other factors that will impact the water distribution system. Our experience has demonstrated that an appropriately set up hydraulic model with organized scenarios and datasets establishes the foundation for these types of updates. Answering the needs of future "what-if" scenarios by simple updates to the model and its scenarios is critical for using the model as a planning tool moving forward.

Model Accuracy

For improved accuracy, the hydraulic model will incorporate the following:

- Detailed review of as-builts and recent operational data will be used to update the hydraulic model (using InfoWater Pro or AquaTwin) to reflect the current physical and operational conditions provided by the District.
- Working with District operations staff, Stantec will use field flow and pressure measurements, including hydrant flow test data to calibrate and verify the new hydraulic model.

For proper system evaluation of supply reliability and system optimization, an accurate hydraulic model calibration will be required that represents the water systems actual conditions. Stantec will work to achieve a model calibration accurate to within 10% between the model and field measured results. Our approach will be to calibrate the model for both pressure and flow conditions. A workshop will be held with the operations staff to determine the best fire hydrant test locations and final appropriate procedures for obtaining the field measurements necessary, including pump flow and discharge pressure as well as tank levels provided by SCADA. Following the workshop, Stantec will prepare a hydrant flow testing plan.

We assume that the hydrant flow testing can be performed by the District's operations staff. Ideally, to fully stress the system, testing and calibration is

performed during the summer peak demand months. However, the proposed schedule for this project will require this activity to occur in late winter or early spring. Rather than pushing the entire schedule out six months, we propose to increase the flow from the hydrants to be tested by opening two or more hydrants at a time as opposed to a single hydrant.

A system operating controls workshop will be conducted prior to completion of calibration. We will meet with operations staff to review and obtain facility control data including pressure regulating valve set points, pump station start/stop set points, flow control valve settings, tank level controls, and other operations pertaining to extended period simulation (EPS) scenarios over a 24-hour to 72-hour period.

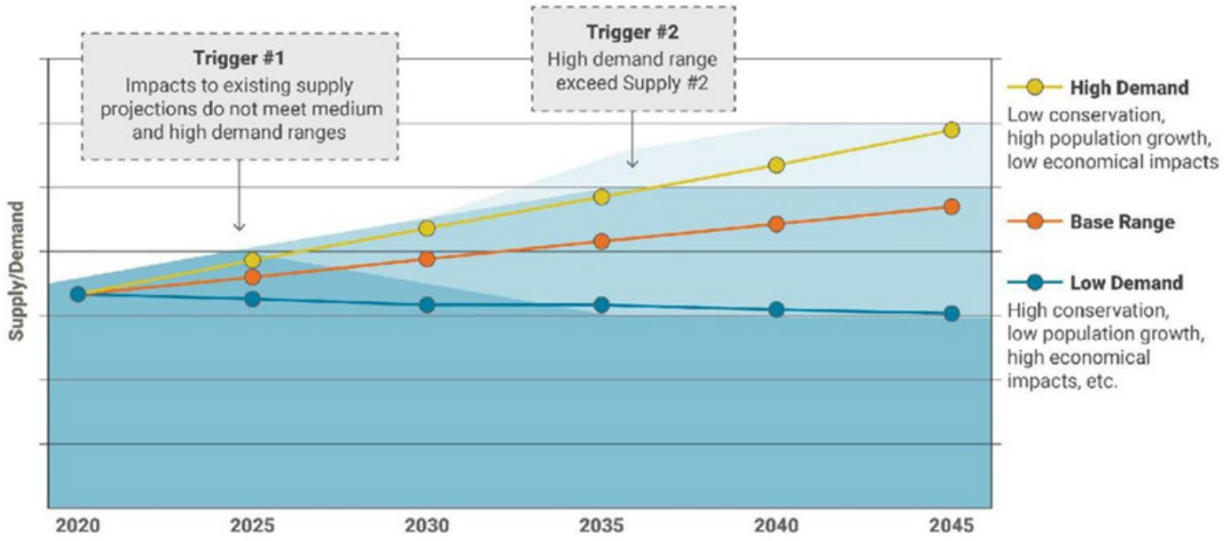
Survey and Condition Assessment

Since the District's GIS contains approximately 80-percent of the system, Stantec's survey team will perform site visits with operation staff to verify locations and elevations for the remaining 20-percent of the facilities, which are assumed to be approximately 20-percent of the system, or roughly 10 storage tanks, 9 pump stations, plus key pressure reducing stations. Two days of our survey crew's time is estimated.

A desktop condition assessment only of the water facilities will be conducted based on our review of available data such as as-builts plans, pump test data, maintenance records, and site photos to be provided by the District's operations staff. Based on this desktop review, or additional issues noted by operations staff, further evaluation and site visits by our condition assessment team of the facilities may be recommended. These site visits and field assessment observations are provided as Optional services in our separate fee proposal. Budget and scope for these additional evaluations can be determined at that time and may also consist of recommendations for materials testing or pump testing by a third party subconsultant, or contracted separately by the District.

Dependable Water Demand and Supply Analysis

Stantec recognizes water demand trends change over time based on a variety of factors including population, current demand management measures implemented, high efficiency fixtures, economic, and climate changes. As water suppliers project future water demands, factors applied to water demands need to be adaptable to the ever-changing environment. Recent studies have evaluated demand projections of urban water suppliers and determined water suppliers have been overestimating demands.[1] Overestimation has been due to a variety of factors including inaccurate population projections and recent successful water conservation efforts. As shown on the figure below, demands in the lower range consider high conservation efforts and low population growth. Demands in the high range assume low conservation efforts and high population growth. This



1 An Assessment of Urban Water Demand Forecasts in California; Abraham, Sonali; Diringer, Sarah; and Cooley, Heather; https://pacinst.org/wp-content/uploads/2020/08/Pacific-Institute-Assessment- Urban-Water-Demand-Forecasts-in-CA-Aug-2020.pdf;August 2020.

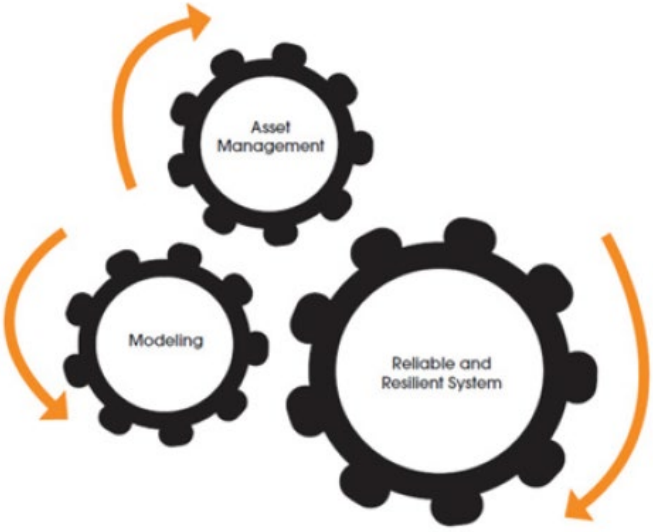
range in demands will paint a better picture of future water needs for the District and allow for trigger-based supply planning.

For your master plan to be a useful planning tool, accurate estimation of demand projections plays an important role. Projecting for future conditions will require additional considerations such as using appropriate forecasting methods, water conservation, and changing water consumption patterns. In our approach, we will develop factors and demand projections that are consistent with population and per capita water use goals, land use factors, and a linear regression analysis based on historical data to develop accurate factors.

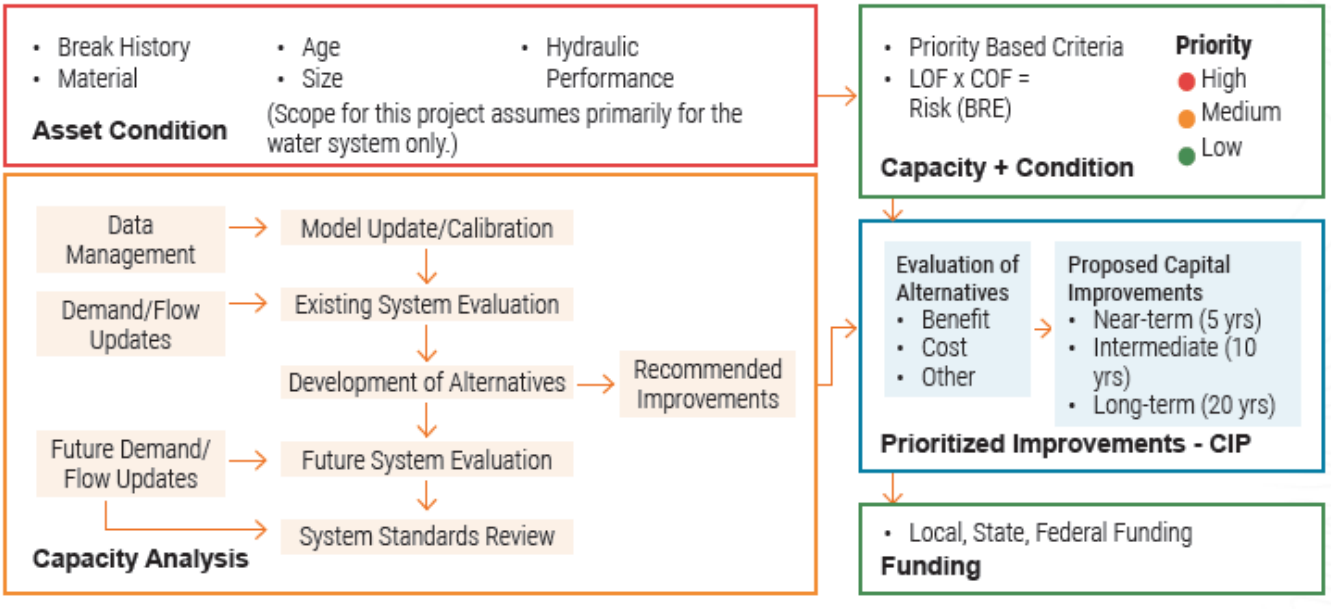
Risk Based Project Prioritization Framework

Given the age of the pipes, pipe materials, external and internal stresses, limited pipe condition information, and budget limitations, determining "which pipes to replace when" is a challenge faced by most utilities. A Risk Based Project Prioritization Framework will help realize the District's goals of a comprehensive, best-practice asset management implementation strategy that builds on all of the things that the District is doing well and enhances those priority areas in need of improvement. This will truly be a collaborative effort, and the result will be a deliverable that your staff will own and operate with minimal support from outside consulting staff.

For progressive utilities, "risk" is the most important concept of evaluating a system. By quantifying and assessing the risks posed by the failure or inability of its assets to meet their overall levels of service, the District can identify operating and maintenance procedures, as well as identifying and prioritizing capital rehabilitation and replacement projects to



mitigate the risks. Risk-based prioritization framework assists decision makers in achieving a reliable management strategy for the system to maintain the level of service. This prioritization is based on a typical risk equation (risk = probability or likelihood [LoF] × consequences [CoF]) to arrive at a severity index which serves to rank the asset relative to the other assets. This is usually conducted in a workshop format, where participants assess the likelihood of failure of the asset within a certain timeframe. The consequence of this failure is also assessed, from an



environmental, safety and economics standpoint. Since different participants are from across the District, especially engineering, operations, maintenance, planning, etc., there is very little disagreement about the priority of the recommendation.

The severity index puts the recommendations in order, so it is quite clear which are the highest priority recommendations. This process will help to focus the entire District on those deficiencies that represent the greatest risk with the result that less time and money is spent correcting items that have a low risk, allowing these savings to be used to reduce the higher risks.

The scoring in the risk prioritization for likelihood is related to the physical condition, capacity and utilization, water quality, and functionality. For the consequences, it is related to environmental impact, loss of service, health and safety implications, regulatory compliance, water loss, community disruption, public image, workforce stress, damage to property, loss of revenue, and service agreements.

The Risk Based Project Prioritization Framework will empower District staff to optimize pipeline replacement through an understanding of pipeline risk to the District, the replacement costs, and value over time for each pipeline.

Capital Improvement Strategy

Capital improvements are significantly important in meeting the District's overall goals, particularly knowing when the improvements and funding are needed. We will synthesize findings from the existing and future water distribution system analyses and hydraulic modeling into a detailed, prioritized, and phased CIP. The CIP will identify projects and facility needs, including an opinion of probable construction costs that accounts for design, construction, and construction management for each recommended project. The opinion of probably construction costs will be a level V cost estimate accurate to within -20% to +50% which is typical for planning level construction cost estimates.

The project costs will be provided for a short-term five-year planning horizon and a long-term twenty-year planning horizon. Implementation phasing will be provided in 5-year increments. Each capital improvement will be sub categorized by infrastructure type (pipe, pump, etc.) and justification for the improvement. This information will be clearly presented in narrative, tabular, and graphic form in the final master plan and categorized by planning horizon, improvement type, and cost. The CIP will be prioritized based on our Risk Based Prioritization Framework to establish implementation needs categorized by high, medium, and low priority ranking.

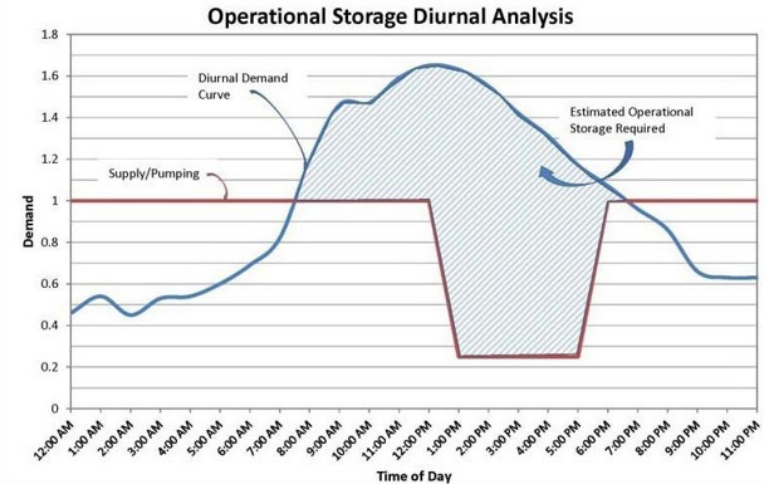
In addition to a prioritized CIP, we will use data provided by the District regarding roadway pavement improvements to be integrated with pipeline improvements impacting the roads. For the pipelines within the system, we will estimate in the CIP incremental rehabilitation and replacement costs. This is accomplished by estimating the cost to replace the system in kind from supplied information and then fractionalizing the cost to a yearly total based on factors such as useful life, pipe material, and pipe break history. This is incredibly useful in planning for the full cost of capital improvements and system maintenance, as Stantec has been performing similar analyses for other Southern California clients.

Regulatory Experience

Our team is up to date with drinking water regulations and water quality parameters that affect public water systems. We understand that the United States Environmental Protection Agency (USEPA) and California State Water Resources Control Board (State Water Board) is continuously updating regulations such as Hexavalent Chromium, Microplastics, Lead and Copper Rule (LCR), Per- and Polyfluoroalkyl Substances (PFAS), and emerging contaminants.

Our approach will include identifying and discussing new drinking water regulations impacting the District's water distribution system. We will also verify the District is in compliance with these regulations and provide a summary of the groundwater quality, treated water quality, and water quality in the District's distribution system.

In addition, the changing climate requires Californians to adopt permanent changes to make water conservation a way of life, using water more wisely to prepare for more frequent periods of limited water supply. The State Water Board has established water conservation regulations based on Senate Bill 1157 that mandates reducing the per capita indoor residential water use to 47 gallons per capita per day (gpcd) by 2025 and 42 gpcd by 2030. Stantec can provide an overview of existing drought and conservation regulations to ensure the regulations are being met by the District.



Example of Operational Storage Analysis

Pumping and Storage Evaluations

For thorough evaluation of pump station and storage capacity, we will conduct a 24-hour to 72-hour EPS model scenario analysis storage analysis for each storage service zone. We will develop the storage requirements by creating Storage Zones from GIS parcel demands, diurnal demand patterns, and pumping supply analyses. Additionally, through the hydraulic model, we will verify zones with more than one tank and if multiple tanks can supply the entire storage zone.

Using a GIS parcel base, we will create storage zones from overlaying the water system and tank facilities with the pressure zone polygons. These parcels, which will contain water demand information based on the parcel land use and duty factors, will then be exported to a spreadsheet for storage calculations.

Valued Funding Assistance

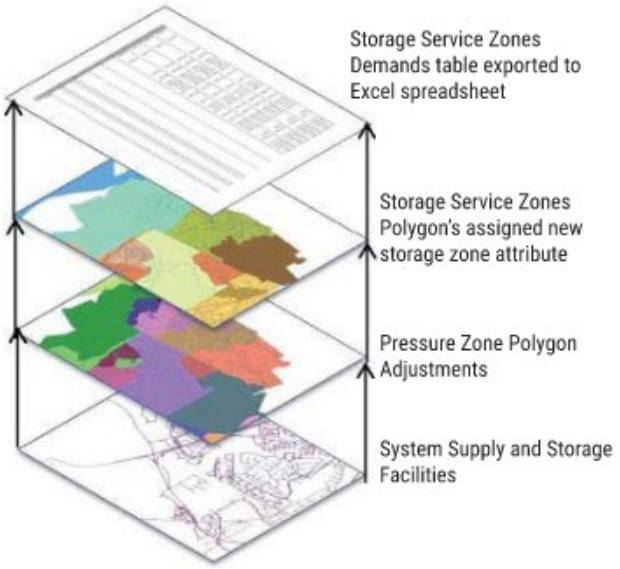
Stantec has the tools, databases, and relationships to help identify suitable sources of funding for the CIP developed for this project.

The Water System Master Plan CIP will incorporate a funding strategy and action plan based on clear decision criteria including, funding availability, schedule alignment related to application deadlines and project milestones, matching fund requirements, agency requirements associated with accepting the funding, and restrictions that may be placed on projects with grant or loan funding.

Consideration will be given to shared features and benefits of the CIP improvements. Prioritization to funding sources will be presented in a funding matrix enabling the District an opportunity to review and filter sources of capital according to key characteristics. A comprehensive explanation of funding options and recommendations will accompany the funding matrix to provide context and guidance.

Workshops with Operational Staff

We propose conducting workshops at key stages of the project to bring your staff and our team together for the sharing of our ideas and analyses to provide opportunity for improved input and direction.



GIS Parcel Base to Storage Zone Analysis Approach

Scope of Work

The proposed scope of work for the WSMP and hydraulic model identifies improvements to the District's water supply and distribution system to support a 5- and 20-year Capital Improvement Program providing adequate services to their customers.

Task 1: Project Kickoff & Work Plan

1a. Kickoff Meeting

To kick off the project, we will meet with the District to develop a final work plan, and budgetary goals based our proposed scope of services herein and the RFP.

This kickoff meeting will be a key opportunity for District representatives and the Stantec team to steer and further clarify scope and critical elements of the project. The meeting agenda will focus on project understanding, scope, District and team member involvement and roles, public engagement, project constraints, and project goals. This meeting will also include a review of background information and project scope as well as an overview of the project schedule, objectives, milestones, and details including a review of the data collection list.

1b. Work Plan

We will update and prepare a work plan that outlines the flow of work for the project, including the required District staff involvement and expectations, key milestones and deliverables. The work plan will also incorporate a public engagement plan that defines a strategy to coordinate with other efforts currently underway in the District.

1c. Project Management and Meetings

Our Project Manager, Jeff Dunn, PE, will conduct the required project management activities to keep the project on budget and schedule. The following activities will be performed:

- Weekly project check-ins – via phone or email
- Meeting Agendas and Minutes
- Monthly billings/invoices
- Monthly status reports with billing
- Updated project schedule and budget
- Milestone tracking and decision log

As part of the project management activities, we propose conducting regular progress meetings and workshops at key stages of the project as described in our scope herein where we feel it would be important to:

- Present findings and/or exchange ideas for key decision making during the project.
- Obtain important feedback to more effectively complete the calibrations, analyses and recommendations.
- Discuss with District staff regarding the water system controls, settings, and other constraints that are needed for accurate modeling.
- Meetings will be used to bring your staff and our team together for idea sharing and to provide the opportunity for improved input and direction.

In addition to progress meetings, we recommend conducting more in-depth workshops attended by your operations staff and other key team members as appropriate. When a workshop is scheduled during a given month, it will take the place of the progress meeting. Workshops will include:

- Facility Conditions Assessment Workshop
- Modeling and Calibration Workshops
  - Hydrant Field-Testing Procedures Workshop
  - Model and Facility Controls Workshop
  - Model Calibration Workshop
- Water System Evaluation Workshops
  - Model Scenario and System Evaluations Workshop
  - Improvements Prioritization and CIP Recommendations Workshop

In addition to the kickoff meeting, a total of five (5) progress meetings and five (5) workshops are included in the proposed schedule and labor projections. One of the progress meetings will be used to review hydrant flow-testing procedures.

Task 2: District Policy, Document Review and Existing Conditions

We will review plans, policies, projects, and data from existing resources that can be utilized in the preparation of the WSMP, as well as perform necessary field work to obtain information and data needed for modeling and analysis.

As part of the kickoff meeting, we provide a list of documents and data that we will need to obtain for review. This list of data will be tracked in a data

collection tracking log providing when the request was submitted, when the data was received, and the condition of the data. The list will include a priority identifying which documents and data is needed first and which can be delayed until later during the project.

Task 3: Data Collection and Analysis

3a. Site Visits and Facility Assessments

For budgetary purposes, we assume this will be a desktop facility analysis with photos of each of the facilities aboveground or that may be visible in a vault provided by the District operations staff. A workshop will then be conducted after our review of the photos, as-built plans of the facilities, and maintenance records to discuss the condition of the facilities. Stantec will provide a list of items for operations staff to consider while taking photos of each facility. Based on our review of the available data provided, we will prepare an assessment of the condition of the facilities which will include a rating for each facility and estimated remaining useful life.

An example rating system will be based on a scoring system of 1 to 5 as shown below:

Grade Classification		Action	Timescale for Longer Life Assets
1	Very good	No action required	No action needed within 20 years.
2	Good	Monitor to see if there are any changes	Some action needed within 20 years.
3	Moderate	Consider specialist assessment	Some action within 10 years.
4	Poor	Get specialist assessment	Action needed within 3 years.
5	Very poor	Replace or repair	Action needed within one years.

If Stantec's condition assessment team were to be requested to visit each facility for the condition assessment, a separate Optional Condition Assessment budget is provided with our fee estimate.

3b. Facility Site Survey and GIS Updates

We assume based on the estimate that 80-percent of the water system is within GIS, that approximately 20-percent of the system may require additional site survey and locating. We estimate our survey crew will require two days to survey approximately 10 storage tanks, 9 pump stations, plus key pressure reducing stations. For each of the facilities visited, the location of aboveground infrastructure will be identified to enable the facilities to be mapped in the GIS database. The vertical elevations will also be noted.

However, if the District were to request Stantec's survey crew to field survey additional facilities or all facilities, additional fees can be negotiated at that time. Our proposed separate fee estimate includes an approximate Optional Survey fee estimate based on the number of pump stations, tanks, wells, and pressure reducing stations within the system.

3c. Groundwater Supply Evaluation

The potential effects of hydrological conditions, economic conditions, behavioral and social changes in water usage will impact the water supply required. Additionally, the constraints for groundwater and new regulations impact the ability to produce and deliver water based on water quality concerns. Hydrogeological considerations such as depths to groundwater, aquifer properties and groundwater quality will be reviewed and reported. We will have our subconsultant, TH&Co, perform the groundwater supply evaluation, which will include a well evaluation.

TH&Co will obtain necessary data to evaluate the hydrogeology of the area and existing well information. The data to be reviewed may include:

- Existing well locations
- Detailed borehole lithologic logs
- Geology and cross sections
- Historical static and pumping groundwater level data (2015 to present)
- Groundwater quality data, including any Title 22 analyses (2015 to present)
- Downhole video survey
- Results of well rehabilitation efforts
- Well construction/completion information including:
    - Casing material
    - Filter pack material
    - Annular seal material
    - Reference point elevation
    - Pump setting

Other potential sources of data may include the United States Geological Survey (USGS), California Statewide Groundwater Elevation Monitoring (CASGEM), California Department of Water

Resources (CDWR), and State of California Department of Public Works' Bulletin 45.

Well Evaluation

TH&Co will conduct a desktop well condition assessment for each of the District's wells. The condition assessment will include determining the construction and production information of each well and an assessment of the condition, or potential condition of each well based on review of the most recent downhole video logs, if available.

As part of this analysis, TH&Co will prepare a table summarizing the remaining life expectancy of the District's wells based on their age, materials used in construction, rehabilitation history, and groundwater chemistry. From that information, we will prepare a well replacement schedule that considers the well construction characteristics and groundwater quality. From that information, we will prepare a life-cycle cost schedule for rehabilitation and/or replacement. The well replacement costs, and schedule will be prepared considering different types of steel construction materials to allow for the comparison of wells constructed with the relatively expensive materials that are corrosion resistant (high upfront costs) to wells constructed of less expensive materials that are more corrosive and don't last as long (low upfront cost).

3d. Existing and Future Demands

The total water demand will be estimated based on the historical production or supply data from the wells and water from TCCWD in conjunction with the billing data to determine demands by land use and spatial allocation for modeling purposes. The demand is defined as the billing or consumption data plus the water loss component. The water loss will be estimated based on the difference between the consumption data and total production data from the District's supplies.

We will identify the demand for each of the following sub-categories or based on the categories provided with the billing information available as appropriate.

- Residential (Single and Multiple Family)
- Commercial (Office, Retail)
- Industrial
- Landscaping (ie, Golf Course, Parks)
- Institutional (Schools, Municipal)

"Duty factors" will be established for each subcategory to allow forecasting of future water usage and modeling of the system based on the land use methodology. Units for these duty factors will be verified with the District. In addition to the duty factors, we will determine water usage patterns to determine the hourly diurnal pattern for purposes of the EPS model analyses. We understand that the District does not have SCADA, except to monitor tank levels. Therefore, we estimate hourly diurnal water use patterns based on other agency investigations and experience working on similar master plan projects.

3e. Regulatory Considerations

The State Water Resources Control Board has established water conservation regulations that requires Californians to adopt permanent changes to make water conservation a way of life. To address the District's water conservation efforts, Stantec will:

- Develop "conservation factors" to project future water demands, meeting the new water conservation legislation (Senate Bill 1157) passed by the State of California in September 2022 that mandates reducing the per capita indoor residential water use to 47 gpcd by 2025 and 42 gpcd by 2030.

Stantec will include a section in the WMP discussing the quality of the District's water supplies including the following items:

- A discussion of drinking water regulations and water quality parameters that affect the wells and the system. We understand that the USEPA and State Water Resources Control Board have new regulations related to Hexavalent Chromium Microplastics, Lead and Copper Rule (LCR), and Cross Connection Control.
- In addition to the PFAS regulations and other known contaminants, a discussion on emerging contaminants that may affect the District's water supply will be included.
- We will prepare a range of water quality and regulatory constraint scenarios that result in differing levels of groundwater availability and treatment requirements. We will review the District's water quality data and sampling locations to prepare a table and comparison with the MCL or MCLG limits for the groundwater sources.
- Based on our review of the regulations and emerging contaminants we will provide a general description of the District's potential future water treatment needs.

Task 3.1 Hydraulic Model

We will develop a hydraulic model of the District's water system to evaluate the system for any deficiencies and improvements needed. The model will assess capacity of the conveyance system and perform "what if" scenarios to assess the impacts for future developments and land use changes.

We have used several hydraulic modeling software for water systems, with the most common in California being Innovyze InfoWater Pro and the new Aquanuity AquaTwin software. We recommend using the AquaTwin modeling software because of the nature of this project. However, at the project kickoff meeting, we can discuss further the hydraulic modeling software selection recommendation.

Hydraulic Model Calibration

Hydrant Flow Testing

For the hydraulic model steady-state calibration, we will use the data from the fire hydrant flow tests. To determine the dates of the field flow testing, it is recommended to use the monthly historic billing data to evaluate the month at or near maximum water usage, which could be between June and August.

Prior to the field flow testing, we will provide flow test sheets for your review. We will then conduct a brief 1-hour Field-Testing Procedures Workshop which will have operations staff present. We will discuss and review number of potential hydrant tests, their locations, equipment installation needs, and pressure loggers. At the workshop, we will show maps that can be marked up for potential testing locations. Locations will be reviewed for traffic concerns and the best potential for stressing the water system for determining the calibration attributes. If possible, temporary pressure loggers would ideally be installed at various locations within the pressure zone being tested.

SCADA data for tank levels from the dates of hydrant flow testing will be requested after field testing has been completed. If SCADA data is not available, we recommend additional staff be positioned at the facilities serving into the area of the test to capture field data prior to and during the hydrant flow. Data would include water level at tanks as well as pressure and flow at the discharge of supply pump stations and/or wells. We assume the District's operations staff will conduct the field testing.

Steady State Calibration

Results of the field tests will be combined with the SCADA and/or field data and will be compared against the modeling results. The model will be calibrated until the field measurements and model results are as close as possible to field measurements. Pipe roughness coefficients (c-factors) will be adjusted based on age, diameter, and material to match measured pressures. The goal is to calibrate the model within 10% of the field measurements.

Hydraulic Model Analyses

The model will be set up to evaluate the system for specific "what-if" scenarios and future scenarios. The model will then be used to perform the water system evaluations including recommendations for any improvements. We will consider the following scenarios to be analyzed for the short-term (5-year) and long-term (20-year) planning horizons:

- **Average Day Demands** – 24-hr EPS
- **Maximum Day Demands** – 24-hr EPS (this scenario will include the peak hour demand conditions at one of the hours during the 24-hr EPS. Results will be reported for 15-minute intervals to better understand the relationship between the pumps and storage tanks operations for a pumping and storage analysis.)
- **Maximum Day plus Fire Flow Analysis** (this will be a scenario to be run using the software's fire flow analysis feature and we will run this feature for all the hydrants' locations within the model.)
- **Adequacy of Pressure Zones** – For each zone we will prepare a table that lists pressures zones, hydraulic grade of the zone, the minimum and maximum ground elevations, maximum and minimum static pressures, and maximum and minimum dynamic pressures from the model analyses. Additionally, a map will be prepared based on the hydraulic model that shows locations of low pressure and high pressure. We will also obtain any pressure complaint areas from operations.
- **Reliability Analysis** – We assume that water system interruption scenarios will be analyzed to determine the reliability and potential deficiencies within the system. Potential reliability analysis scenarios include assumed outages at a key well supply, pump station, or transmission main. We assume that up to five such scenarios will be evaluated.

Task 4: Identify Improvement Projects and Funding Sources

4a. Capital Improvement Program (CIP)

Stantec will use the results from the hydraulic model analysis to identify improvement projects. Improvements will address existing system deficiencies as well as new facilities required for providing continued reliable service through a 20-year planning horizon.

We will provide a phasing of short-term (5-year) and long-term (20-year) improvements, capital cost requirements, cost estimates which incorporate the CIP, and implementation schedule. The proposed improvements should be categorized as high, medium, and low need based on the extent and nature of the problem identified, along with potential impacts of not addressing (i.e., damage from flooding and sink holes). The proposed improvements will also include a priority ranking factor based on whether the improvements require a roadway pavement excavation in a street identified to be repaved. The timeline for CIP planning will be determined upon completion of the identification of needed improvements but is anticipated to be a priority five-year schedule, followed by year 5 through 20 completions of all other nonminor improvements. A preliminary cost estimate will be completed for each project as well as a cumulative cost estimate for each CIP year and overall program.

CIP Methodology

When evaluating improvements and depending upon the locations and general constraints and in addition to the roadway pavement plan provided, we will also consider construction methodologies and innovative technologies, installation methods (e.g., trenchless), and materials that can or should be incorporated with the recommended improvements. These methodologies will be considered at a high planning level with the assumption that further preliminary design and planning analyses will be performed for each recommendation.

We will develop planning level unit cost estimates to be used for the quantities determined for each CIP project recommended. The unit costs will be based on total project estimates including design, construction, construction management, administrative/legal, and other contingencies. Our Cost Estimator specialist will assist our team in developing the unit costs to use for this project based on recent construction bids for similar construction in and around the District and tied to the latest ENR index.

Our recommendations for improvements to the water distribution system pipelines, groundwater wells, imported water connections, pump stations, and storage facilities, and will consider cost effectiveness of capital improvements as well as minimizing annual operation and maintenance costs.

4b. Risk Based Project Prioritization

Stantec will develop a prioritization environment within the District's GIS platform to prioritize the District's asset replacement program. The prioritization will be updated easily. It will conduct various pipeline prioritization scenarios based on capacity and condition. District's staff will be able to conduct data-driven, and risk-based analyses in the future. The prioritization environment will utilize a decision-support approach that incorporates the most effective aspects of Multi-Criteria Decision Analysis and Cost-Benefit Analysis (value for money).

Task 4.1: Identify Short- and Long-Term Funding Options

We will identify short- and long-term funding options for the water CIP projects and on-going maintenance. As we have done recently for Cucamonga Valley Water District and City of Fullerton, we will provide a review of the types of funding opportunities available based on the proposed improvement projects in the CIP. Using this knowledge and experience we have from other agencies; we will provide a detailed review of what other model California cities are doing to fund their systems and recommend a series of funding strategies for the District to consider.

Task 5: Prepare Master Plan Report

We propose that draft chapters be provided as electronic deliverables in Microsoft Word and Adobe PDF throughout the progress of the WSMP. The following chapters will be submitted for review as four (4) technical memoranda for review, comment, and approval by the District:

- Chapters 1 to 4: Introduction, Service Area Characteristics, Water Demand Characteristics, and Existing Water Distribution System
- Chapters 5 & 6: Hydraulic Model & Calibration, Water System Evaluations
- Chapter 7: Capital Improvement Program
- Chapters 8 & 9: Regulatory Analysis and Funding Opportunities

The chapters will be complied together at the end for a comprehensive WSMP report, which will also include an executive summary, and will be delivered as an electronic document.

The table on the right is a proposed Table of Contents for the main chapters anticipated for the Water System Master Plan report.

Task 6: Plan Adoption

This task includes the plan adoption phase, allowing time and effort to present to the Infrastructure Committee, the public, and the District Board for comment and review leading up to the adoption by the District Board.

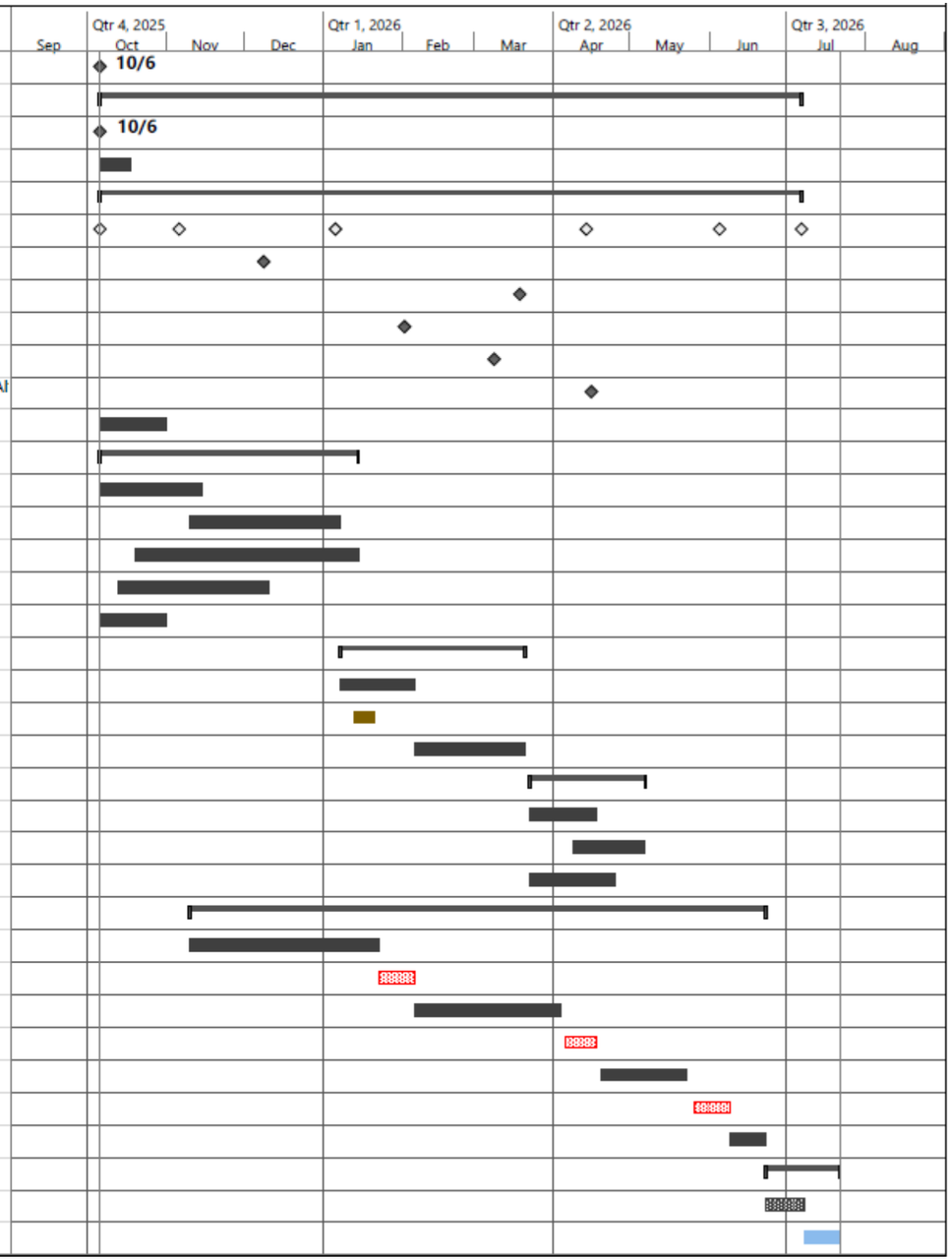
The final Water System Master Plan report shall address District comments, questions, changes, or decisions regarding the draft report.

Preliminary Table of Contents

Chapter	Description
	Executive Summary
1	Introduction
2	Service Area Characteristics - Existing Land Use & Population - Demand Characterization - Existing & Future Demands - Growth Projections
3	Existing Water Distribution System - Distribution System Characterization - Water Storage & Supply Capacity
4	Water Supply & Reliability Evaluation
5	Hydraulic Model & Calibration
6	Water System Evaluations - Existing System Evaluation - Future System Evaluation - Fire Flow Analysis & Capacities - Water Pumping Station Evaluations
7	Capital Improvement Program
8	Regulatory Analysis - Existing & Future Regulations
9	Funding Opportunities

E. Proposed Schedule

ID	Task Name	Start	Finish	Resource Names
1	Notice to Proceed	Mon 10/6/25	Mon 10/6/25	
2	Task 1: Project Kickoff and Work Plan	Mon 10/6/25	Tue 7/7/26	
3	1a. Kickoff Meeting	Mon 10/6/25	Mon 10/6/25	Jeff Dunn
4	1b. Work Plan	Mon 10/6/25	Fri 10/17/25	Jeff Dunn
5	1c. Project Management and Meetings	Mon 10/6/25	Tue 7/7/26	Jeff Dunn,BVCSD Staff
6	Progress Meetings	Mon 10/6/25	Tue 7/7/26	Jeff Dunn,Roxana Carrillo,BVCSD Staff
13	Facility Condition Assessment Workshop	Tue 12/9/25	Tue 12/9/25	Jeff Dunn,BVCSD Staff,Sophia Barron
14	Model and Facility Controls Workshop	Thu 3/19/26	Thu 3/19/26	Jeff Dunn,Roxana Carrillo,BVCSD Staff
15	Model Calibration Workshop	Mon 2/2/26	Mon 2/2/26	Jeff Dunn,Roxana Carrillo,BVCSD Staff
16	Model Scenario and System Evaluations Workshop	Mon 3/9/26	Mon 3/9/26	Jeff Dunn,Roxana Carrillo,BVCSD Staff
17	Prioritization and CIP Recommendations Workshop	Wed 4/15/26	Wed 4/15/26	Jeff Dunn,Roxana Carrillo,Ben Stewart,Laith Al
18	Task 2: District Policy, Document Review and Existing Conditions	Mon 10/6/25	Fri 10/31/25	Jeff Dunn,BVCSD Staff,Roxana Carrillo
19	Task 3: Data Collection and Analysis	Mon 10/6/25	Wed 1/14/26	
20	3a. Site Visits and Facility Assessments	Mon 10/6/25	Fri 11/14/25	Jeff Dunn,Thomas Harder,Sophia Barron
21	3b. Facilty Site Survey and GIS Updates	Mon 11/10/25	Wed 1/7/26	Jason Shockley,Todd Wilson
22	3c. Groundwater Supply Evaluation	Mon 10/20/25	Wed 1/14/26	Thomas Harder
23	3d. Existing and Future Water Demands	Mon 10/13/25	Wed 12/10/25	Roxana Carrillo,Tongxing Hu
24	3e. Regulatory Considerations	Mon 10/6/25	Fri 10/31/25	Connie Adera,Thomas Harder
25	Task 3.1 Hydraulic Model Development	Thu 1/8/26	Fri 3/20/26	Roxana Carrillo
26	Hydraulic Model Calibration	Thu 1/8/26	Thu 2/5/26	Roxana Carrillo
27	Field Hydrant Flow Testing	Tue 1/13/26	Tue 1/20/26	Roxana Carrillo,Sophia Barron,BVCSD Staff
28	Hydraulic Model Analyses	Fri 2/6/26	Fri 3/20/26	Roxana Carrillo,BVCDS Staff
29	Task 4: Identify Improvement Projects and Funding Sources	Mon 3/23/26	Wed 5/6/26	
30	4a. Capital Improvement Program (CIP)	Mon 3/23/26	Fri 4/17/26	Roxana Carrillo,Laith Alfaqih,BVCSD
31	4b. Risk Based Project Prioritization	Thu 4/9/26	Wed 5/6/26	Jeff Dunn,Laith Alfaqih,Sophia Barron
32	Task 4.1: Identify Short- and Long-Term Funding Options	Mon 3/23/26	Fri 4/24/26	Ben Stewart,Laith Alfaqih,BVCSD Staff
33	Task 5: Prepare Master Plan Report	Mon 11/10/25	Mon 6/22/26	
34	Prepare Draft Report Chapters 1-5	Mon 11/10/25	Thu 1/22/26	Roxana Carrillo,Sophia Barron
35	BVCSD Review of Draft Report Chapters	Fri 1/23/26	Thu 2/5/26	BVCSD Staff
36	Prepare Draft Report Chapters 5-9	Fri 2/6/26	Fri 4/3/26	Roxana Carrillo,Sophia Barron
37	BVCSD Review of Draft Report Chapters	Mon 4/6/26	Fri 4/17/26	BVCSD Staff
38	Prepare 100% Draft Report	Mon 4/20/26	Fri 5/22/26	Roxana Carrillo,Sophia Barron
39	BVCSD Review of 100% Draft Report	Tue 5/26/26	Mon 6/8/26	BVCSD Staff
40	Prepare Final Draft Report	Tue 6/9/26	Mon 6/22/26	Roxana Carrillo,Sophia Barron
41	Task 6: Plan Adoption	Tue 6/23/26	Tue 7/21/26	
42	Prepare Infrastructure Committee and Board Presentations	Tue 6/23/26	Tue 7/7/26	BVCSD Staff,Jeff Dunn
43	Final Comments to the Water Master Plan Report	Wed 7/8/26	Tue 7/21/26	Jeff Dunn,Roxana Carrillo,Sophia Barron



F. Labor Projections

	QA/QC - Technical Advisor	Project Manager	Planning/Hydraulic Modeling	Planning Support	Planning/Hydraulic Modeling	Regulatory/Water Quality	Asset/Risk Prioritization	CIP Funding Strategy	Cost Estimator	GIS Specialist	Survey Manager	2- Person Survey Crew	Administrative	Principal Hydrogeologist	Senior Hydrogeologist	Project Geoscientist	Staff Geoscientist	Graphics	Clerical
Name	Snow, Tama	Dunn, Jeff	Carrillo, Roxana	Barron, Sophia	McKenzie, Fletcher	Adera, Connie	Alfaqih, Laith	Stewart, Benjamin	Loucks, James	Wilson, Todd	Shockley, Jason		Tidd, Cat	Tom Harder	Georgie Aronson	Matt Hutchinson			
Total Hours	20	141	476	224	50	32	49	53	8	86	8	16	22	22	32	148	124	12	4

Task	Task Name	Stantec Hours													TH&Co. Hours						Total Hours
1	**Project Kickoff and Work Plan**	**2**	**42**	**24**	**4**	**6**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**20**	**6**	**0**	**8**	**4**	**0**	**0**	**118**
1a.	Kickoff Meeting		2	2											2		2				8
1b.	Work Plan		2	4																	6
1c.	Project Management and Meetings	2	38	18	4	6		1	1					20	4		6	4			104
2	**District Policy, Document Review and Existing Conditions**		**2**	**8**	**8**																**18**
3	**Data Collection and Analysis**	**0**	**21**	**50**	**76**	**0**	**24**	**4**	**0**	**0**	**40**	**8**	**16**	**2**	**10**	**24**	**100**	**96**	**0**	**0**	**471**
3a.	Site Visits and Facility Assessments		16	40	48			4													108
3b.	Facilty Site Survey and GIS Updates		1	2							40	8	16	2							69
3c.	Groundwater Supply Evaluation		2	2											10	24	100	96			234
3d.	Existing and Future Water Demands		1	4	24																29
3e.	Regulatory Considerations		1	2	4		24														31
3.1	**Hydraulic Model**	**0**	**10**	**200**	**0**	**44**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**254**
	Hydraulic Model Development		2	48		8															58
	Hydraulic Model Calibration		2	56		24															82
	Hydraulic Model Analyses		6	96		12															114
4	**Identify Improvement Projects and Funding Sources**	**0**	**14**	**30**	**48**	**0**	**0**	**36**	**44**	**8**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**188**
4a.	Capital Improvement Program (CIP)		4	16	24			4		8	8										64
4b.	Risk Based Project Prioritization		6	10	24			32	4												76
4.1	Identify Short- and Long-Term Funding Options		4	4					40												48
5	**Prepare Master Plan Report**	**14**	**40**	**140**	**80**	**0**	**8**	**8**	**8**	**0**	**38**	**0**	**0**	**0**	**6**	**8**	**40**	**24**	**12**	**4**	**430**
	Prepare TM#1 - Chapters 1 - 4	4	8	32	32						16				6	8	40	24	12	4	186
	Prepare TM#2 - Chapters 5, 6		8	24	24						14										
	Prepare TM#3 - Chapter 7		6	16	12			8			8										
	Prepare TM#4 - Chapter 8, 9	4	4	12	12		8		8												48
	Prepare 100% Draft Report	4	8	32																	44
	Prepare Final Draft Report	2	6	24																	32
6	**Plan Adoption**	**4**	**12**	**24**	**8**																**48**
	Prepare Infrastructure Committee and Board Presentations	2	8	8																	18
	Final Comments to the Water Master Plan Report	2	4	16	8																30
																			Total Base Proposal		1,527

G. Consultant Information

Founded in 1954, Stantec has since provided water resources and all types of engineering services to improve the quality of life in communities where we live and work. During this time, we have added a full complement of engineering and planning disciplines to our portfolio to better serve our clients' needs. We take pride in a long history of being part of the communities we serve.

Stantec Consulting Services (Stantec) is a large, diverse, and continuously growing company offering extensive services to clients around the globe. With 29,000 employees in over 400 locations worldwide and 24 offices throughout California, we have the ability to provide solutions to whatever issues our clients may have. In California, we have nearly 250 professional staff within the Water discipline alone to support our local project needs.

We collaborate across disciplines and industries to bring water, buildings, energy and resources, environmental, and infrastructure projects to life.

Stantec is a worldwide leader in providing water resources engineering services and we consistently rank in the Top 5 Design Firms for Water/Wastewater. In partnership with our clients, we provide practical solutions by leveraging strong local teams with solid understanding of issues and global expertise. We have planned, designed, built, and managed many of the largest and most technologically advanced water resources projects in the world. Stantec has earned a reputation of being a go-to-partner for various agencies.

Stantec's current corporate officers include:

- Gord Johnston – President & Chief Executive Officer
- Vito Culome – Executive Vice President & Chief Financial Officer
- John Take – Executive Vice President & Chief Growth & Innovation Officer
- Susan Reisbord – Executive Vice President & Chief Operations Officer (North America)
- Cath Schefer - Executive Vice President & Chief Operations Officer (Global)
- Kenna Houncaren - Executive Vice President & Chief Corporate Services Officer
- Ryan Roberts - Executive Vice President & Chief Practice Officer
- Asifa Samji - Executive Vice President & Chief Human Resources Officer
- Paul Alpern - Executive Vice President & General Counsel
- Bjorn Morisbak - Executive Vice President & Corporate Development Officer

Stantec

A. Our Legal Name & Address

Corporate Office

Stantec Consulting Services Inc.
10160 112 Street
Edmonton, Alberta T5K 2L6
Canada

Stantec Inc. is a Corporation and publicly traded entities listed on the New York Stock Exchange (Symbol: STN) and the Toronto Stock Exchange (Symbol: STN). Stantec's corporate office is located in Edmonton, Alberta, Canada.

B. Legal Form of Company
A New York Corporation

C. Parent Company
The parent company of Stantec Consulting Services Inc. is Stantec Inc.

D. Representative Contact
Jeff Dunn PE | Project Manager
38 Technology Drive
Irvine, CA 92618
(949) 521-3110
Jeff.dunn@stantec.com

E. California Business License

3259819

Over 29,000 employees globally

250 professional staff in our Water business line in California

Stantec's governance and structure can be found on our website, stantec.com. We do not have any associations with companies whose work on this project or other design or construction of other projects that may potentially rise to a conflict of interest. Additionally, we do not have any contracts that have been terminated for convenience or default within the past three years.

Subconsultant Information

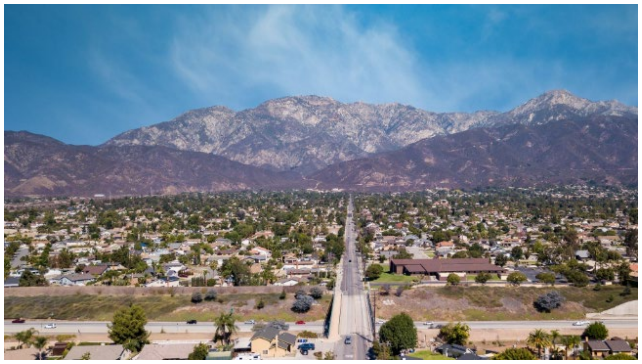
We have teamed with Thomas Harder & Co. for specific scope of work related to the groundwater basin, groundwater supply and wells. Thomas Harder & Co. (TH&Co) will serve the role of hydrogeologist. We have developed a long-term relationship with TH&Co and we consider them a trusted partner. We will provide them with a contract which makes them subject to the same conditions included in our contract with the City. TH&Co will be included in regularly scheduled internal project team meetings and held accountable to meet our expectations and those of the District. Below we provide information about TH&Co.

About TH&Co. TH&Co has a staff of 14 professional geoscientists who bring extensive experience in site elevation, drilling oversight, and system performance testing. They are locally based in Orange and Los Angeles Counties. TH&Co consists of a team of highly specialized experts in municipal and monitoring well design, well construction management, and groundwater quality.

Demonstrated Experience on Previous Projects. Given TH&Co's team experience and localized expertise, they are uniquely qualified to provide hydrogeological consulting support for this project. The proposed staff have experience with projects in the Orange County Groundwater Basin and have worked with the City of Fullerton. Everyone is based out of their Anaheim office. They are familiar with the City of Fullerton's workflows, requirements for technical specifications, and expectations for future construction management and reporting.

For over 30 years, Thomas Harder has been providing technical direction for municipalities to develop sustainable groundwater resources for the residents of California. He has played a key role in providing the technical support needed to develop sustainable groundwater resources. Thomas and his team have experience with large-scale basin analysis, well siting, and municipal well design and construction. They recently conducted groundwater and well evaluations within the Kern County Region, including the Kern Water Bank, Mojave Desert, and Santa Clarita Valley Water Agency, plus provided construction management of more than 24 municipal production wells. The proposed TH&Co staff are committed to facilitating an efficient project working with Stantec that meets or exceeds the project requirements.

H. Experience and References



Integrated Master Plan & Grant Services On-Call

Cucamonga Valley Water District
Ranch Cucamonga, CA

Amanda Coker, PE – Engineering Manager
(909) 360-6914, amandac@cvwdwater.com

Project Costs: $772,497
Project Duration: June 2023 - Present

Role: Prime Consultant

Description:
Stantec is managing the Integrated Master Plan for Cucamonga Valley Water District's (CVWD's) potable water, sewer, and recycled water systems. In addition to the potable water model updates and calibration, system reliability scenarios were evaluated for increased groundwater sustainability. The Integrated CIP incorporated combing CIP improvements for the water, sewer, and recycled water systems based on prioritizing analyses involving criteria such as condition, risk analyses, costs, funding, project vicinity, and other factors. As part of the Grant Services On-Call, we performed a funding sources evaluation for the CVWD's CIP with recommendations for implementation.

Project Manager: Jeff Dunn

Team Members:

Roxana Carrillo, Fletcher McKenzie, Laith Alfaqih, Sophia Barron, Connie Adera, Ben Stewart, Jim Loucks

Water Master Plan and Rate Study

City of Fullerton
Fullerton, CA

Gar Huang, PE – Water Engineer
(714) 738-6895, gar.huang@cityoffullerton.com

Project Costs: Original $929,683 – Final $1,052,476 incorporating additional scope of services
Project Duration: February 2023 - Present

Role: Prime Consultant

Description:
Stantec prepared the Water Master Plan (WMP) including the following.

- A fully calibrated hydraulic model, water distribution system performance and water age analysis
- Water Supply and Demand Analysis to support the City with the goal of increasing their local water supply portfolio
- Asset Risk Assessment and Rehab and Replacement Program, providing life expectancy assessment of the City's infrastructure
- Comprehensive CIP Implementation strategy, providing prioritized projects considering improvements driven by capacity deficiencies and level of risk based on the condition of facility.
- Water Rate Study including cost of service analysis, rate structure analysis, and recommendations for changes to existing rates

Project Manager: Jeff Dunn

Team Members:

Roxana Carrillo, Fletcher McKenzie, Laith Alfaqih, Sophia Barron, Connie Adera, Ben Stewart, Jim Loucks

Water Master Plan Update

City of Orange
Orange, CA

Sonny Tran, PE – Assistant Water Manager
(714) 288-2497, stran@cityoforange.org

Project Costs: $314,892
Project Duration: March 2020 – Feb 2022

Role: Prime Consultant

Description:
Stantec updated the Water Master Plan and hydraulic model while meeting the City's objectives including the following: Calibrated the model for extended period simulations (72-hours) and steady-state conditions with a field hydrant flow testing program; Analyzed water demand and supply projections including evaluated existing groundwater supply to meet future demands and redundancy considerations; Evaluated optimization of supply facility operation and distribution system maintenance program; Provided a phased and prioritized CIP with cost estimates; Investigated water quality within the system and address any regulatory concerns; and identified any deficiencies and "bottle necks" in the water system.

Project Manager: Jeff Dunn

Team Members:

Roxana Carrillo, Connie Adera, Jim Loucks

Water Master Plan Update

City of Anaheim – Public Utilities Department
Anaheim, CA

David Kim, PE – Principal Engineer
(714) 765-4206, dkim@anaheim.net

Project Costs: Original $400,000 – Final $450,000 due to additional scope of services requested
Project Duration: October 2019 – January 2021

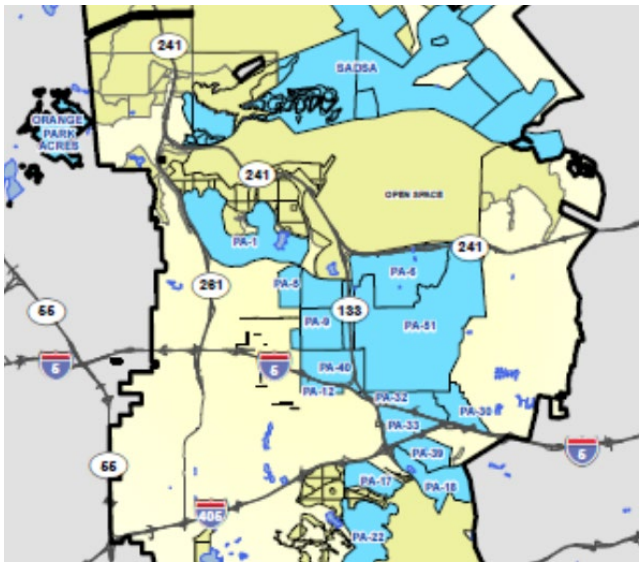
Role: Prime Consultant

Description:
The objectives for the Water Master Plan Update (WMPU) were to address the City's ability to provide a reliable water supply to Anaheim's customers. For the transmission and distribution systems, a Risk Based Pipeline Prioritization methodology was used as an estimation of Likelihood of Failure (LoF) based on available information and the pipeline's potential Consequence of Failure (CoF) based on proximity to other critical assets. These two factors combined to calculate the risk score for each asset. A priority-based Capital Improvement Program (CIP) was then developed based on both the hydraulic model and risk assessment analyses. The CIP identified the proposed improvement projects, the estimated costs, and developed a timetable or prioritization for implementing the improvements over the next 20 years, establishing a comprehensive picture of the improvements based on system hydraulic needs and a risk assessment of aging infrastructure. Total capital improvements totaled approximately $250 M.

Project Manager: Jim Cathcart

Team Members:

Jeff Dunn, Roxana Carrillo, Laith Alfaqih, Jim Loucks



Various Sub Area Master Plans

Irvine Ranch Water District
Irvine, CA

Eric Akiyoshi, PE – Principal Engineer
(949) 453-5552, akiyoshi@irwd.com

Project Costs: ~$1.2 million
Project Duration: March 2002 - Present

Role: Prime Consultant

Description:
Stantec has completed almost two dozen water facility planning studies for IRWD throughout the past few decades assisting IRWD as their District has expanded. Services have included hydraulic modeling, along with design and engineering for potable water, sewer, and recycled water facilities.
The most recent evaluation involved connecting the southern water systems with the northern water systems required hydraulic modeling of the entire District water system. The hydraulic model contains over 40,000 pipes with numerous pressure zones, over 25 storage tanks, over 30 pump stations, nearly 100 pressure reducing valves, and imported water connections. Our analysis investigated future system conditions, pumping and storage verifications, and adjustments to the supplies between imported and groundwater.

Project Manager: Jeff Dunn

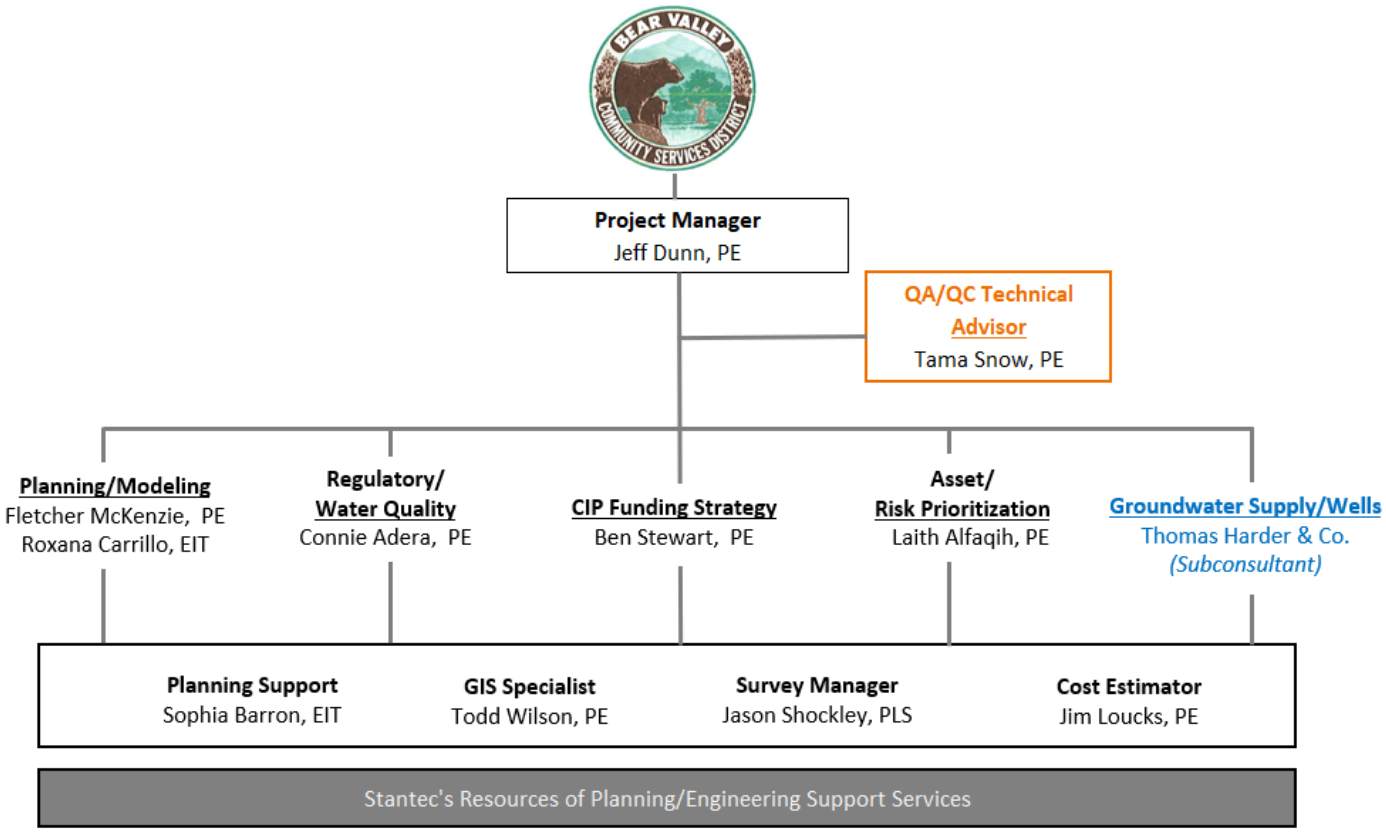
Project Team:

Roxana Carrillo, Tama Snow, Jim Loucks

Project Team

By defining the roles and responsibilities of everyone involved in project delivery, Stantec can set clear expectations for performance. Team leaders can hold – both individually and collectively – people accountable for achieving performance, which ultimately improves our success in project delivery. We have chosen our project team members based on their relevant experience and working together on similar projects throughout southern California. Our proposed Team's Organization Chart is provided below.

Organizational Chart



Summary of Key Team Members

Jeff Dunn PE

Project Manager

30 years of experience

Jeff has over 30 years of experience in working with public water agencies throughout Southern California. He has managed facilities planning and design of infrastructure for potable water, recycled water, and sewer collection facilities. Jeff has prepared over 25 system master planning studies, including asset management analyses and hydraulic model evaluations for facility planning, feasibility, and preliminary design studies. He is also an expert hydraulic modeler, having calibrated and analyzed nearly two dozen models using multiple modeling software. His master plans have included preparations of prioritized capital improvement programs (CIP) incorporating results from hydraulic analyses, operation and maintenance programs, condition assessments, and risk priority assessments.

Project Role:

As our Project Manger, Jeff will be fully involved and in control of the work effort and the project's details on a day-to-day basis. Jeff will manage the project to maintain the schedule, budgets, and deliverables. He will communicate with you on a regular basis and be able to discuss specific aspects of the project. He will prepare the regular status reports, attend meetings, maintain project schedule, and update you on financial conditions.

Tama Snow PE

QA/QC Technical Advisor

33 years of experience

For over 33 years she has been planning and executing projects that improve water resources management capabilities for public and private, clients. Well respected in the industry, she is known as someone who pays close attention to details, is responsive to client needs and doesn't lose sight of the big picture. And over the years, having seen how intensive public scrutiny to innovative water projects in California have delayed and even prevented project implementation, she has become adept at public outreach and communications.

Project Role:

Tama will work closely with Jeff Dunn and other project team members to ensure there are adequate resources available to meet the expectations of the scope of work and project schedule. Tama will provide quality control reviews and ensure the project team is adhering to Stantec's quality assurance and quality control guidelines.

Roxana Carrillo EIT

Planning/Modeling Analysis

10 years of experience

Roxana is a civil engineer in training in Stantec's Water group, leading our planning and modeling projects consisting of facilities analyses, hydraulic modeling, and assisting with technical design of projects including water distribution systems and sewer networks. Her work experience has involved hydraulic model updating and calibrating, water demand and supply analysis, fire flow analysis, and master planning.

Project Role:

She will lead master planning tasks, including assisting Jeff will all communications with the team. She will lead the effort in preparation of the master plan report, CIP, and workshops and presentations.

Fletcher McKenzie PE

Planning/Modeling Analyses

16 years of experience

Fletcher has experience in water planning creating and updating hydraulic models for the analysis of distribution systems, including model calibration, fire flow analysis, unidirectional flushing (UDF), as well as extensive experience in hydraulic transient analysis. He has worked on pump selection, control valve design, external pipeline load analysis, master planning, as well as open channel hydraulics.

Project Role:

He will lead the hydraulic modeling effort including updating and calibration the model and conducting the hydraulic analyses in development of the system improvements for the CIP.

Ben Stewart PE

CIP Funding Strategy

15 years of experience

Ben assists local government and utility clients to form strategic plans through financial planning and will review work with you in reviewing your rates and your capital funding strategies available. He works as part of financial group and works with our funding team assisting our clients to obtain financial planning for water system and supply needs. His background in engineering and economics provides a well-rounded understanding of utility operations, capital planning and data analytics that is integrated into economic evaluations, affordability assessments, and financial planning and forecasting studies.

Project Role:

Ben will lead the team in reviewing the District's rates with the proposed CIP and developing potential funding opportunities.

Connie Adera PE

Regulatory/Water Quality

14 years of experience

Connie is an environmental engineer focusing on water treatment design and water quality studies and analysis, including plant-scale renovation feasibility studies and water quality studies. She has worked on several master planning studies evaluating water quality data and providing recommendations related regulatory compliance.

Project Role:

Connie will lead the portion of the master plan addressing water quality and related regulations impacting the District's operations.

Thomas Harder & Co.
Groundwater Consulting

Thomas Harder PG

Groundwater Supply/Wells

30+ years of experience

Thomas has been providing technical direction for municipalities to develop sustainable groundwater resources throughout southern California, including within the Kern County region and Kern Water Bank. Thomas has played a key role in providing the technical support needed to guide decisions for basin managers. His expertise spans a wide range of hydrogeological disciplines, including regional groundwater basin analysis, sustainable yield, artificial recharge, groundwater management, groundwater models, contaminant hydrogeology, and water wells.

Project Role:

Thomas will lead the water supply evaluations of the water master plan, reviewing the existing wells and production capacities, water quality impacts, and recommendations for groundwater supply sustainability for the future.

Laith Alfaqih PhD, PE

Asset/Risk Prioritization

23 years of experience

Laith has guided organizations at all stages of their asset management journey, from inception to refinement. He is a published author and contributor to the asset management knowledge base, frequently sharing his expertise at industry events. He has managed and performed risk analyses in determining likelihood and consequences of failure analyses, gap analyses, and statistical and life cycle analyses to identify areas of operational efficiencies and cost savings. He understands the nuances of system nuances and requirements to develop robust and sustainable solutions to achieve long-term reliability and resiliency.

Project Role:

Laith will plan, direct, and implement asset management strategies to mitigate risk and plan for future CIP prioritization and implementation schedule.

Appendix A

Resumes

Jeffrey Dunn PE

Project Manager, Water Resource Planning

30 years of experience · Irvine, California

Jeff has 30 years of experience in working with public water agencies throughout Southern California. He has prepared and managed master plan projects including facility planning and design of infrastructure for potable water, recycled water, and sewer collection facilities. Jeff has prepared system master planning studies that have consisted of asset management analyses and condition assessment developing prioritized CIPs in addition to many hydraulic model evaluations for facility planning, feasibility, and preliminary design studies. He is also an expert hydraulic modeler, having calibrated and analyzed over two dozens models using InfoWater Pro modeling software.

EDUCATION

BS in Civil Engineering, California Polytechnic University, Pomona, California, United States, 1995

REGISTRATIONS

Professional Engineer #58455, State of California

PROJECT EXPERIENCE

Integrated Master Plan | Cucamonga Valley Water District (CVWD) | Rancho Cucamonga, California | Project Manager

Jeff is managing the Integrated Master Plan for the CVWD's potable water, sewer, and recycled water systems. In addition to the potable water model updates and calibration, system reliability scenarios were evaluated for increased groundwater sustainability. The Integrated CIP incorporated combing CIP improvements for the water, sewer, and recycled water systems based on prioritizing analyses involving criteria such as condition, risk analyses, costs, funding, project vicinities, and other factors.

Water System Master Plan | City of Orange | Orange, California | Project Manager

Jeff is managing the water master plan to update the current hydraulic model which included calibrating the model with hydrant flow testing program, analyzing water demand and supply projections, evaluating optimization of supply facility operation, and providing a phased priority-based CIP with cost estimates. Water quality issues were addressed including water age analyses, identifying any deficiencies, and improving water circulation and redundancy within the system.

City of Fullerton Water Master Plan Update and On-Call Modeling with Asset Management Program | Fullerton, California | Project Manager

Prepared a Water Master Plan Update to provide a roadmap for long-term capital improvement and water resource planning for the City of Fullerton, comprising of condition assessments for asset management risk analyses, including On-Call Modeling Services. Evaluations were focused on the City's groundwater water supply and water quality to meet various water demand projections, including maximizing existing groundwater supplies. In addition, the project developed an Asset Management Program based on risk analyses prioritizing a 20-year capital improvement plan.

City of Anaheim Water Master Plan Update | Anaheim, California, United States | Water System Planning Lead

The WMP focused on updating water demands and use factors, calibrating the existing distribution model, and preparing an asset management program. Jeff analyzed scenarios addressing supply variability between groundwater and imported between the east and west service areas, including impacts to PFAS issues. The goal was to develop an updated plan for capital planning through 2040 planning horizon.

Water Master Plan | City of Manhattan Beach | Manhattan Beach, California | Project Manager

Jeff managed the water master plan update, which included near- and long-term water supply demands, delivery of adequate flows and pressures for peak demands and fire protection, redundancy for service reliability with diversified water supply sources, and highest efficiency and lowest cost of operation. The master plan included hydrant flow testing and calibration of the City of Manhattan Beach's hydraulic model in InfoWater.

Water Resources Master Plan Update (WRMP) | Irvine Ranch Water District | Irvine, California | Project Manager

Jeff prepared an update of the water supply, demands, and storage chapters of IRWD's 2017 WRMP. The WRMP Update revised water demand projections to be consistent with the recent water conservation measures with updated demand factors for each land use. The water supply chapter was revised to include their recent recycled water expansion projects.

Water System Master Plan | City of La Habra | La Habra, California | Modeler

Hydraulic analyses and report preparation for the Water System Master Plan. The hydraulic analysis was performed using the H2ONET modeling software. The entire existing distribution system was modeled resulting in a network analysis of approximately 550 pipes, including 50 PRV stations, 13 pumps, and three reservoir tanks. The model was calibrated to field-testing data. Other responsibilities included coordinating with the client for collection of data and facilities information, hydraulic model creation, demand calculations, hydraulic modeling analyses for existing and future distribution systems, and report preparation.

Water System Master Plan | Mesa Water District | Costa Mesa, California | Associate Engineer

Hydraulic analyses and report preparation for the Water System Master Plan. The entire existing distribution system was modeled resulting in a network analysis of approximately 700 pipes, including six FCV stations, two pump stations, nine wells, and two reservoir tanks. The model was calibrated to field-testing data. Responsibilities included coordinating with the client for collection of data and facilities information, hydraulic model creation, demand calculations, model calibration, hydraulic modeling analyses for existing and future distribution systems, and report preparation.

Water System Master Plan | City of Brea | Brea, California | Modeler

Hydraulic analyses and report preparation for the Water System Master Plan. The existing distribution system was modeled resulting in a network analysis of approximately 1,800 pipes, including 72 PRV stations, five pump stations, and five reservoir tanks. The model was calibrated to field testing data. Responsibilities included extensive client coordination for the collection of data and facilities information, hydraulic model creation, demand calculation, hydraulic modeling analyses for existing and future distribution systems, and report preparation.

Water Master Plan Update | Laguna Beach County Water District | Laguna Beach, California | Modeler

Computer hydraulic water modeling and analysis of the District's entire distribution system. Three steady-state demand scenarios were analyzed to determine pressure deficiencies and to make recommendations for pipe diameter upgrades. Two extended-period simulation scenarios were performed for storage and pumping analyses using a seven-day period for MWD supply outage and a firestorm fire flow of 35,000 gpm. Other tasks included the calculation of demands, peaking factors, demand projections, population projections, and cost analysis, as well as report writing and preparation of exhibits.

Reservoir Storage Analysis | Irvine Ranch Water District | Irvine, California | Project Engineer

Jeff provided a water storage analysis for IRWD’s potable and non-potable water systems to update their current Water Resources Master Plan. Coordination was required to incorporate IRWD’s GIS data which included demands and water facility information. Tasks included overlaying the water system and USGS information to identify pressure-zone service areas for use in developing storage service areas. For each water system, the demands were calculated and totaled by storage areas in five-year increments to 2025. Surpluses and shortfalls were analyzed to determine recommendations for new storage or operational adjustments. Updated tables and exhibits were created for use in preparing a revised Chapter 5 of the Water Resources Master Plan Update.

Fire Flow and Hydraulic Model On-Call Services | Eastern Municipal Water District (EMWD) | Perris, California | Project Manager

Jeff has managed our fire flow hydraulic modeling on-call tasks for new developments to determine appropriate improvements and service pressures for the additional demands on the existing water distribution system.

On-Call Modeling Services | Orange County Water District (OCWD) | Fountain Valley, California | Project Manager/Lead Modeler

Jeff managed and performed several hydraulic modeling tasks including model updates and calibration Talbert Barrier Well system and analyses, the Groundwater Replenishment System (DWRS) hydraulic modeling including scenario analyses for their basins recharge, and their Green Acres Project (GAP) recycled water system.

On-Call Hydraulic Modeling | Inland Empire Utilities Agency (IEUA) | Chino, California | Project Manager

Jeff managed and performed hydraulic modeling services for the Agency's recycled water model using the InfoWater software. Hydraulic modeling was performed to support the Recycled Water Program Strategy and preparation of technical memorandums such as for the WRCWRA supply options, and City of Ontario’s Euclid Ave expansion project.

Potable Water, Sewer, and Recycled Water Sub-Area Master Plans | Irvine Ranch Water District (IRWD) | Various Cities, California | Project Manager

Since the mid-1990s, Jeff has prepared SAMPs for IRWD’s potable water, sewer, non-potable water, and telemetry systems. To complete the SAMPs, Jeff performed local and regional hydraulic modeling with extended period simulations, phasing studies, and regional storage analyses. Recently, a SAMP update was performed for the Portola Springs service area for flow monitoring and calibration of the sewer model.

Southwest Distribution System Hydraulic Model | Golden State Water Company | Various Locations, California | Project Manager

Jeff updated and calibrated Golden State Water Company's (GSWC) Southwest Distribution System hydraulic model in InfoWater. The GSWC Southwest Distribution System serves the southwestern area of Los Angeles County, City of Gardena, City of Lawndale, and portions of Carson, Compton, El Segundo, Hawthorne, and Inglewood. The existing model, which was previously created for only steady-state analyses, was updated and calibrated as an extended period simulation (EPS) model with high level accuracy for subsequent water quality analyses to be performed by Stantec. The model itself consists of three pressure zones, with close to 9,000 pipe links and several pumps and pressure reducing valves. The project also required using GIS Gateway to update InfoWater model with GIS features.

Vellano Domestic, Reclaimed, and Sewer Systems Master Plans | Chino Hills, California | Project Manager

Planning, design, and computer network analyses of the proposed domestic, reclaimed, and sewer collection systems. The modeling analysis was used to determine pipe diameters, PRV locations, and pump station locations and requirements, as well as to perform a storage analysis. Other tasks involved establishing the pressure criteria and pressure zones; distribution system pipeline alignments and demand calculations; as well as preparing final reports, exhibits, and maps.

Desert Springs Resort Water Supply Assessment | Imperial County, California | Project Engineer

An SB 610 Water Supply Assessment was prepared by Stantec for the Desert Springs Resort project. The project is a motor sports resort community covering 1,105 acres on property which has historically been used solely for agriculture purposes. The resort includes 1,475 residential units of various types, raceway facilities, commercial elements, and recreational facilities such as road raceway and four lakes for water sports. No domestic water provider serves the area so the project will be served by a private water utility company who will operate private water and wastewater facilities. Non-potable, or raw, water supply will be provided by Imperial Irrigation District.

Reclaimed Water Model | Moulton Niguel Water District | Laguna Niguel, California | Project Engineer

Jeff provided a computer network analysis of the District's reclaimed water distribution system using Cybernet software. The analysis included modeling the complete existing and proposed reclaimed water distribution system for steady-state peak demand and maximum-day, 24-hour, extended-period simulation. The steady-state simulations were used to analyze pressure and pipeline deficiencies. The extended-period simulation was used for the pumping and storage analyses.

Recycled Water Program Strategy | Inland Empire Utilities Agency | Various, California | Ongoing | Project Engineer

Jeff has prepared a program strategy for IEUA's future recycled water system to incorporate their member Agency's demands plus maximizing recycled water recharge to their spreading basins. A basin implementation strategy was developed along with system model analyses out to year 2035. A 20-year CIP was developed in 5-year increments.

Inland Empire Utilities Agency (IEUA) - 1630 West Recycled Water Pump Station Surge Protection | Inland Empire Utilities Agency | Ontario, California | Project Manager

To resolve surging and pump failure problems in the 1299 Zone and the 1630 West Pump Station, Jeff performed hydraulic model services to evaluate the system operation, system, surge and risk of pipeline failures. He prepared a technical memorandum that recommended a new surge tank, including BCE evaluation of alternatives and risk management analysis.

Regional Recycled Water System Analysis | Irvine Ranch Water District | Irvine, California | Project Manager

Jeff prepared a hydraulic model analysis and pump station feasibility analyses for the IRWD's northern recycled water distribution system. The District's calibrated model, of their whole system was utilized for the analysis. Recycled water demands were estimated for various demand and operating scenarios to determine future facility layout, sizing, and capacities. Pump design analysis was performed to verify pump curves for their Multi-Zone Pump Station. Several alternatives for a pump station layout were evaluated, with recommendations and project costs provided.

1158 Zone Pump Station Upgrades and RP-4 1158 Zone Outfall Pipeline Feasibility Study, Inland Empire Utilities Agency | Inland Empire Utilities Agency | Chino, California | Project Manager

Jeff is managing feasibility and surge protection analyses for the proposed upgrades to the RP-1 1158 Pressure Zone effluent pump station. The upgrades to the pump station are a recommendation of the current RWPS and the Agency requires better definition of the pumps' capacity, and design recommendations, and feasibility of the improvements in conjunction with the existing facilities. Additionally, Stantec is evaluating the possible causes of leaks occurring in the 42-inch RP-4 1158 Zone Pipeline and providing recommendations. A surge analysis is also being performed for recommendations to the existing surge tank and future surge protection needs.

Tama Snow PE

Vice President, Regional Business Leader, US Pacific

33 years of experience · Walnut Creek, California

For over 30 years Tama has been planning and executing projects that improve water resources management capabilities for public and private clients. Tama is known as someone who pays close attention to details, is responsive to client needs and doesn't lose sight of the big picture. Tama seeks to improve the balance between human and environmental water needs—to serve the greater good. She loves helping clients develop strategic and sustainable solutions to their challenges. And over the years, having seen how intensive public scrutiny to innovative water projects in California have delayed and even prevented project implementation, she has become well versed in public outreach and communications.

EDUCATION

Masters of Engineering, Cal-Poly Pomona, Pomona, CA, 2001

Bachelor of Science in Civil Engineering, University of California at Irvine, Irvine, CA, 1991

Bachelor of Arts in Mathematics, University of California Riverside, Riverside, CA, 1988

REGISTRATIONS

Engineer #C 056934, State of California, 1997

PROJECT EXPERIENCE

Water Augmentation Feasibility Study | Palmdale Water District | Palmdale, California | Project Manager

Palmdale Water District retained Stantec to prepare a water augmentation feasibility study to utilize 5 million gallons per day of recycled water. Alternatives evaluated included surface water augmentation at Palmdale Lake and groundwater injection. Multiple alternatives were evaluated considering regulatory requirements, conveyance and infrastructure needs, acquisition of property for construction of full-scale facility and a level 5 cost estimate was completed.

Pure Water Antelope Valley | Palmdale Water District | Palmdale, California | Program Manager

Stantec was retained by the Palmdale Water District to manage and provide planning services for the Pure Water Antelope Valley Recycled Water Program. Services being provided under this program include preparation of twelve technical memorandums that have included background review and conducting a data gap analysis, conveyance routing and infrastructure needs, recycled water quality analysis, evaluation of delivery methods for multiple construction projects, design of a 200 gallon per minute advanced water treatment demonstration facility, groundwater modeling, equipment procurement, estimating construction costs, obtaining regulatory approval, and stakeholder engagement. The Pure Water Antelope Valley Program will utilize 5 million gallons per day of recycled water from the Los Angeles County Sanitation District's Palmdale Water Reclamation Plant. The recycle water will be advanced treated utilizing microfiltration, reverse osmosis, and ultraviolet advanced oxidation and injected into the groundwater basin.

Lake Forest Zone B to C Pump Station | Irvine Ranch Water District | Lake Forest, California | Principal-in Charge

Stantec was retained by the Irvine Ranch Water District to prepare construction plans and specifications for a new recycled water pump station. The project included preparing a surge analysis, preparing plans and specifications for decommissioning of an existing recycled water pump station and abandoning an existing groundwater well, preparing a preliminary design report, 60 percent, 90 percent and 100 percent plans and specifications for a new recycled water pump station.

Recycled Water and Stormwater Harvesting Study | Port of Long Beach | Long Beach, California | QA/QC

The Port of Long Beach (PoLB) retained Stantec Consulting Services, Inc. (Stantec) to evaluate the feasibility of implementing a recycled water program to reduce potable water demands at the PoLB. The recycled water study was an effort to prioritize planning for improvements to conserve water, ensure water reuse for existing and future port operations, and to protect the environment. The study identified and evaluated the source of recycled water supply, potential recycled water customers, demands, infrastructure requirements and cost to implement.

El Centro Generation Station Zero Liquid Discharge Project | Imperial Irrigation District | El Centro, California | Principal in Charge / QAQC

The Imperial Irrigation District (IID) retained Stantec to prepare a feasibility study to evaluate water treatment requirements to remove Thallium and selenium at their El Centro Generating Station. A water quality analysis was completed, and 8 alternatives were developed. Subsequently, IID hired Stantec to complete the construction plans, specifications and engineer's estimate of probable construction costs for the water treatment plant and brine ponds.

Water Master Plan (WMP)* | Indio Water Authority | Indio, California | QAQC

Tama reviewed all deliverables prior to submitting to client. The 2018 WMP was prepared as an update to the Authority's 2012 Water Master Plan Update. The Authority typically performs a comprehensive update of its WMP every five years to capture changes in water conveyance infrastructure, service population, water demands, planned developments, and water-related regulations to update their capital improvement program (CIP). As the City of Indio continues to grow amid increasingly restrictive water supply conditions, water master planning has become even more vital for the Authority to address system deficiencies, improve operations and efficiency, and develop the necessary supply to meet future demands.

Hydraulic Modeling On-Call Services* | Otay Water District | Spring Valley, California, United States | 2017-2019 | Project Manager

Utilizing the District's existing hydraulic model and data from its GIS and SCADA systems, Tama oversaw steady state and extended period dynamic modeling analyses of the existing and future potable water and recycled water systems and pressure surge analyses for pressure zones or pipelines. The team also identified improvements and recommendations to remedy system deficiencies to meet future conditions and conducting fire-flow analyses.

Johnson Utilities Comprehensive Planning Study* | EPCOR/Johnson Utilities | San Tan Valley, Arizona, United States | Project Manager

Tama prepared an Integrated Water, Wastewater, Reclaimed Water and Water Resources Comprehensive Planning Study (CPS) to provide the utility with a capital improvement plan to address the numerous pressing and immediate needs, including water quality and water pressure issues and sanitary sewer overflows and determining best reuse of the recycled water of different qualities produced at three wastewater treatment plants. Improvements needed to the water, wastewater and recycled water systems were identified to address current issues, as well as prepare the Utility for future growth over 3-year, 5-year, 10-year, and build-out planning horizons. Best use of recycled water included groundwater recharge, identifying recycled water customers and conducting a cost feasibility analyses.

Buena Yard Facility Improvements* | Buena Sanitation District | Vista, California, United States | Project Manager

Tama conducted a comprehensive Facility Planning Study and preliminary design to repurpose the Buena Sanitation District's Buena Yard (previously Shadowridge Water Reclamation Plant) as an emergency wastewater storage and satellite maintenance facility. This Study and the preliminary design included conducting a condition assessment of existing assets, preparing an evaluation of emergency wastewater storage capabilities, hydraulic analysis, hazardous materials study, and preparing a facility plan to bring the complex up to current building codes and evaluate the use of space to repurpose the existing building. A detailed opinion of cost estimate and construction implementation plan was also prepared.

Professional Engineering Design for Five Potable Water Pipeline Replacements* | City of Spring Valley | Spring Valley, CA | Principal-in-Charge

For Otay Water District, Tama is providing engineering services to replace five potable water pipeline segments within the District's service area. Key project issues included an accelerated design and construction schedule to beat County of San Diego repaving moratoriums. The project is currently underway.

Offsite Pipelines for the Irvine Lake Pipeline North Conversion Project* | Irvine Ranch Water District | Orange, CA | Project Manager

The project entailed preparation of a preliminary design report, construction plans and specifications for the design of 5 miles of 42-inch CML&C recycled water pipelines on Santiago Canyon and Jamboree Roads for the Irvine Ranch Water District. The project required extensive coordination with the City of Orange and particular attention to traffic control due to the high volume of traffic in the project areas. Tama provided assistance during bidding and engineering services during construction.

Asset Management As-Needed Services Contract* | Otay Water District | Spring Valley, California | Project Manager

As part of Otay Water District's (OWD) Asset Management On-Call Contract, an asset management data gap analysis was conducted and a data gap closure strategy was developed. Benefits derived from the consolidation of the assets owned and managed by OWD in a centralized asset register included improved quality of asset information for operational and strategic asset management decisions, enhanced business process efficiency, improved customer service in providing accurate asset information, reduced capital and maintenance costs by effectively managing infrastructure assets.

** denotes projects completed with other firms*

Roxana Carrillo EIT

Engineer in Training, Civil Engineering

10 years of experience – Irvine, California

Roxana is a civil engineer in training in Stantec's Water group and has a wide range of experience assisting with water resource planning, hydraulic modeling, and technical design of projects including water distribution systems and sewer networks. Her work experience has involved preparation of system master plans, hydraulic modeling, water demand and supply analyses, fire flow analysis, and facility master planning.

EDUCATION

Bachelor of Science, University of California, Irvine, Irvine, California, United States, 2012

CERTIFICATIONS & TRAINING

Engineer in Training (EIT) Certification, California Board for Professional Engineers, Land Surveyors, and Geologists, California

MEMBERSHIPS

Current Campaign Co-Lead, Local Office Champion, Water For People, 2019 – Present

Member, Orange County Water Association, 2019 – Present

Past President, Current Publicity Chair, Professional Development Conference Committee Member, Society of Women Engineers, 2014 – Present

PROJECT EXPERIENCE

Fullerton Water Master Plan | City of Fullerton | Fullerton, California | Planning Support

Roxana prepared the report and hydraulic evaluations for the Water Master Plan Update to provide a roadmap for long-term capital improvement and water resource planning for the City of Fullerton. Evaluations were focused on the City's groundwater water supply and water quality to meet various water demand projections, including maximizing groundwater under extreme dry demand conditions. In addition, the project developed an Asset Management Program based on risk analyses using and a 20-year capital improvement plan.

Integrated Master Plan | Cucamonga Valley Water District (CVWD) | Rancho Cucamonga, California | Planning Support

Assisting with the Integrated Master Plan for the CVWD's potable water, sewer, and recycled water systems, Roxana provides hydraulic modeling support. In addition, potable water system reliability scenarios were evaluated for increased groundwater sustainability. The Integrated CIP incorporated combing CIP improvements for the water, sewer, and recycled water systems based on prioritizing analyses involving criteria such as condition, risk analyses, costs, funding, project vicinities, and other factors.

Water System Master Plan | City of Orange | Orange, California | Hydraulic Modeling/Planning Support

Roxana updated the water master plan as well as the hydraulic model for the City of Orange. The hydraulic model update included calibration based on the hydrant flow testing program, analyzing water demand and supply projections, evaluating optimization of supply facility operation, and providing a phased priority-based CIP with cost estimates. Water quality issues were addressed including water age analyses, identifying any deficiencies, and improving water circulation and redundancy within the system.

Water Master Plan | City of Manhattan Beach | Manhattan Beach, California | Hydraulic Modeling/Planning Support

Prepared the water master plan update and established near- and long-term water supply demands, evaluated delivery of adequate flows and pressures for peak demands and fire protection, and analyzed redundancy for service reliability with diversified water supply sources. Roxana conducted hydrant flow testing and calibrated the City's hydraulic model in InfoWater.

Engineering Services for Water Master Plan Update | City of Anaheim, CA | Anaheim, California | Hydraulic Modeling/Planning Support

Roxana provided hydraulic analyses and report preparation for the Water Master Plan Update to provide a roadmap for long-term capital improvement and water resource planning for the City of Anaheim. Stantec evaluated the system's water supply, water quality, water demand projections, and water resources/improvement planning. In addition, Stantec developed an Asset Management Program using InfoMaster and a 20-year capital improvement plan.

Gateway Village Development SAMP | Irvine Ranch Water District | Irvine, California, United States | Planning Lead

Roxana developed a Sub-Area Master Plan for domestic water, wastewater, and non-potable water systems to serve the proposed Gateway Village Development in the City of Irvine. Prior to the SAMP, Stantec evaluated various alternatives to serve the Gateway Village Development and recommended the best alternative for each water, wastewater, and non-potable water system. For the SAMP, Roxana evaluated the impacts to the existing infrastructure for potable water, sewer, and nonpotable service as well as demands projections for the development. She proposed infrastructure that led to the creation of a new subzone to adequately meet velocity and pressure criteria via three pressure reducing valves. Operation settings were proposed to ensure proper looping and minimal impact to the exiting systems.

PA 51 Great Park SAMP Update | Irvine Ranch Water District | Irvine, California, United States | Planning Support

Roxana prepared a Sub-Area Master Plan update for domestic water, wastewater, and non-potable water systems to serve a proposed 3,565-acre Great Park and Great Park Neighborhoods in the City of Irvine. The project evaluated the proposed infrastructure and impacts to the existing infrastructure for potable water, sewer, and nonpotable service as well as demands projections for the Great Park lake.

Vista Point Development SAMP | Irvine Ranch Water District | Irvine, California, United States | Planning Lead

Roxana developed a Sub-Area Master Plan for domestic water, wastewater, and non-potable water systems to serve the proposed Vista Point Development in the City of Irvine. The development includes a high-density residential apartment community with 2,500 dwelling units and a recreational facility. The development is proposed to be divided into two phases. Roxana analyzed the hydraulic models for the potable water, sewer, and nonpotable distribution systems to evaluate the impacts to the existing infrastructure. Proposed infrastructure was recommended, ensuring planning criteria is met and minimal impacts to the existing systems.

Hydraulic Model Update and 770 Pressure Zone Analysis | Walnut Valley Water District | Walnut, California, United States | Hydraulic Modeling Support

Roxana updated and evaluated the 770 Pressure Zone in the hydraulic model of the Walnut Valley Water District potable water distribution system to reflect changes since 2012. The updated model was then used to analyze the impacts to the 770 Zone removing existing pressure regulating stations. Additionally, a new source of supply was included from Cal Domestic that directly supplied the 770 Zone.

Safe and Affordable Funding for Equity and Resilience (SAFER) Administrator Program | California State Water Resources Control Board | California, USA | Technical Support

Roxana is part of a broad Stantec team selected by the State of California to serve as Administrators within the Safe and Affordable Funding for Equity and Resilience (SAFER) Program, a multi-billion-dollar effort to ensure the human right to water is achieved across the state. In this role, Stantec can be appointed by California to accept full operational responsibility for a failing or at-risk drinking water system for a period of two to four years during which Stantec will work directly with the community served by the system, its existing staff and leaders, and with state staff to identify and overcome challenges facing the system. Roxana provides technical support for a failing water system in eastern San Diego County. In this role, Roxana coordinates engineering design plans, addresses water quality issues, and provides insight on planning needs for a water distribution system.

Fire Flow & Hydraulic Modeling | Eastern Municipal Water District | Perris, California, United States | Hydraulic Modeling Support

Perform hydraulic modeling and fire flow testing of the Eastern Municipal Water District water distribution system. Stantec provided as-needed engineering services in order for the District to continue delivering water services to more than 800,000 users throughout Riverside County.

Fletcher McKenzie P.E.

Hydraulics Engineer

16 years of experience · Sacramento, California

Mr. McKenzie has over 15 years of experience in water and wastewater engineering. He has been part of project teams creating hydraulic models for the analysis of distribution systems, including model calibration, fire flow analysis, unidirectional flushing (UDF), as well as extensive experience in hydraulic transient analysis. He has worked on pump selection, control valve design, external pipeline load analysis, master planning, as well as open channel hydraulics, and gravity pipeline design. Mr. McKenzie has been the lead transient engineer in studies ranging from gravity systems to 200 MGD pump stations, as well as analyzing Francis reaction turbines.

EDUCATION

Masters of Science, Michigan Technological University/Civil Engineering, Houghton, Michigan, United States, 2011

Bachelors of Science, Colorado State University/Civil Engineering, Fort Collins, Colorado, United States, 2006

Bachelors of Arts, Colorado State University/Spanish, Fort Collins, Colorado, United States, 2006

REGISTRATIONS

Professional Engineer #PE.0049479, Colorado Department of Regulatory Agencies

CERTIFICATIONS & TRAINING

Hydraulic Transient Modeling, Innovyze InfoSurge, Broomfield, Colorado, United States

Hydraulic Transient Modeling, Applied Flow Technology (AFT) Impulse, Denver, Colorado, United States

Hydraulic Transient Modeling, KYPipe KYSurge, Denver, Colorado, United States

PROJECT EXPERIENCE

City of Fullerton Water Master Plan Update and On-Call Modeling with Asset Management Program | Fullerton, California | Modeler

Fletcher was part of the modeling team for the Master Plan Update to provide a roadmap for long-term capital improvement and water resource planning for the City of Fullerton, comprising of condition assessments for asset management risk analyses, including On-Call Modeling Services. Evaluations were focused on the City's groundwater water supply and water quality to meet various water demand projections, including maximizing existing groundwater supplies. In addition, the project developed an Asset Management Program based on risk analyses prioritizing a 20-year capital improvement plan.

Integrated Master Plan | Cucamonga Valley Water District (CVWD) | Rancho Cucamonga, California | Potable Water Modeling Lead

Fletcher is the lead modeler for the potable water system evaluations for the Integrated Master Plan for the CVWD's potable water, sewer, and recycled water systems. In addition to the potable water model updates and calibration using Infowater Pro, system reliability scenarios were evaluated for increased groundwater sustainability. The Integrated CIP incorporated combing CIP improvements for the water, sewer, and recycled water systems based on prioritizing analyses involving criteria such as condition, risk analyses, costs, funding, project vicinities, and other factors.

Potable Water System Hydraulic Model and Master Plan Update, City of Henderson, Nevada | City of Henderson | Henderson, Nevada | Hydraulics and Transient Engineer

This project consisted of conducting a hydraulic transient screening analysis for the City of Henderson's Potable Water Distribution System. The existing potable water system is an Innovyze InfoWater model consisting of over 80,000 pipes and nearly 30 pump stations, which was calibrated to the existing conditions. In addition to the hydraulic transient screening, Mr. McKenzie performed hydraulic modeling to assess water age conditions in the City of Henderson water distribution system. The study objective was to evaluate water age across the City distribution system under average and minimum day demand conditions, in which increasing water age is a proxy for an increase in trihalomethanes (THMs). Recommendations included seasonal adjustments to reduce storage volume, such as reducing the low set point of the tanks in lower demand periods (while maintaining minimum fire flow volumes) in order to increase the tank turnover; THM aeration, and bottle tests to confirm unique THM reaction rates and formation potential.

2018 Comprehensive and Water Distribution Master Plans Update | Arcadis US, Inc. | Columbus, Ohio, United States | Hydraulic Transient Analyst

The City's model is composed of 3,370 miles of pipe, about 21,000 nodes, 15 service districts, 27 pump and booster stations, 38 water storage tanks and serves a population of 1.2 million with an average day demand of 140 MGD. As part of the Master Plan, Stantec is completing a hydraulic transient analysis on four of the City's pump stations, the largest of which has a 90 MGD capacity, to determine transient pressures within the service districts served by each pump station. Fletcher worked on a modeling plan, which included recommendations to skeletonize the model for the transient analysis. The modeling plan also listed key assumptions such as boundary conditions, performance criteria (minimum and maximum transient pressures), and identified the transient analysis scenarios to be completed. Fletcher then executed the modeling plan and incorporated it into a final report documenting the transient analysis and recommendations. Recommendations included some follow-up testing at key locations with high-speed pressure transmitters; and depending on the results, considering adding air chambers and surge-suppression combination air vacuum valves at key locations in the system.

Thornton Integrated Master Plan* | City of Thornton | Thornton, Colorado | Lead Modeler

Served as task lead for the water distribution system master planning part of the integrated master plan, looking at raw water, water treatment, water distribution, and wastewater collection from 2018-2065 (buildout). Responsibilities included hydraulic model review, defining the performance criteria of the system, projecting minimum day, average day, and maximum day demands for four different planning periods, and finally creating proposed capital improvement projects in order to plan for system improvements through buildout. The analysis also looked at three different supply scenarios each with up to three emergency conditions simulating treatment outages. This analysis intended to find the most effective solution to expand the system taking into account the full life cycle, from raw water, treatment, distribution and wastewater collection.

City of Aurora Wastewater Master Plan* | City of Aurora | Aurora, Colorado | Project Engineer

Assisted with development of a system wide all pipes hydraulic model using InfoSewer. The evaluation included analyzing the impacts and needed system upgrades to accommodate future planned growth, as well as existing system evaluation, unit cost development, and timing recommendations for future CIP projects.

Indian Wells Valley Groundwater Authority - Imported Water Pipeline Hydraulics | Indian Wells Valley Groundwater Authority | California City, California, United States | Hydraulic Engineer

Mr. McKenzie served as the hydraulic engineer in charge of model construction for a proposed Imported Water Pipeline which aims to take water from a tank farm and deliver the water over 50 miles of 24-inch pipeline with three booster pump stations lifting the water up to a regulating reservoir, where it will then flow by gravity down to a blending tank for distribution. The project involved identifying a servicing strategy, locating the booster pump stations, sizing the pumps for three different flow conditions, ranging from 6 up to 14 cfs, locating pressure reducing stations, as well as doing a hydraulic transient analysis of the system to evaluate surge mitigation equipment needed. The transient analysis sized hydropneumatic surge tanks to mitigate transient conditions due to a power failure at the pump stations.

San Fernando Groundwater Remediation Project - Hydraulic Transient Analysis | Los Angeles Department of Water & Power | Transient Analyst

Fletcher served as the hydraulic transient analyst for the Tujunga and North Hollywood Treatment Plants, which are comprised of various wells that pump to a treatment plant, which is going to be upgraded. The project was being executed as a design build in partnership with Kiewit Corporation, and was therefore on an accelerated schedule to begin construction. Mr. McKenzie's analysis found that during a power failure event with all wells operating, negative pressures could exceed the manufacturer's recommended limits for some of the treatment equipment. He then sized and located a bladder style air chamber, including specifying an initial gas pre-charge pressure and tank connection size, to mitigate the downsurge from a pump trip event and maintain positive pressure at the equipment of interest.

Benjamin Stewart PE

Principal

15 years of experience · Sacramento, California

Benjamin has leveraged his diverse background to successfully lead utility clients in developing long-term financial plans, designing cost-of-service-based rates, navigating Prop 218 requirements, assessing affordability impacts to ratepayers, and improving customer assistance programs. He has also assisted clients in forming strategic plans through advanced analyses of customer characteristics, water demands, and business case evaluations and feasibility studies of capital investment alternatives. Currently, Benjamin is Stantec's lead consultant for addressing complex affordability issues with the enhanced WARi® methodology. His background in engineering and economics provides a comprehensive understanding of utility operations, capital planning, and data analytics, integrated into economic evaluations, affordability assessments, and financial planning and forecasting studies.

EDUCATION

BS, Civil Engineering, University of Nebraska, Lincoln, Nebraska, 2009

MS, Environmental Engineering, University of Nebraska, Lincoln, Nebraska, 2011

MS, Mineral & Energy Economics, Colorado School of Mines, Golden, Colorado, 2015

REGISTRATIONS

Professional Engineer #0050700, State of Colorado

MEMBERSHIPS

Secretary - CA-NV, American Water Works Association, 2016-Present

Member, American Water Works Association

Rates & Charges Committee, American Water Works Association

M1 Manual Work Group – Demand Elasticity Chapter Lead Author, American Water Works Association

PROJECT EXPERIENCE

City of Fullerton Water Rate Study | Fullerton, CA | Principal

Benjamin is the project manager for the rate study component of a master plan, asset management plan and rate study project. The rate study utilizes outputs from the master plan and asset management plan in a comprehensive financial plan, cost-of-service (COS), and rate design study, including extensive engagement with the City's Infrastructure and Natural Resources Advisory Council. This process promoted buy-in from the community with citizen representatives, while meeting the financial and management goals of the City's public works department. Development of the 10-year financial forecast focused on ensuring the ability to evaluate capital planning scenarios, flexing key variables including annual buried pipe replacement, operating and capital reserve development, and a combination of capital financing alternatives. The COS and rate design process enabled the City to eliminate unnecessary or redundant customer classes while ensuring an equitable allocation of costs among customers.

City of San Diego Strength Based Billing Consultant | San Diego, California, United States | Senior Manager

Benjamin is the project manager responsible for client coordination, team management, stakeholder engagement, and City Council and Commission presentations. The Strength Based Billing project involves developing a new cost allocation and billing framework for the City of San Diego's Metro wastewater system used to provide treatment services to the City's municipal customers and the Metro JPA's 15 other member agencies. This update to the City's cost allocation and billing is motivated by a few key factors, including a need to update allocations from those developed 10+ years ago to reflect the current system dynamics, as well as the implementation of the City's Pure Water program, a potable reuse system, and similar potable reuse programs under development by other member agencies. The Stantec team of financial and engineering experts are working with the City and JPA representatives to account for these and other factors in the creation of a new cost allocation scheme that will maintain revenue sufficiency while acknowledging usage and capacity characteristics of both the system and the served agencies will drastically change in the coming years.

East Bay Municipal Utility District Water and Wastewater Cost of Service and Rate Study| Oakland, CA | Principal

Benjamin is the project manager for a comprehensive water and wastewater cost of service and rate design study for the District. A board workshop was conducted early in the study to educate board members on the rate study process, and to solicit feedback and input prior to developing rate proposals. The study has involved detailed analyses of the District's financial and billing data to facilitate thorough reconsideration of the existing rates. Particular focus is being paid to the tiered water rates and the viability of maintaining tiered rates given recent court decisions regarding the basis for tiered rates at other

agencies in the state. The District's bi-monthly billing data required sophisticated methods to normalize the data to allow for estimation of max month demand factors, and AMI data was used to estimate max day demand factors for the single-family residential class, the only class for which a sufficient number of customers could be analyzed for a representative sample. Extensive conversations and analyses are currently underway to further bolster the foundation for the District's rate structures. The study is ongoing, and rate proposals are scheduled to be finalized in early calendar year 2025.

East Bay Municipal Utility District System Connection Charge Study| Oakland, CA | Managing Consultant

Benjamin led an extensive statistical analysis of water demands in the District's service area to evaluate a range of potential billing parameters for updates to System Connection Charges (SCC). The analysis included testing parameters such as building area, parcel area, indoor and outdoor areas, meter sizes, total rooms, bedrooms, and fixture counts to evaluate the statistical significance of differences in customer groups for each parameter. This analysis helped to inform conversations with District staff to weigh the equity considerations of preferred options with the administrative feasibility of implementing each. Ultimately, this analysis helped to refine demand estimates for every customer class, and of particular importance, provided statistical support to enable the District to offer a reduced charge per dwelling unit for multi-family housing units of less than 500 square feet per dwelling unit. This was seen as an important step forward in a service area grappling with housing shortages and affordability challenges.

City of San Diego Independent Water & Sewer Rates Review | San Diego, California, United States | Principal

Benjamin is the project manager responsible for client coordination, review services, stakeholder engagement, and City Council presentations/training. The independent rates review involves collaboration with the City's Independent Budget Analyst (IBA) and the Independent Rates Oversight Committee (IROC) to provide a unique, outside perspective on the City's water and sewer rate proposals by the Public Utilities Department (PUD) and their rate consultant. The Stantec team is responsible for reviewing PUD financial plans, cost-of-service analyses and rate design models for accuracy and veracity of rate setting principles. Areas of focus include, but are not limited to, reserve policies, demand forecasts and capital funding strategies in the PUD long-term financial plan; system functionalization, cost allocation, and customer characteristics in the cost-of-service analysis; and revenue sufficiency and adherence to Prop 218 principles in the rate design model. Additionally, the Stantec team provided training to City Councilmembers to enhance the collective understanding of the process, requirements, and methodologies employed in calculating water and sewer rates to enable councilmembers to ask pertinent questions and make informed decisions about the proposed rates. The project helped enable the City to adopt rates that adhere to best practices, meet desired objectives, and are equitable and consistent with the requirements of Prop 218.

Northeast Ohio Regional Sewer District Wastewater Rate Study and Affordability Analysis | Cleveland, Ohio | Managing Consultant

Benjamin was responsible for developing and updating financial planning models for the District. Specifically, financial planning models were developed to evaluate multiple capital, operating, and financing scenarios within the District's CSO program to determine the impact on debt financing and necessary rate increases. Benjamin was also responsible for reviewing a cost-of-service model and developing rate structures. Findings were summarized in technical reports, and multiple presentations were given to inform the District staff and board of the findings of the study. Ultimately, recommended rate increases from the efforts were adopted by the District. Benjamin also led a detailed affordability analysis to determine impacts of rate changes to residential customers at the census tract level, and of potential increases in participation in the District's customer assistance program. The analysis used a range of affordability metrics to evaluate customer impacts, and the previously discussed financial model to test financial impacts to the District.

City of Cleveland Water and Sewer Rate Study | Cleveland, OH | Managing Consultant

Benjamin led the development of a service area affordability analysis and water and sewer demand model as part of the City's financial planning and water & sewer rate studies. The service area affordability analysis incorporated actual billing data for all residential customers, compiled to determine typical bills for each census tract. This data was merged with income distribution data to provide a graphical and quantitative analysis of water and sewer bill affordability throughout the service area. This detailed analysis provided the City with an understanding of the factors driving utility affordability, including income, rates, and consumption allowing the City to move forward with a plan to improve affordability through increased participation in assistance programs coupled with efforts to improve conservation and usage efficiency. The City's demand model was developed using time series regression analysis on multiple years of detailed billing data, overlaid with census tract level housing and economic data, detailed parcel information, and local weather data to analyze relationships between service area characteristics and demand for water and sewer services. The results of this analysis were incorporated into an Excel-based demand/ & revenue forecasting model for financial planning.

Connie Adera PE, ENV SP

Environmental Engineer – Water Quality/Regulatory

14 years of experience · Pasadena, California

Connie is an environmental engineer and project manager with 14 years of experience. Connie focuses on water and wastewater treatment design, pump station and conveyance design, and water quality studies and analysis. As a project engineer and project manager for Stantec, Connie works with the water and wastewater treatment group on drinking water, wastewater, water recycling, and water reuse studies and treatment design, pump station designs, plant-scale renovation feasibility studies and water quality studies. At this time, Connie focuses on her career as a project manager. Right now, she works on two $10M grants with the State Board on the Safe and Affordable Funding for Equity and Resilience Program (SAFER) managing the scope, schedule, and budget for technical projects. She manages contracts – budgets, schedules, and scope – for a variety of other projects and takes on technical tasks as needed.

EDUCATION

Bachelor of Science, Environmental Science, Iowa State University, Ames, Iowa, 2007

Master of Science, Civil Engineering, University of Colorado at Boulder, Boulder, Colorado, 2013

REGISTRATIONS

Registered Civil Engineer #0053874, State of Colorado

CERTIFICATIONS & TRAINING

ENV SP, Envision Specialist, Institute for Sustainable Infrastructure

PROJECT EXPERIENCE

Orange Grove Boulevard Pipeline Design | Pasadena Water and Power | Pasadena, California | Project Engineer

As project engineer, Connie was involved in this pipeline alignment project to maintain pressure and a water balance between two different pressure zones in the city. This design replaces an 8”, 12” and 24” water line on a main thoroughfare in Pasadena.

Water System Master Plan | City of Fullerton | Fullerton, California | Water Quality Engineer

Connie assisted the master planning team with several evaluations of the water distribution systems current water quality and future impacts, including analysis of sampling stations and source water quality constituents. Water quality issues were addressed including water age analyses, identifying any deficiencies. Regulatory evaluations and impacts were conducted to consider future supply source improvements that may be needed.

Various Metropolitan Water District Task Orders | Metropolitan Water District | Los Angeles, California | Process Engineer

Connie is a process engineer managing various task orders to identify nitrogen management alternatives, cost phasing, and updating capital costs for MWD’s potential 150 mgd full-scale advanced water treatment facility.

Water System Master Plan | City of Orange | Orange, California | Water Quality Engineer

Connie assisted the master planning team with several evaluations of the water distribution systems current water quality and future impacts, including analysis of sampling stations and source water quality constituents. Water quality issues were addressed including water age analyses, identifying any deficiencies, and improving movement of water from wells and other sources.

Water Master Plan Update | City of Manhattan Beach | Manhattan Beach, California | Project Manager

Connie assisted the master planning team with several evaluations of the water distribution systems current water quality and future impacts, including analysis of sampling stations and source water quality constituents. Water quality issues were addressed including water age analyses, identifying any deficiencies. Regulatory evaluations and impacts were conducted to consider future supply source improvements that may be needed

Water Supply Master Plan | Casitas Municipal Water District | Oakview, California | Project Engineer

Connie is developing potential water supply projects to increase the portfolio of water sources for CMWD as well as the flow rate in order to reduce the overuse of water from Lake Casitas. One project entails converting an area of homes on septic tanks to sewer while the other involves routing desalinated water from Santa Barbara to the Casitas Service Area.

Wastewater Treatment Plant Master Plan | City of Arvin | Arvin, California | Project Engineer and Project Manager

Connie was the project manager and project engineer for a master plan to upgrade the wastewater treatment plant to remove nitrogen. The recommendation included converting an Orbal to a membrane bioreactor and disposing of the effluent in ponds on site. This project was completed on time and on budget.

Graves Reservoir and Wellhead Water Treatment Engineering Services During Construction | City of South Pasadena | South Pasadena, California | Project Engineer and Project Manager

Connie is managing, coordinating, and providing review of submittals and requests for information for the Contractor as well as managing the budget. Construction of the project is currently approximately 30% complete.

Enlozada Wastewater Treatment Plant at Cerro Verde Peru | Freeport McMoran | Arequipa, Peru | Project Engineer

The WWTP utilizes primary clarification, trickling filter/solids contact, secondary clarification, and effluent disinfection. Connie translated drawings and documents between English and Spanish, reviewed manufacturer and construction phase submittals, participated in client meetings, prepared permitting documents, revised calculations, and prepared the O&M manual.

CC Williams Wastewater Treatment Plant | Mobile Area Water and Sewer Service | Project Engineer

Connie worked on the pre-design for the primary clarifiers for this project consisting of a pre-design to the headworks and primary clarifiers at the wastewater treatment plant. The pre-design included coordination with the concurrent master planning activities which included site and facility planning. The work also involved alternatives analysis for bar screens, grit removal technologies, primary clarifiers, and a primary effluent pump station.

Springwood Booster Pump Station | California American Water | Newbury Park, California | Project Engineer and Project Manager

Connie was the project manager and project engineer for a neighborhood booster pump station design. This project had many challenges and ultimately did not go forward due to lack of space and electricity at the pump station location.

WRP 10 Secondary Effluent Pump Station | Coachella Valley Water District | Coachella Valley, California | Project Engineer and Project Manager

Connie is a project engineer and the project manager for the engineering services during construction of a secondary effluent pump station to store and convey secondary effluent for percolation as well as tertiary filter backwash for treatment. Connie is managing, coordinating, and providing review of submittals and requests for information for the Contractor as well as managing the budget. Construction of the project is currently approximately 10% complete.

White Water River channel Replenishment Ponds | Coachella Valley Water District | Coachella Valley, California | Project Engineer and Project Manager

As project engineer and project manager, Connie is involved in the design of three replenishment ponds and conveyance to percolate Colorado River water into the White Water River Channel.

Well 7991 Arsenic Removal Alternatives Analysis | Coachella Valley Water District | Palm Desert, California | Process Engineer

Connie is a process engineer working on the evaluation of various alternatives to remove arsenic from the well water in the southeastern portion of the CVWD service area. The study evaluates rehabilitation of the ion exchange treatment system, blending with other water sources, abandonment of the well, or replacement of the treatment system with a new adsorption or ion exchange system. The evaluation includes a life cycle cost analysis.

Laith Alfaqih PH.D., PE, CRL, MIAM, SDRM

Senior Principal · Asset/Risk Prioritization

23 years of experience · Cincinnati, Ohio

Laith is a results oriented professional engineer, with over 20 years of experience in working across various industries. He is a champion of working collaboratively on inter-professional teams to achieve common goals. He works with organizations--at any stage of their asset management journey--to implement asset management principles and practices that fit their culture and align with their maturity and growth strategies to achieve sustainability, reliability, and resiliency.

EDUCATION

PhD, Civil Engineering, University of Alabama

MS, Operations Management, Enterprise Integration (Management Information Systems), University of Alabama

MS, Environmental Engineering, University of Alabama

BS, Civil Engineering, University of Jordan, Amman, Jordan

REGISTRATIONS

Professional Engineer #76732, Ohio

Certified Reliability Leader (CRL) #150570, Association of Asset Management Professionals

PROJECT EXPERIENCE

City of Fullerton, Asset Management & Water Master Plan | City of Fullerton | Fullerton, California | Asset Management Technical Lead

Laith led the development, evaluation, and prioritization of Fullerton's water infrastructure. Assessed the condition of both aboveground and underground assets. Stantec developed a prioritization plan for asset rehabilitation and replacement based on business risk exposure. Strengthened the City's structured decision support process, by improving the robustness and defensibility of the City's future Pipeline R&R Rate Analysis, evaluated the data provided by the city for use in the pipeline replacement prioritization based on risk analysis.

Water Master Plan Update, | Anaheim, CA | Asset Management Lead

Expanded on the City's asset management program as part of the master plan update. This update was to reflect the improvements and changes made to Anaheim's water infrastructure and to serve as a roadmap for Anaheim's long-term capital improvement program and water resource planning by addressing its' future demands, long term reliability goals, and aging infrastructure. InfoMaster software is utilized to complete a risk-based prioritization for pipeline-improvements.

City of Forth Worth Asset Management | Fort Worth, TX | Project Manager

As legacy project from an acquired firm, it was behind schedule and over budget. The project's scope was to conduct a sanitary sewer evaluation system (SSES) for more than 800,000 feet of conveyance system infrastructure. Reviewed available material and developed an execution plan to complete the project with a minimal financial impact while meeting client's expectations. Led the team to set up assessment methodologies, databases, reporting techniques, cost estimates, and quality assurances/quality control (QA/QC) for the assessment. Compiled and presented the information and results to the client with success.

Capital Program Management and Program Controls Management and Implementation | Cincinnati, Ohio | Capital Improvement Planning and Asset Management Lead

This is a $6.5 million annually for 6-year program. The CIP and asset management task is $1 million/ year. Laith is tasked with developing, communicating, and implementing an integrated approach to define and allocate $130 million Annual CIP for Asset Management (AM) and Consent Decree projects. He collaborates with the AM and Watershed Planning supervising engineer on improving processes and developing and implementing the Asset Management Strategy as part of the Asset Management Plan for watershed and facilities planning. He assists MSD employees from various divisions on documenting, reviewing, and updating the workflow processes. Develops and documents the decision-making process to identify and prioritize capital and operational projects at service, watershed, and basin levels to establish the Program Annual CIP.

Los Angeles County Public Works Deficiency Repair Framework | Los Angeles, California | Asset Management Lead

Identified the process of integrating the work of repairs with existing Los Angeles County Public Works (LACPW) and Los Angeles County Flood Control District (LACFCD) operations, whether the repairs are done internally through work orders or externally through solicitations. Established a procedure to prioritize and conduct the repairs of the deficiencies collected during the Open Channel Inspection (OCI) project.

Community Water Company of Green Valley Asset Management Plan Update | Green Valley, Arizona | Asset Management Lead

Updated and enhanced the asset management plan for the organization to assist them in managing their assets (water distribution and facilities). This will improve the decision-making process towards the assets. Assist in identifying and establishing the renewal and replacement of assets.

Peer Review of AM Risk Assessment for Wastewater Collection and Water Distribution Systems | Austin Water | Austin, Texas | Asset Management Lead

Peer review Austin Water's recent versions of condition assessment scoring for the wastewater collection system and drinking water distribution system. Refine and improve the condition scoring framework to most accurately represent the true conditions in the systems. Provide leading industry practices to further enhance their asset management practices for the wastewater and water systems.

Asset Management and Reliability Centered Design Implementation, Capital Regional District (CRD) | Victoria, British Columbia | Asset Management Lead

Laith developed an Asset Componentization Guide and implemented the processes on the new facilities that CRD has acquired. This guide will be utilized on future assets across CRD. He also developed and implemented an asset cost replacement methodology for new and existing assets to help with long-term capital reserve planning. Laith assisted CRD in discussions and implementation of Reliability Centered Design/Maintenance principles at the new wastewater treatment plants and pump stations and conducted criticality analysis workshops on the new facilities.

Asset Management Improvement Program | Palm Beach County Water Utilities Department (PBCWUD) | Boynton Beach, Florida | Principal

Led the documentation revision and mock auditing of Palm Beach County Water Utilities Department's (PBCWUD's) asset management improvement program, culminating in PBCWUD becoming the first water utility in North America to achieve ISO 55001 certification. I worked closely with PBCWUD staff to implement corrective actions and ensure that the organization was ready for ISO 55001 certification. I provided ongoing support and guidance throughout and after the certification process.

City of Moorhead, Asset Management Services | City of Moorhead, MN | Moorhead, Minnesota | Asset Management Technical Lead

Laith developed and implemented asset management needs for the City of Moorhead, MN across the organization. As part of the implementation plan, the city wants to engage the staff by professionally developing their asset management fundamentals, knowledge, and skills. Additionally, there are areas as part of the AM journey that needs development such as the policy, asset management strategic plan, objectives, and asset management plans.

Jackson Water Asset Management | Jackson Water | Jackson, Mississippi | Asset Management Technical Lead

Laith assisted Jackson Water as part of a federal effort to address the ongoing water crisis that has plagued the city for years. Jackson has one of the oldest water systems in the nation, which has led to an unreliable water supply. Boil-water notices have become a common occurrence, and residents regularly report low water pressure. Worked with the team in developing and implementing asset data collection, condition assessment, development of standard operating procedures, and implementation of computerized maintenance management system (CMMS).

Stantec

Stantec is a global leader in sustainable architecture, engineering, and environmental consulting. The diverse perspectives of our partners and interested parties drive us to think beyond what's previously been done on critical issues like climate change, digital transformation, and future-proofing our cities and infrastructure. We innovate at the intersection of community, creativity, and client relationships to advance communities everywhere, so that together we can redefine what's possible.

Stantec Consulting Services Inc.
38 Technology Drive, Suite 200
Irvine CA 92618-5310

August 4, 2025

Bear Valley Community Services District
Public Works Department
Attn: Dawn Smith
Public Works Administrative Specialist II
28999 S. Lower Valley Road
Tehachapi, CA 93591

Reference: FEE PROPOSAL for Professional Engineering Services for a Water System Master Plan

Greetings Dawn,

As required by your Request for Proposal for a Water System Master Plan (WSMP), Stantec Consulting Services Inc. (Stantec) is pleased to provide you with this separate Fee Proposal for the Water System Master Plan (WSMP).

Our fee is based on our understanding of the project and scope of services as outlined in our proposal incorporating our experience with similar projects. The attached fee table shows the hours and hourly rates for each of our team members proposed to work on this project, broken down by task item.

Our total base fee proposed for the project is a not-to-exceed labor and direct costs of $319,900 and summarized below. Also, as described in our proposal we have made assumptions regarding the level of effort required for field services such as survey and facility site observations. These assumptions were made with budgetary considerations. For field survey and facility locating services to include all facilities (21 wells, 43 tanks, and 36 pump stations) other than the two-days of survey time assumed, then additional budget would be negotiated, and an Optional Survey budget is estimated is provided below. Additionally, Optional Condition Assessment site visits budgeted are also estimated and provided below if the District requires our Condition Assessment team to visit each facility.

Task	Estimated Budget
1. Project Kick and Work Plan	$ 27,206
2. District Policy, Document Review and Existing Conditions	$ 3,880
3. Data Collection and Analysis	$ 90,594
4. Identify Improvement Projects and Funding Sources	$ 53,668
5. Prepare Master Plan Report	$ 88,932
6. Plan Adoption	$ 11,704
Base Scope of Services	**$ 319,900**
Optional Field Survey Services	$ 90,528
Optional Field Condition Assessment Site Observations	$ 130,050
Optional Services Subtotal	**$ 220,578**

Reference: **Proposal for Professional Engineering Services for a Water System Master Plan**

Our proposed fee estimated that is provided is binding for a 90-calendar day period. The proposal is signed by Jeff Dunn, PE who is authorized to negotiate and execute binding legal documents on behalf of Stantec.

Thank you for giving us the opportunity to submit our proposal. If you have any questions or wish to discuss the information presented, all correspondence and communications should be directed to Jeff Dunn at the address provided on this letterhead or phone number or email listed below.

Respectfully,

Stantec Consulting Services Inc.

Jeff Dunn PE
Principal
Mobile: 9495213110
jeff.dunn@stantec.com

stantec.com

FEE ESTIMATE - Water Sytem Master Plan

	QA/QC - Technical Advisor	Project Manager	Planning/Hydraulic Modeling	Planning Support	Planning/Hydraulic Modeling	Regulatory/Water Quality	Asset/Risk Prioritization	CIP Funding Strategy	Cost Estimator	GIS Specialist	Survey Manager	2-Person Survey Crew	Administrative	Principal Hydrogeologist	Senior Hydrogeologist	Project Geoscientist	Staff Geoscientist	Graphics	Clerical
Name	Snow, Tama	Dunn, Jeff	Carrillo, Roxana	Barron, Sophia	McKenzie, Fletcher	Adera, Connie	Alfaqih, Laith	Stewart, Benjamin	Loucks, James	Wilson, Todd	Shockley, Jason		Tidd, Cat	Tom Harder	Georgie Aronson	Matt Hutchinson			
Project Billing Rate	$302	$292	$206	$206	$217	$240	$254	$254	$240	$190	$240	$365	$177	$240	$180	$155	$135	$110	$90
Total Hours	20	141	476	224	50	32	49	53	8	86	8	16	22	22	32	148	124	12	4
Fee	$6,644	$35,916	$80,290	$39,928	$13,020	$4,800	$8,400	$12,192	$2,240	$16,192	$960	$2,920	$3,476	$12,192	$2,240	$16,192	$960	$2,920	$3,476

Task	Task Name	Stantec Hours													TH&Co. Hours						Hours	Labor	Expense	Sub - TH&Co.	Total
1	**Project Kickoff and Work Plan**	**2**	**42**	**24**	**4**	**6**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**20**	**6**	**0**	**8**	**4**	**0**	**0**	**118**	**$23,986**	**$0**	**$3,220**	**$27,206**
1a.	Kickoff Meeting		2	2											2		2				8	$996	$0	$790	$1,786
1b.	Work Plan		2	4																	6	$1,408	$0	$0	$1,408
1c.	Project Management and Meetings	2	38	18	4	6		1	1					20	4		6	4			104	$21,582	$0	$2,430	$24,012
2	**District Policy, Document Review and Existing Conditions**		**2**	**8**	**8**																**18**	**$3,880**	**$0**	**$0**	**$3,880**
3	**Data Collection and Analysis**	**0**	**21**	**50**	**76**	**0**	**24**	**4**	**0**	**0**	**40**	**8**	**16**	**2**	**10**	**24**	**100**	**96**	**0**	**0**	**471**	**$54,578**	**$836**	**$35,180**	**$90,594**
3a.	Site Visits and Facility Assessments		16	40	48			4													108	$23,816	$200	$0	$24,016
3b.	Facilty Site Survey and GIS Updates		1	2							40	8	16	2							69	$16,418	$636	$0	$17,054
3c.	Groundwater Supply Evaluation		2	2											10	24	100	96			234	$996	$0	$35,180	$36,176
3d.	Existing and Future Water Demands		1	4	24																29	$6,060	$0	$0	$6,060
3e.	Regulatory Considerations		1	2	4		24														31	$7,288	$0	$0	$7,288
3.1	**Hydraulic Model**	**0**	**10**	**200**	**0**	**44**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**254**	**$53,668**	**$0**	**$0**	**$53,668**
	Hydraulic Model Development		2	48		8															58	$12,208	$0	$0	$12,208
	Hydraulic Model Calibration		2	56		24															82	$17,328	$0	$0	$17,328
	Hydraulic Model Analyses		6	96		12															114	$24,132	$0	$0	$24,132
4	**Identify Improvement Projects and Funding Sources**	**0**	**14**	**30**	**48**	**0**	**0**	**36**	**44**	**8**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**188**	**$43,916**	**$0**	**$0**	**$43,916**
4a.	Capital Improvement Program (CIP)		4	16	24			4		8	8										64	$13,864	$0	$0	$13,864
4b.	Risk Based Project Prioritization		6	10	24			32	4												76	$17,900	$0	$0	$17,900
4.1	Identify Short- and Long-Term Funding Options		4	4					40												48	$12,152	$0	$0	$12,152
5	**Prepare Master Plan Report**	**14**	**40**	**140**	**80**	**0**	**8**	**8**	**8**	**0**	**38**	**0**	**0**	**0**	**6**	**8**	**40**	**24**	**12**	**4**	**430**	**$74,432**	**$500**	**$14,000**	**$88,932**
	Prepare TM#1 - Chapters 1 - 4	4	8	32	32						16				6	8	40	24	12	4	186	$19,768	$0	$14,000	$33,768
	Prepare TM#2 - Chapters 5, 6		8	24	24						14										70	$14,884	$0	$0	$14,884
	Prepare TM#3 - Chapter 7		6	16	12			8			8										50	$11,072	$0	$0	$11,072
	Prepare TM#4 - Chapter 8, 9	4	4	12	12		8		8												48	$11,272	$0	$0	$11,272
	Prepare 100% Draft Report	4	8	32																	44	$10,136	$0	$0	$10,136
	Prepare Final Draft Report	2	6	24																	32	$7,300	$500	$0	$7,800
6	**Plan Adoption**	**4**	**12**	**24**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**48**	**$11,304**	**$400**	**$0**	**$11,704**
	Prepare Infrastructure Committee and Board Presentations	2	8	8																	18	$4,588	$400	$0	$4,988
	Final Comments to the Water Master Plan Report	2	4	16	8																30	$6,716	$0	$0	$6,716
																			Base Proposal Total		**1,527**	**$ 265,764**	**$ 1,736**	**$ 52,400**	**$ 319,900**
	Optional Survey		**4**	**4**							**80**	**32**	**176**	**8**							**304**	**$90,528**	**$0**	**$0**	**$90,528**
	Optional Assessment Site Visits		**125**	**175**	**125**			**125**												**0**	**550**	**$130,050**	**$0**	**$0**	**$130,050**
																			Optional Services Subtotal		**854**	**$ 220,578**	**$ -**	**$ -**	**$ 220,578**