

SUPPLEMENTAL AGREEMENT FOR ASSIGNED PROJECT

Consultant: KENNEDY/JENKS CONSULTANTS, INC.

Project Name: Focused Water System Master Plan

The Scope of Services for Professional Services for the Focused Water System Master Plan ("Project"), a copy of which is attached hereto as Exhibit "A" and incorporated herein by this reference, shall constitute a supplemental to the Master Agreement for Professional Consultant Services for Engineering and Related Services for Water Resources for Various Water Projects by and between the City and Consultant dated July 30, 2018 ("Agreement"). Consultant agrees to perform the services described in Exhibit "A" within the time set forth in the Notice to proceed for a not-to-exceed amount of \$120,998.00, unless otherwise modified by change order. All charges shall be consistent with the Compensation Schedule and Hourly Fee Rate Schedule, which is attached as Exhibit "B" and incorporated herein by this reference. Performance of the services shall be subject to the terms and conditions contained in the Agreement.

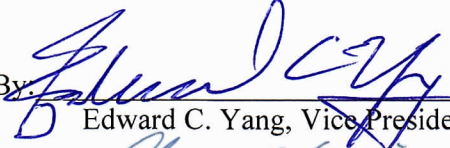
Dated this _____ day of _____, 2020.

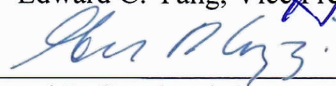
CITY OF RIVERSIDE, a California
charter city and municipal corporation

By: _____
City Manager

By: _____
City Clerk

KENNEDY/JENKS CONSULTANTS, INC.,
a California corporation

By: 
Edward C. Yang, Vice President

By: 
Gerard P. Cavaluzzi, Corporate Secretary

CERTIFIED AS TO AVAILABILITY OF FUNDS:

By: _____
Director of Finance

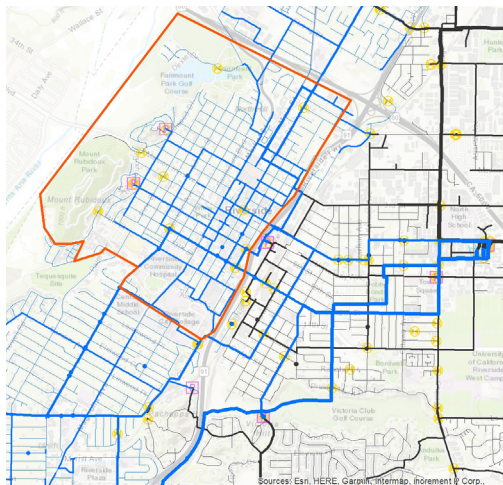
APPROVED AS TO FORM:

By: _____
Assistant City Attorney

EXHIBIT “A”

SCOPE OF SERVICES

CITY OF RIVERSIDE



Request For Proposals For Professional Services

Focused Water System Master Plan
RFP No. 2013



Kennedy Jenks

A. COVER LETTER

City of Riverside

March 25, 2020

City of Riverside
Public Utilities – Water Department
3900 Main Street
Riverside, California 92522

Subject: Proposal to Provide Professional Services for the Focused Water System Master Plan

Dear Riverside Public Utilities Staff:

With per capita demands generally decreasing due to conservation, Riverside Public Utilities (RPU) is seeking a consultant to provide a Water System Master Plan focused on two areas where growth is expected: Downtown Riverside and wholesale opportunities. Kennedy/Jenks Consultants (KJ) is uniquely qualified to support you with this project and offer RPU the following benefits:

EXTENSIVE KNOWLEDGE OF YOUR SYSTEM. KJ has deep knowledge and experience of your distribution system and hydraulic model, based on our team's successful delivery of your Water System Hydraulic Model Project in 2018. Both Paul Chau and David Ferguson, our proposed Project Manager and Principal-in-Charge, respectively, were involved with the hydraulic model development. There will be no learning curve for our team; we will be able to hit the ground running on identifying system deficiencies and developing effective solutions, providing you with an efficient master planning process.

FOCUSED APPROACH FOR YOUR NEEDS. We have proposed a tailored approach for addressing RPU's specific needs for the Project: addressing growth in Downtown and conveying new wholesale opportunities. For Downtown, developing unique and site-specific water use metrics will help define precise future water demands and associated facility needs for accurate capital budget planning; and for wholesale opportunities, delineating precise facility needs will help RPU understand total implementation costs in support of analyzing potential wholesale opportunities.

ALLIANCE WITH UWMP REQUIREMENTS. Our proposed approach to developing your demand projections using Urban Water Use Objectives will allow RPU to easily align with the 2020 Urban Water Management Plan (UWMP) requirements for tracking and reduce water demands by sector. This will provide RPU with demand projections that can be utilized as part of your UWMP efforts, saving you time and money.

On behalf of our team, we value our relationship with RPU and look forward to the opportunity to continue working with you. Please contact me at (626) 568-4302 or Paul at (626) 568-4311 should you have any questions regarding our proposal.

Very truly yours,

Kennedy/Jenks Consultants, Inc.



David Ferguson, PE, PhD
Principal-in-Charge



Paul Chau, PE
Project Manager

B. STATEMENT OF UNDERSTANDING AND APPROACH

City of Riverside

B. STATEMENT OF UNDERSTANDING AND APPROACH

Understanding

RPU is looking for a consultant to develop the Focused Water System Master Plan (Plan). The Plan includes several components, including water demand projections, design standards, hydraulic model updates, hydraulic deficiency analysis, capital improvement planning, and report preparation. The objective of the Plan is to identify specific facility requirements resulting from growth in water demands. The Plan will focus on two areas that have potential for significant demand growth: development in the Downtown Riverside area and wholesale of surplus supply to other water agencies.

We understand that Downtown Riverside has historically had a low service pressure issue when Linden and Evans Reservoirs are operated at a lower water level, which has prompted customer complaints in the past. The pressure issue would be further exacerbated in the future with development and increased water demand in the area.

RPU currently wholesales water to Western Municipal Water District (WMWD) and may sell surplus supply to other agencies in the future. Any significant future sales to other agencies will likely have infrastructure impacts, especially with RPU's water supply entering the distribution system in the Gravity Zone. These impacts will be quantified as part of the Plan such that the capital and O&M costs may be incorporated into RPU's wholesale analysis and negotiations.

The Plan will utilize the updated hydraulic model that was completed in 2018 by KJ. The model will need updates for future demand scenarios, peaking factors, and future facility analyses to address the objectives of the project.

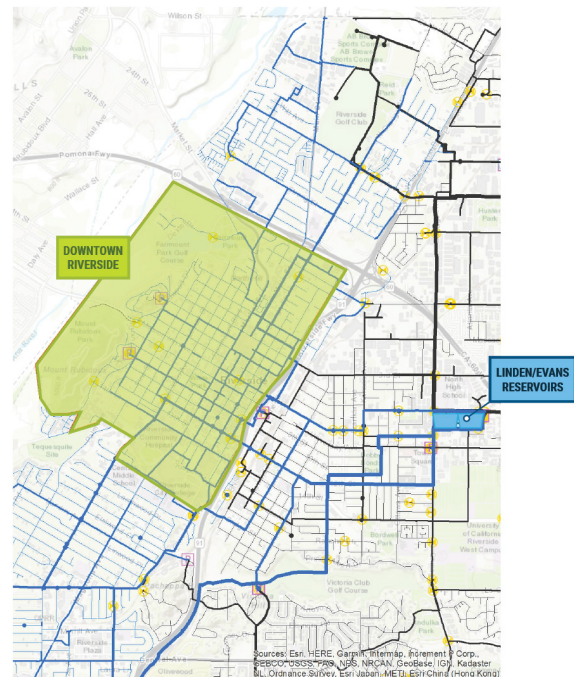


Figure 1. Downtown Riverside Water Distribution System

Downtown Riverside is served by the Linden and Evans Reservoirs.

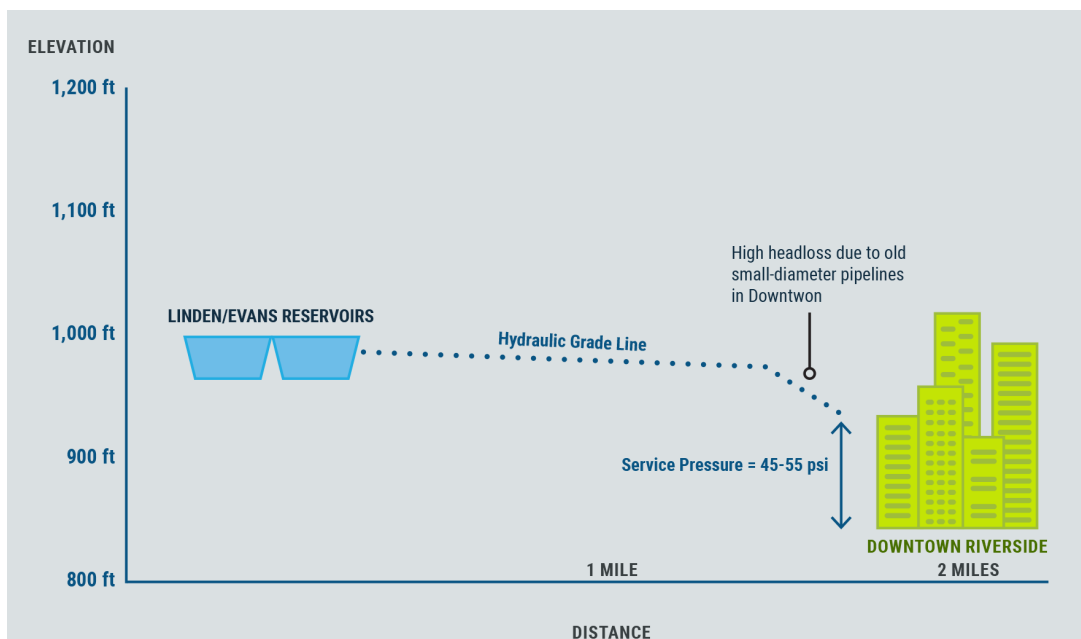


Figure 2. Hydraulic Profile of Water Service to Downtown Riverside

When Linden and Evans Reservoirs are operating at lower water levels, we understand that service pressure in Downtown Riverside can drop below 50 psi, eliciting customer complaints.

Approach

This section describes our proposed approach for executing key elements of the Project. Our approach addresses these key issues and benefits are displayed in the table below:

ISSUE	KJ APPROACH	BENEFIT
Improve water service in downtown Riverside	- Upsize pipelines - Boost pressure utilizing one or more existing connections to Sugarloaf or Chicago Zones - New pump station	Provide adequate water service pressure for existing and future Downtown Riverside customers.
Identify facility requirements for new wholesale deliveries	Delineate conveyance corridors for wholesale deliveries and identify facility capacity needs	Support delivery of wholesale supply to other agencies.
Precisely project demands in Downtown Riverside	Utilize meter billing data and customer information to develop water use metrics for Downtown Riverside	Precise demand projections for Downtown Riverside lead to accurate facility planning.
Provide viable demand projections that can be utilized for the 2020 Urban Water Management Plan	Analyze water demands by sector, in accordance with Water Use Objectives for Urban Water Management Plants (UWMP)	Cost and time savings derived from demand projections aligned with UWMP requirements.

Improve Downtown Riverside Service Pressure

As noted previously, low service pressure in Downtown has been a historical issue that has elicited customer complaints. With significant demand growth anticipated in the future, this issue will only become exacerbated and will need to be addressed. We will help RPU several potential solutions, including pipe up-sizing, pressure zone connections, and new pumping facilities.

As shown in **Figure 3**, there is a good amount of old 4-inch and 6-inch piping in the Downtown area, which impart excessive headloss in the distribution system. RPU may want to consider replacing this piping with larger-diameter pipelines, especially if the pipeline replacement projects can be conditioned into a development project's water service application.

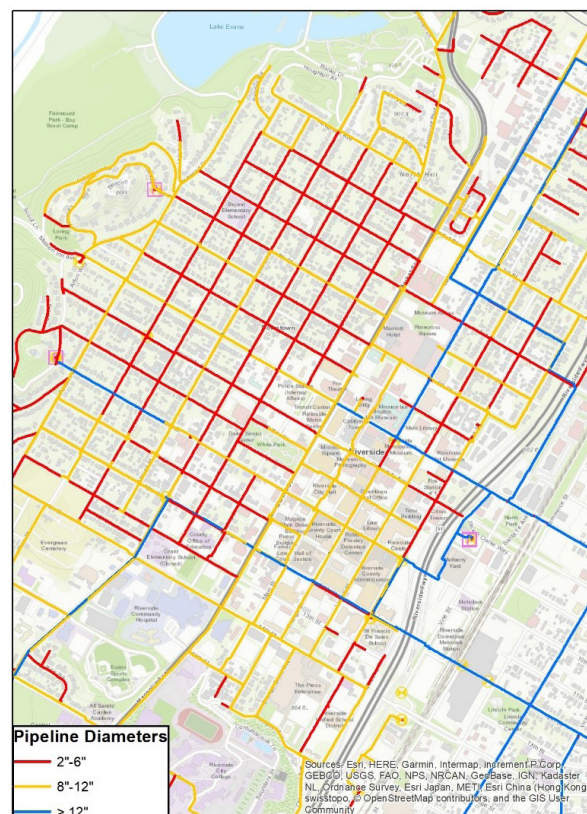


Figure 3. Old Small Pipelines in Downtown Limit Service Pressure

There is a good amount of 4-inch and 6-inch distribution mains in Downtown Riverside. Replacing these pipelines with larger pipelines will improve service pressure in the area.

Another potential solution is to boost pressure in Downtown by utilizing one or more existing connections to the Sugarloaf 1200 Zone or the Chicago 1100 Zone, as shown in **Figure 4**. These connections could be activated on a low pressure set point in Downtown.

Pressure in Downtown can also be boosted by a new pump station located on Mission Inn Avenue or 12th Street. This would create a new subzone for Downtown.

Since Downtown is an old section of RPU, many of the older buildings may have plumbing that cannot handle high pressure. We will work with RPU to identify the maximum allowable service pressure for Downtown Riverside. RPU certainly does not want to implement a solution that solves one problem and creates another one.

We will work with RPU to identify the best solutions to provide reliable water service to Downtown now and in the future. **With our team's extensive knowledge of RPU's system, we will be able to analyze RPU's issues quickly and efficiently, with no learning curve.**

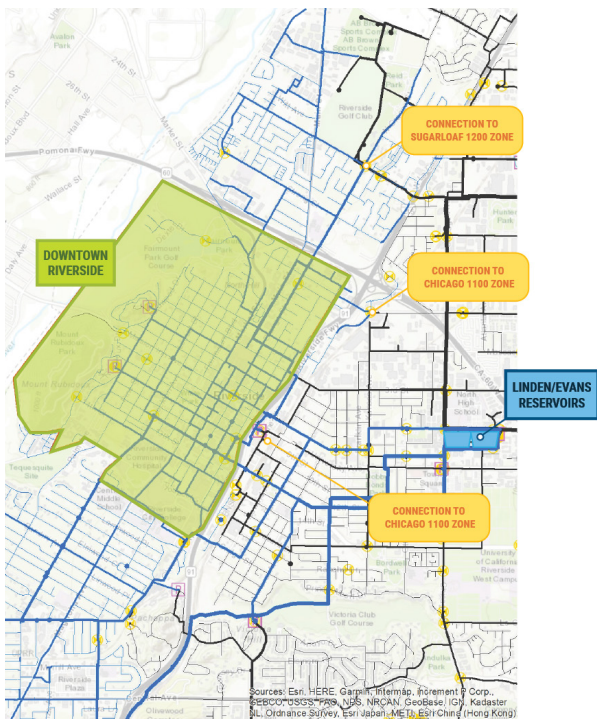


Figure 4. Connections to Higher Pressure Zones
Existing connections to the Sugarloaf (1200) and Chicago (1100) pressure zones can be utilized to increase pressure in Downtown Riverside.

Efficient Identification of Facility Needs for Additional Wholesale Deliveries

We understand that RPU currently sells water supply to Western MWD and is evaluating potential opportunities to sell wholesale water to other agencies. With our deep knowledge of your system through developing your hydraulic model and other projects, we will provide **efficient and thorough facility analysis to support delivery of wholesale supply to other agencies.**

One potential group of wholesale opportunities are utilities served by Western MWD via the Mills Gravity Pipeline, which include Cities of Corona and Norco, Lee Lake Water District, and Elsinore Valley Municipal Water District. Water supply can potentially be conveyed to these utilities via RPU's Mills Pipeline from the Campbell Reservoir. As shown in **Figure 5**, the conveyance system from Linden Reservoir to Campbell Reservoir gradually decreases in pipe size from 72-inch to 14-inch. In addition, there are three booster stations that boost water from the Gravity Zone to the 1600 Zone. These pipeline and pumping facilities may need to be up-sized in order to support additional wholesale delivery. It is important to accurately capture the facility requirements and associated costs so that they can be incorporated in the sales agreements RPU enters into with other agencies.

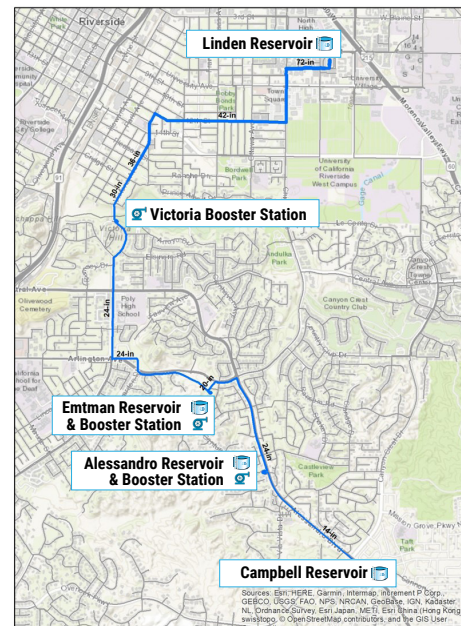


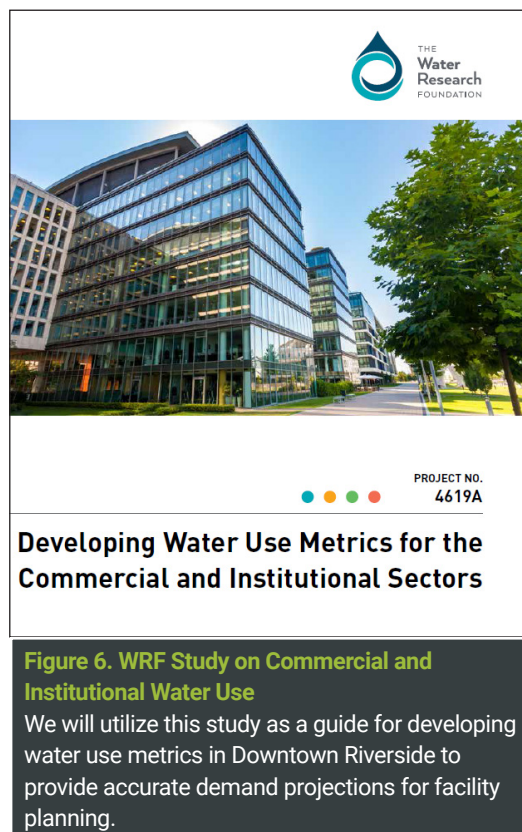
Figure 5. Transmission System to Western MWD Delivery
Pipe and pumping facilities may need to be upgraded to support additional wholesale deliveries to member agencies of Western MWD or other utilities.

Developing Water Demand Metrics for Downtown Riverside

One of the key elements of providing reliable water service for Downtown is to develop an effective methodology for estimating future demands, which will help guide the required infrastructure requirements.

The typical demand categories, such as single & multi-family residential, commercial, industrial, institutional, and landscaping, are not sufficient for providing precise, granular demand estimates in a clustered commercial area, such as Downtown. The Water Research Foundation (WRF) recently completed a study analyzing water use for commercial and institutional sectors, titled Project No. 4619A, Developing Water Use Metrics for the Commercial and Institutional Sectors. One of the key takeaways from the WRF study is that commercial and institutional water use metrics vary widely across the nation and it is recommended that utilities establish their own benchmarks. It is important to be able to delineate between high rate users, such as dining establishments, retirement/nursing homes, and lodging, versus low rate users, such as religious buildings, retail outlets, and warehouses.

We propose using your meter billing data and customer information to develop water demand metrics for the Downtown area on a gallon per square foot per year (gal/ft²/yr) basis, using customer categories recommended by the WRF study, as shown in **Table 1**. We will revise these categories as needed based on the makeup of the Downtown customer base. **The water demand metrics can be applied to future developments to provide RPU with precise demand projections for accurate facility planning.**



Typical Water Use Categories	Downtown Riverside Water Use Metrics Categories (gal/ft ² /yr)
Single Family Residential	Auto / Auto Service
Multi Family Residential	Eating / Drinking Place
Commercial	Health Care Facility
Industrial	Lodging
Institutional	Office Building
Landscaping	Religious Building
	Retail Outlet
	Retirement / Nursing Home
	School / College
	Warehouse

Table 1. Proposed Downtown Riverside Water Use Metrics to Develop Granular and Precise Demand Projections

Forward-Thinking Demand Duty Factors for Meeting UWMP Requirements

For most utilities, demand duty factors are calculated based on existing water usage by land use and applied to undeveloped parcels to develop future demands. Passive water savings from codes, standards, ordinances, or land use plans are typically not incorporated. With the advent of **Urban Water Use Objectives that will be utilized as water use criteria for the 2020 Urban Water Management Plans**, it is likely that RPU will need to account for passive water savings in order to measure compliance with the Urban Water Use Objectives. Passive water savings are especially acute for indoor water use with new appliances and fixtures required to use less water. In recent years, agencies throughout the State are reporting reduced sewer flows, which are mainly derived from indoor water use, at their wastewater treatment plants even with increased population and overall water usage.

One way that passive water savings can be calculated is by evaluating the historical billing data to analyze the effects of passive savings on water use on a per acre duty factor basis in the last several years. The data can be analyzed to determine if any trends are present in water usage by billing type or land use type in the last 5 years, as shown in Figure 1. The Multi-Family Residential billing type historical data is of particular interest as these accounts typically represent mostly indoor demand. One would expect to see gradual decrease in gpd/acre for this meter group due to passive water savings from low-flow appliances and fixtures. The analysis will provide information on how to project future indoor water demand, which can be used to project future land use duty factors and per capita demands.

The analysis will also provide a means for RPU to measure compliance with the Urban Water Use Objectives. Since specific objectives have not been defined yet for most of the objectives, a range of potential values can be utilized for each objective to develop the envelope of demand projections. Combined with the population projection data, land use changes, and agricultural trends, this analysis will provide RPU with a range of demand projections, which will provide RPU with a broad range of planning scenarios.

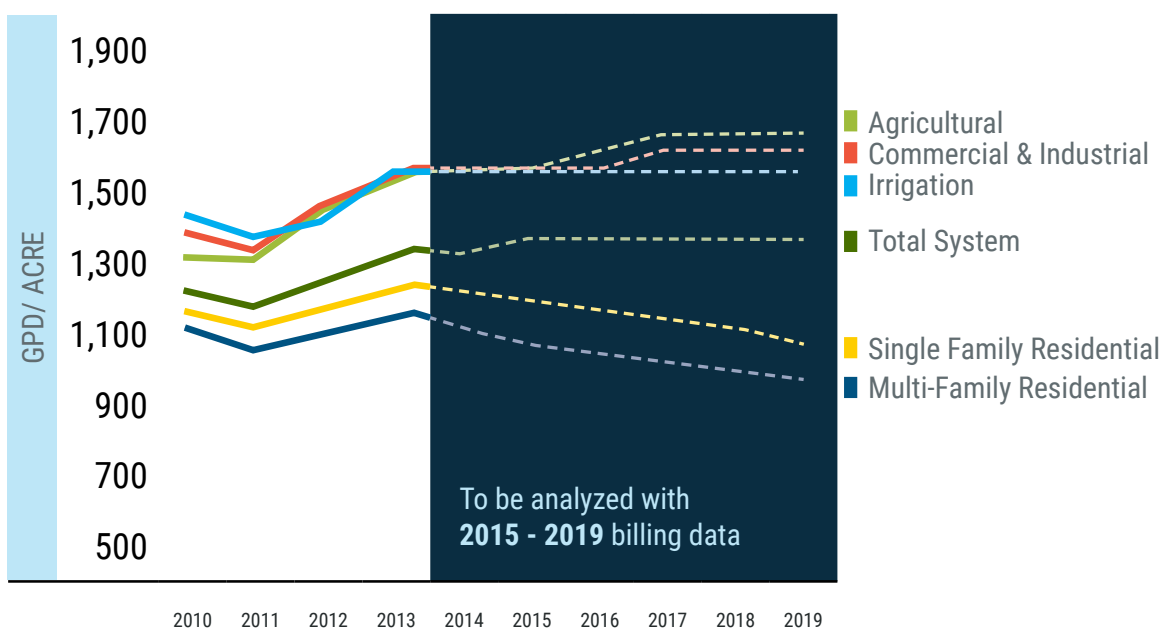


Table 2. Use historical billing data to develop duty factor trends by water sector to inform demand projection for compliance with Urban Water Management Plan requirements.

Scope of Work

This section presents our proposed scope of work for the Focused Water System Master Plan, based on the scope of work presented in the RFP and our proposed approach to executing your Project. A summary of the proposed tasks, deliverables, and meetings is provided in **Table 3**.

TASK	DELIVERABLES	MEETINGS
TASK 1. PROJECT MANAGEMENT, QUALITY ASSURANCE/QUALITY CONTROL, AND MEETINGS	• Monthly invoices • Monthly updated project schedules • Meeting agendas and minutes • PowerPoint presentations	• Project Kick-off Meeting • 20 bi-weekly conference calls
TASK 2. WATER DEMAND PROJECTIONS	• Draft Water Demand Analysis TM • Water demand tabulations in five-year increments until 2045 • Downtown Riverside water use metrics table	Water Demand Projections Review Meeting
TASK 3. DESIGN STANDARDS	• Table describing recommended design standards	None
TASK 4. SCENARIO CREATION	• Updated hydraulic model	None
TASK 5. HYDRAULIC DEFICIENCY ANALYSIS	• Draft Hydraulic Analysis TM • System maps depicting hydraulic modeling results • Updated hydraulic model	Hydraulic Deficiency Analysis Review Meeting
TASK 6. CAPITAL IMPROVEMENT PLANNING	• Draft CIP TM	Unit Cost Bid Results Data Gathering Meeting Capital Improvement Plan Review Meeting
TASK 7. DRAFT AND FINAL REPORTS	• Draft and Final Focused Water System Master Plan	None
TASK 8 (OPTIONAL). KNOWLEDGE TRANSFER WORKSHOP	• PowerPoint presentation	Knowledge Transfer Workshop

Table 3. A summary scope of work to deliver your project.

Task 1. Project Management, Quality Assurance/Quality Control, and Meetings

This task consists of project management and coordination activities as well as quality control/assurance, and meetings with the project team.

Task 1.1 Project Management

Project coordination and administration will be provided, consisting of invoicing, schedule and budget monitoring, team coordination, and contract administration. It is assumed that the project duration is 10 months.

KJ will prepare and submit a concise monthly status report with the monthly invoice statement that includes:

- A summary of work progress/items complete for all work tasks;
- A summary of expenditures by task showing total budget, billing-to-date, current billing, remaining amount, and percent complete; and

Task 1.2 Quality Control/Quality Assurance

Project deliverables will be provided quality reviews prior to submittal to the District in accordance with KJ's Quality Control Program. An internal team project initiation review meeting and concept & criteria review meeting will be conducted to review project approach and methodology early in the process. As the project is executed, other QC reviews are performed at appropriate milestones, which are generally associated with submittals to the District; internal QC review will occur prior to submission of a submittal.

Task 1.3 Meetings & Conference Calls

KJ's Project Manager will hold 20 bi-weekly conference calls with RPU's Project Manager to review project status, including work completed during the latest report period, work anticipated to be completed during the next reporting period, identified problems/issues that could affect project budget or schedule, outstanding issues to be resolved, and action items.

KJ will attend 5 in-person meetings with RPU at RPU's offices. The anticipated meetings consist of:

- Project Kick-off Meeting At the kick-off meeting, a communication plan will be provided that enables clear and timely communication between RPU and KJ. The plan will include KJ's proposed single point of contact, number of on-site and telephone meetings, and a time-line of the meetings, commensurate with the project schedule.
- Water Demand Projections Review Meeting
- Hydraulic Deficiency Analysis Review Meeting
- Unit Cost Bid Results Data Gathering Meeting
- Capital Improvement Plan Review Meeting

Meetings will be attended by KJ's Project Manager; other staff will attend meetings, as needed. For project meetings, KJ will prepare and distribute draft agenda at least three days prior to each meeting. KJ will also prepare meeting materials, which may include tables, figures, or PowerPoint presentations, depending on the requirements of each meeting. Minutes will be prepared and provided within five business days after each meeting.

DELIVERABLES

- Monthly invoices
- Monthly updated project schedules
- Meeting agendas and minutes
- PowerPoint presentations

Task 2. Water Demand Projections

Task 2.1 Review Existing Planning Documents

KJ will review existing planning documents to evaluate future water demands, consisting of:

- City of Riverside's 2025 General Plan
- City of Riverside's specific plans and developments
- Southern California Association of Governments' (SCAG) population growth projection
- Existing water demands from RPU's billing system.
- City of Riverside's GIS parcel layer
- City of Riverside – Urban Water Management Plan 2015

KJ will work with RPU to develop the planning horizon for the Project. KJ's preliminary recommendation is to utilize a consistent planning horizon with the 2020 UWMP, which is anticipated to be 2045.

Task 2.2 Water Demand Analysis

Task 2.2.1 Peaking Factor Analysis

Water supply data will be utilized to develop a maximum day peaking factor. A general peak hour peaking factor will be calculated based on the existing diurnal curves in the hydraulic model.

Task 2.2.2 Peaking Factor Analysis

KJ will provide a future demand forecast that will include calculation of duty factors, application of duty factors on vacant land, densification, use of population forecast estimates, and the use of previous planning documents.

KJ will engage RPU staff to receive projected demands for wholesale opportunities that RPU is exploring.

Near-term future demands will be estimated based on known development plans provided by RPU. Long-term future demands will be estimated based on regional population projection data and per capita water demand factors.

Task 2.2.3 Downtown Riverside Water Use Metrics

For the Downtown Riverside area, existing billing data will be utilized to develop water use metrics for up to 10 commercial water use categories. Our preliminary recommendation for water use metric categories includes auto service, dining establishments, health care facilities, lodging, office buildings, religious buildings, retail outlets, retirement/nursing homes, schools, and warehouses. The water use metrics will be utilized to project future demands in Downtown.

Task 2.2.4 Water Demand Analysis TM Preparation

A draft Technical Memorandum (TM) will be provided summarizing the work described in this task. RPU's comments on the draft TM will be incorporated in the Draft Water System Master Plan Report.

DELIVERABLES

- Draft Water Demand Analysis TM (PDF, 5 hard copies)
- Water demand tabulations five-year increments from 2025 until 2045 (PDF)
- Downtown Riverside water use metrics table (PDF)

Task 3. Design Standards

KJ will review RPU's existing design standards and provide recommendations for changes, if any. The design standards are recommended to be limited to transmission and distribution mains.

The design standards will consist of the following:

- Maximum pipe velocities;
- Fire flow requirements for each customer type

It is anticipated that fire flow requirements will be assigned for each pressure zone and will be based on Riverside County requirements and land use designations.

DELIVERABLES

- Table describing recommended design standards (PDF)

Task 4. Scenario Creation

The following model scenarios will be created in the hydraulic model:

- Existing Max-Day Demand (MDD): this demand condition is also called the Summer Month demand condition, which is used to model summer months demands when RPU does not wholesale water.
- Existing Average-Day (ADD)– this demand condition is also called the “shoulder month” demand condition at RPU and is used for modeling wholesale scenarios and planned facility shutdowns. KJ will consult RPU staff to identify current and future surplus water delivery demands to neighboring agencies, including seasonal and diurnal demand patterns.
- Intermediate MDD: this scenario is analogous to Existing MDD, except 2030 demand conditions will be utilized
- Intermediate ADD: this scenario is analogous to Existing ADD, except 2030 demand conditions will be utilized
- Ultimate MDD: this scenario is analogous to Existing MDD, except 2045 demand conditions will be utilized
- Intermediate ADD: this scenario is analogous to Existing ADD, except 2045 demand conditions will be utilized

Future demands will be based on the Water Demand Projections developed in **Task 2**.

In the existing hydraulic model, pumps with VFDs are modeled utilizing the software's VFD option. Under future demand conditions, these pumps may not have sufficient capacity to serve demand and will produce run errors in the hydraulic model. Since the focus of this master plan is not on pumping capacity within the distribution system, these pumps may be converted to non-VFD mode in order to allow the hydraulic model to function and evaluate pipeline capacity.

DELIVERABLES

- Updated hydraulic model

Task 5. Hydraulic Deficiency Analysis

Task 5.1 Hydraulic Modeling Analysis

Task 5.1.1 Ultimate Scenario Analysis

KJ will run the Ultimate future scenario under the MDD condition for the distribution system created under the previous task, and identify deficiencies based on the design standards. The hydraulic analysis will be limited to distribution and transmission mains. KJ will review RPU's 2015 Integrated Water System Master Plan and confirm the validity of then proposed projects in removing the identified deficiencies. Only the proposed pipeline projects will be evaluated.

Task 5.1.2 Intermediate Scenario Analysis

KJ will also run the Intermediate scenario under the ADD condition and identify deficiencies related to wholesaling of water. The deficiency analysis for the distribution system will be run under two scenarios – 72-hour extended period simulation (EPS) and fire flow. The fire flow analysis is limited to a pipeline capacity evaluation; a fire flow storage or pumping analysis is not included. Deficiency analysis for the supply system will be run under the steady state conditions and will be limited to pipeline and pumping.

Task 5.2 Hydraulic Analysis TM Preparation

A draft TM will be provided summarizing the work described in this task. The TM will describe results of the hydraulic deficiency analysis for each future scenario. It will also include an analysis of surplus supply available for neighboring agencies. RPU's comments on the draft TM will be incorporated in the Draft Water System Master Plan Report.

DELIVERABLES

- Draft Hydraulic Analysis TM (PDF, 5 hard copies)
- System maps depicting hydraulic modeling results (PDF)
- Updated hydraulic model

Task 6. Capital Improvement Plan Development

Task 6.1 Unit Cost Analysis

KJ will identify unit costs based on the latest bid results for similar pipeline and pumping RPU projects within the Riverside County, preferably based on RPU projects. KJ will meet with RPU's Water Engineering staff to procure the bid results (**see Task 1.3**). Upon calculating the current unit costs and after receiving RPU's approval, KJ will estimate cost escalation from the ENR Index for Los Angeles Area.

Task 6.2 Capital Improvement Plan Development

KJ will propose capital improvement planning (CIP) projects to eliminate identified deficiency for the distribution and transmission mains. KJ will take into account deficiency analyses under Task 5 and provide specific CIP projects to serve RPU's needs to wholesale water under the Intermediate demand conditions and provide adequate pressures in the downtown area under the Ultimate conditions.

The recommended projects and programs are expected to be provided at a conceptual level with an associated implementation schedule with specific tasks for further evaluation/study such as preliminary design, hydraulic analysis, geotechnical investigation, funding strategy, etc. Cost estimates will be provided at an AACE International Class 5 level.

Each CIP project or program will be summarized in a 1-page project sheet that includes a project description, figure, location map, cost estimate, and implementation time frame. The overall CIP will be summarized in a table, organized by year.

Task 6.1 Unit Cost Analysis

A draft CIP TM will be provided, consisting of the unit cost analysis, project sheets, and CIP summary table. RPU's comments on the draft TM will be incorporated in the Draft Water System Master Plan Report.

DELIVERABLES

- Draft CIP TM (PDF, 5 hard copies)

Task 7. Draft and Final Reports

Task 7.1 Draft Report Preparation

KJ will compile all RPU-reviewed technical memorandum into a cohesive report with an executive summary. KJ will submit a draft version of the report for RPU's approval. KJ will also make a presentation for RPU summarizing the proposed Capital Improvement Plan (**included in Task 1.3**)

Task 7.2 Final Report Preparation

KJ will incorporate comments received from RPU into the Final Water System Master Plan Report.

DELIVERABLES

- Draft Water System Master Plan Report (PDF, 5 hard copies)
- Final Water System Master Plan Report (PDF, 10 spiral-bound hard copies, MS Word)
- Final hydraulic model

Task 8. Knowledge Transfer Workshop (Optional)

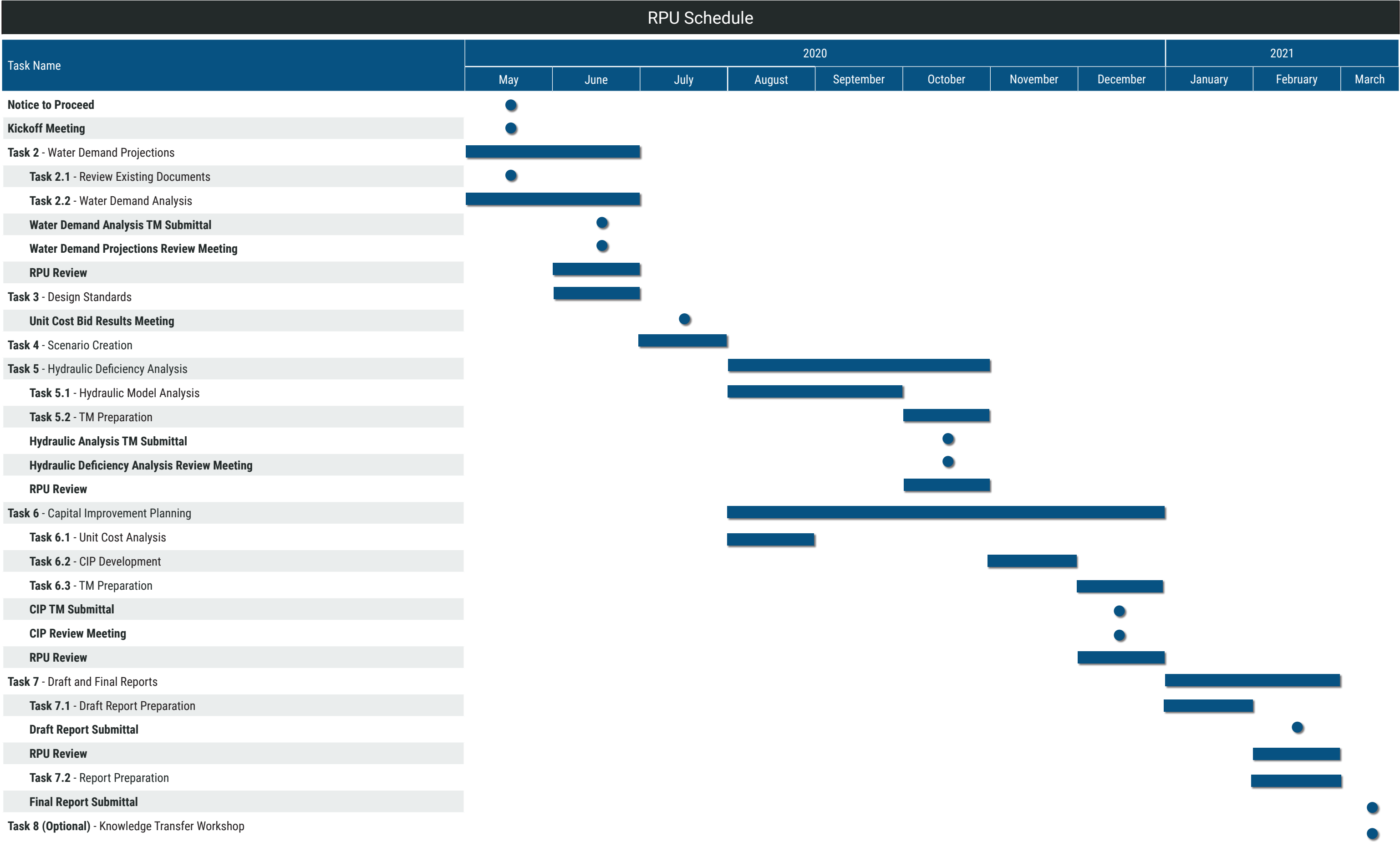
Upon completion of Task 7, KJ will conduct a 1-day (6 hours) knowledge transfer workshop in RPU's office. The workshop will include a summary of methodology, assumptions, analysis, and results of work performed under this project. KJ will prepare a PowerPoint presentation for this workshop.

DELIVERABLES

- PowerPoint Presentation

Project Schedule

A proposed project schedule is provided on the following page. We will work with RPU's staff to adjust the schedule as necessary to deliver the project in accordance with your needs and expectations.



C. COMPANY INFORMATION

City of Riverside

C. COMPANY INFORMATION

Proven Planning Project Experience With RPU and Along The West Coast To Meet Your Specific Needs

Successfully Delivering Projects for RPU for the Past 15 Years

KJ has proudly been serving RPU continuously since 2005. In that time, KJ has successfully delivered on eight projects, which are shown in **Figure 1** below. Moreover, KJ's work with RPU on the **Water System Hydraulic Model Development Project in 2017-18** and the **Recycled Water Plan Validation Study in 2019** confirm our abilities to effectively communicate with RPU and execute on a level that meet and exceeds RPU's expectations. The above mentioned projects validate our ability to work with RPU to meet their needs financially, technically, and professionally.

We offer RPU extensive, successful experience with water system studies throughout the United States and local knowledge derived from our familiarity and experience with multiple master planning efforts and capital improvement program (CIP) developments from your City and past municipal clients in Southern California.

Details on featured projects closely resembling your scope of work are provided with reference information on the following page demonstrating our team's capabilities in addressing similar issues as yours.

Planning Services Grounded in Design & Construction Experience

For over a century, KJ has provided engineering consulting services to the water and wastewater industry, often combining planning, design, and construction management services for our clients.

Almost all of our staff work on these various types of projects concurrently, including the members of our project team. We provide RPU with **expert planning services, grounded in design and construction experience – delivering you practical and innovative solutions for your project.**

The project team has completed six water master plans in the last couple years, described in detail on the following pages.

15

Years Serving RPU

8

Successfully Completed Projects for RPU Since 2005

100+

Years of Water and Wastewater Planning Expertise

200+

Planning Projects Completed in the Last 25 Years

500,000

Miles of Pipeline Planning, Design, and Construction

Figure 1. Summary of KJ's Project Experience with RPU



Relevant Office's Contact Information

PASADENA, CA

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Pasadena, CA, 91101
626.568.911

OXNARD, CA

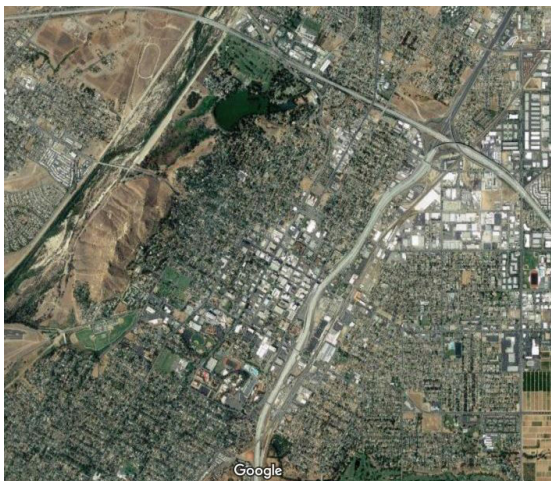
Meredith Clement
2775 North Ventura Rd, Suite 100
Oxnard, CA, 93036
805.973.5700

SAN FRANCISCO, CA

Jose Osorio
275 Battery Street, Suite 550
San Francisco, CA, 94111
415.243.2150

Organizational Entity Identifier

"BUSINESS CORPORATION"



PROJECT HIGHLIGHTS

- Created hydraulic model based on 1-to-1 relationship with RPU's GIS
- Geo-coded all service connections
- Developed diurnal patterns
- Allocated demands appropriately and efficiently
- Correctly calculated ground service elevations
- Successfully determined pipeline C factors and facility attributes, both geometric and hydraulic
- Calibrated the steady state and EPS model using RPU's SCADA system
- Overcame SCADA collection issues by installing external data loggers and modifications of the initial diurnal pattern development plan

RELEVANT TEAM MEMBERS

Paul Chau
David Ferguson
Jose Osorio
Meredith Clement

Water System Hydraulic Model Construction To Improve Water Supply and Distribution Systems

CITY OF RIVERSIDE - PUBLIC UTILITIES DEPARTMENT, CA

The City of Riverside Public Utilities Department (RPU) undertook a project to construct and calibrate two new hydraulic models for its water supply and distribution systems. The models were developed using Innovyze's InfoWater software and RPU's updated Geodatabase of water pipeline and facilities. RPU's previous hydraulic model was developed inhouse as part of the 2005 Water Master Plan and was last updated as part of the 2010 Water Master Plan Update.

RPU's supply and distribution system is large and complex serving an average of 80,000 acre-feet per year (AFY) to over 65,000 service connections. RPU's supply system consists of 50 potable wells with delivery through three major transmission systems each with multiple treatment plants and booster stations. RPU's distribution system consists of 50+ pressure zones, 40+ booster pump stations, 20+ PRV stations, 16 storage tanks and nearly 1,000 miles of water mains.

Hydraulic models were created based on 1-to-1 relationship with RPU's GIS. Other tasks included geo-coding of all service connections, diurnal patterns development, allocations of demands, ground surface elevations, pipeline C factors and facility attributes (geometric/hydraulic) and steady state and EPS model calibration using RPU's SCADA system.

RPU's SCADA system did not collect all field parameters needed for model calibration. This problem was overcome through installation of external data loggers and modification of the initial diurnal pattern development plan.

Scope Of Services

- Model construction from GIS/atlas maps
- Demand allocation
- Model calibration (steady state and EPS)

Reference

Gaurav Agarwal
951.826.5379



PROJECT HIGHLIGHTS

- Updating Urban Water Master Plan including water quality evaluation and enhancement
- Evaluated Demand Analysis through diurnal patterns
- Used hydraulic modeling analysis to develop recommendations

RELEVANT TEAM MEMBERS

Paul Chau
Melanie Rivera
David Ferguson
Jose Osorio
Meredith Clement

Water Master Plan Update Mitigates Water Quality Risks

CITY OF THOUSAND OAKS, CA

KJ developed a Water Master Plan and Urban Water Management Plan Update for the City of Thousand Oaks (City). The primary objective of the water master plan update was water quality evaluation and enhancement through various capital and/or operational improvements. Scope of services for the project included:

- Evaluated demand analysis and pressure zone-specific diurnal patterns.
- Reviewed and evaluated water quality monitoring data to develop control recommendations.
- Hydraulic modeling analysis to develop recommendations to improve system water age and resolve deficiencies.
- Updated and calibrated existing H2Omap hydraulic model Faced with substantial water quality issues related to nitrification within its storage reservoirs, the City elected to use a large fire pump for one of its pressure zones rather than construct additional storage.

Reference

Shamir Shahamiri
805.449.2452



PROJECT HIGHLIGHTS

- Created water master plan for potable water, sewer and recycled water for 89,000 people
- Provided demand projections and recommendations for future supply
- Identified time frames and costs to maintaining and implementing system improvements based on growth forecast

RELEVANT TEAM MEMBERS

Paul Chau
Melanie Rivera
David Ferguson
Jose Osorio

Integrated Master Planning Delivered Optimized Solutions

CITY OF SOUTH GATE, CA

KJ prepared an integrated master plan for the City's potable water (PW), sewer, and recycled water (RW) distribution systems. The City currently provides water distribution and sewer collection services to a population of roughly 89,000 people within its service area. The main objectives of the master plan included:

- Providing demand projections and recommendations on future supply sources for potable and recycled water systems.
- Creating hydraulic models of the water and sewer systems to identify capacity deficiencies and necessary improvements based upon future growth and development.
- Identifying a time frame and cost of maintaining and installing system improvements based upon the growth forecast and condition of existing system pipelines.
- Identifying opportunities to expand RW service within City limits.
- Identifying strategies for maintenance, replacement, and installation of system improvements.

Reference

Ana Ananda
323.563.5769



PROJECT HIGHLIGHTS

- Prepared update for a potable water master plan that includes 130 miles of large transmission pipelines ranging size
- Identified potential hydraulic deficiencies in preparation of possible supply shortage scenarios

RELEVANT TEAM MEMBERS

David Ferguson
Jose Osorio

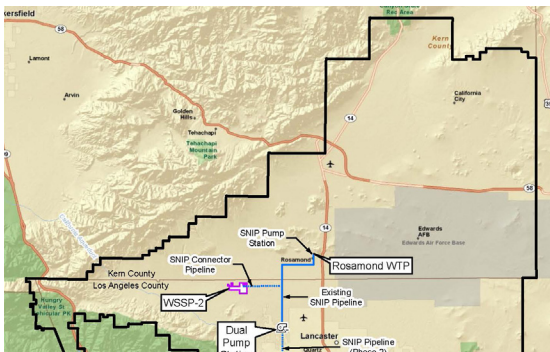
Reference

Kristine McCaffrey
805.579.7173

Potable Water Master Plan Update To Reduce Hydraulic Deficiencies CALLEGUAS MUNICIPAL WATER DISTRICT, CA

KJ prepared an update to the 2006 Potable Water Master Plan for Calleguas Municipal Water District (District). The District is the primary wholesale water agency in Ventura County with 19 retail water purveyors. The District's system includes nearly 130 miles of large transmission pipeline ranging from 14" to 78" diameter pipelines with more than 90 purveyor turnouts. The project's primary focus was to identify potential hydraulic deficiencies during some of the more likely or consequential supply outage scenarios that may occur before 2027 and to evaluate the feasibility of several mitigation measures as described in the District's Emergency Water Supply Plan, including a potential seawater desalination plant and associated pumping and conveyance.

- Developed a CIP
- Provided a comprehensive update of the existing pipeline and facility inventories
- Performed demand analysis and development of turnout-specific diurnal patterns for low, average and high demand conditions
- Updated and calibrated the InfoWater hydraulic model
- Developed and analyzed more than 10 hydraulic demand, supply, and operational scenarios
- Conducted a comprehensive feasibility study of a potential seawater desalination plant



PROJECT HIGHLIGHTS

- Developed GIS databases as precursors to perform hydraulic modeling of water distribution and sewer systems
- A CIP plan was prepared consisting of recommendations on improvements

RELEVANT TEAM MEMBERS

Paul Chau
David Ferguson
Melanie Rivera
Jose Osorio

Accurate Modeling Controls Costs And Risks For Water & Sewer Master Plans ROSAMOND COMMUNITY SERVICES DISTRICT, CA

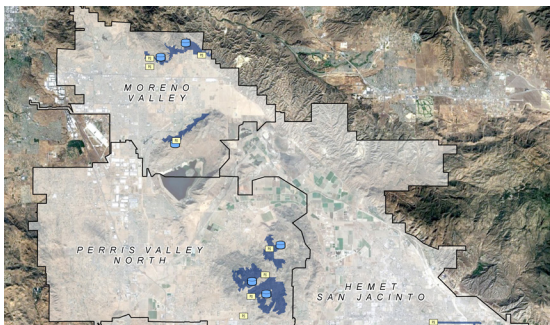
KJ is developing integrated water and sewer master plans for RCSD, which provides water, sewer, park, and lighting services for the City of Rosamond in Antelope Valley, California.

Two separate geographic information system (GIS) databases were developed as precursors to performing hydraulic modeling of the water distribution and sewer systems. Both databases were developed using as-built drawings, GIS shapefiles, and field verified data provided by RCSD. The water system database contains information on RCSD's pressure zones, storage tanks, pump stations, groundwater wells, pressure reducing stations, and distribution system pipelines. The sewer system database maintains the installation years, lengths, diameters, materials, invert elevations, and rim elevations of pipelines and manholes, as well as proposed developments.

A CIP was prepared, consisting of improvement projects recommended as part of the Water Master Plan. No CIP was recommended as part of the Sewer Master Plan, as it was determined the hydraulic capacity of the sewer system was sufficient for existing and future flows and no pipelines were deemed in need of replacement.

Reference

Brach Smith
661.256.3411 EXT. 229



PROJECT HIGHLIGHTS

- Performed detailed evaluations of 10 capital storage improvement projects
- Identified and evaluated alternative improvements to eliminate or delay the proposed capital storage projects
- Included supply/storage calculations, hydraulic modeling and field investigations

RELEVANT TEAM MEMBERS

Melanie Rivera
David Ferguson

Study Provides Revised CIP To Improve Water Age EASTERN MUNICIPAL WATER DISTRICT, CA

KJ performed detailed evaluations of 10 near-term capital storage improvement projects as part of the Booster Pump Station Improvements (Study) for the Eastern Municipal Water District (EMWD). The service pressure zones for these projects are relatively small with low demands and limited storage, and they are all determined to have existing or near-term fire flow/ emergency storage deficiencies. Due to low water demands, the implementation of the proposed capital storage projects within these zones is expected to significantly reduce turnover rates and degrade water quality.

The goal of the Study included identifying and evaluating alternative improvements to eliminate or delay the proposed capital storage projects. The primary alternatives for the identified zones are to maintain storage in the lower or higher pressure zones. The Study included supply/storage calculations, hydraulic modeling (including fire flow, turnover rate, and water age analyses), field investigation of 13 booster stations and up to five storage tanks, cost estimating and report preparation.

Reference

Greg Kowalski
951.928.3777 EXT.4575



PROJECT HIGHLIGHTS

- Compiled a comprehensive assessment of build out water demands, wastewater flows and recycled water opportunities
- Developed updated potable water and recycled water hydraulic models
- Formulated a phased CIP program for each utility system

RELEVANT TEAM MEMBERS

Jose Osorio

Integrated Master Plan Update Aligning Utility Systems To One Common Vision

LAS VIRGENES MUNICIPAL WATER DISTRICT, CA

KJ provided consulting services to LVMWD for the update of the potable water, recycled water, and sanitation master plans as well as an Integrated Plan to align the utility systems with a common vision. The plans included a comprehensive assessment of build out water demands, wastewater flows, and recycled water opportunities with considerations for water conservation and SBx7-7 compliance, development of updated potable water and recycled water hydraulic models, an updated wastewater treatment plant process model, and formulation of a phased Capital Improvement Program for each utility system. The plan was performed under a workshop driven process with the Board of Directors and the wastewater JPA.

Reference

John Zhao
818.252.2230

D. COMPANY PERSONNEL

City of Riverside

D. COMPANY PERSONNEL

An Experienced Team With A Deep Knowledge of RPU's Hydraulic Modeling & Distribution System Provides No Learning Curve

The KJ team is structured to match your project needs. Staff were selected based on their knowledge of RPU's Hydraulic Modeling and Distribution System, as well as experience working on similar projects together.

Both Paul Chau and David Ferguson were key in assisting RPU with completing the Water System Hydraulic Modeling Development project in 2017. Additionally, Paul Chau, David Ferguson, and Melanie Rivera were all pertinent to the successful execution of RPU's Recycled Water Plan Validation Study in 2019.

KJ is confident that the chosen team's profound understanding of RPU's Hydraulic Model and Distribution System combined with our recent and growing relationship with RPU will not only allow us to hit the ground running with no learning curve but provide an outcome that will exceed RPU's expectations.

This section includes brief biographies, contact numbers, licenses and certifications, and the value each key staff member brings to RPU. Full Resumes for our team are provided in Appendix A.

CITY OF RIVERSIDE

PRINCIPAL-IN-CHARGE
David Ferguson, PE

PROJECT MANAGER
Paul Chau, PE

PROJECT ENGINEER
Melanie Rivera, EIT

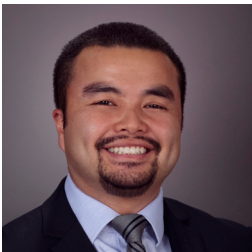
TEAM MEMBERS

GIS
Jose Osorio

WATER DEMAND PROJECTIONS
Meredith Clement

LEGEND

● Key Team Member



CONTACT NUMBER
626.568.4311

LICENSES & CERTIFICATIONS
Professional Civil Engineer, CA

Certified Energy Manager, Association of Energy Engineers

Paul Chau, PE | Project Manager

EXPERIENCE

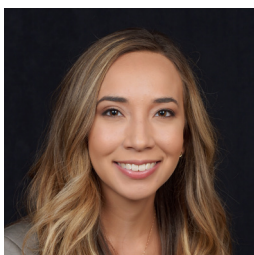
Paul Chau is a civil engineer and certified energy manager with over 13 years of master planning and hydraulic modeling experience for water, sewer, and recycled water distribution systems. He leads KJ's Master Planning Group and has worked extensively with every proposed key team member. His diverse experience with water, sewer, and recycled water planning will provide efficient execution and comprehensive knowledge of project opportunities for the County. He prides himself on providing excellent service for his clients by providing open and consistent communication and meeting schedule deadlines and milestones.

Value: Paul brings over 13 years of master planning and hydraulic modeling experience for water, sewer, and recycled water distribution systems. In addition, Paul worked closely on RPU's water system hydraulic modeling project and recycled water plan validation project making Paul extremely familiar with RPU's expectations and needs for this effort.

What Clients Say About Paul

"The Kennedy/Jenks Team, led by Dawn Taffler and Paul Chau, did an awesome job to get our Pure Water Project Las Virgenes - Triunfo Title XVI Feasibility Study approved by the Bureau of Reclamation without a single comment. The study will provide us with a solid foundation supporting future actions such as securing funding, informing environmental documents and supporting public outreach efforts"

- Pure Water Project, Las Virgenes - Triunfo title XVI Feasibility Study



Melanie Rivera, EIT | Project Engineer

EXPERIENCE

Melanie Rivera is a staff engineer with an educational background in civil and environmental engineering. Melanie has worked with Paul Chau to complete fourteen planning and design projects, including Water Master Plans for South Gate and Rosamond Community Services District and the Las Posas Water Replacement Study for Calleguas MWD. She has gained experience in developing demand projections, creating and utilizing hydraulic models, facility analysis, and CIP development.

CONTACT NUMBER

626.568.4304

LICENSES & CERTIFICATIONS

Engineer-In-Training, CA

Value: Completed several successful projects with Paul and other members of this team since joining KJ in 2015, including several planning and design projects, including Water Master Plans for the City of South Gate and Rosamond Community Services District as well as the Las Posas Water Replacement Study for Calleguas MWD.



David Ferguson, PE | Principal-In-Charge

EXPERIENCE

Dr. Ferguson has nearly four decades of experience in planning, design, construction, and operation of water supply, infrastructure, and treatment projects. He specializes in water system planning, comprehensive groundwater resource analysis and evaluation, water quality evaluation, treatment process alternatives, technical feasibility, and financial analysis. Additionally, he served as RPU's Water System's Operations Manager from 2006 to 2009. Furthermore, Dr. Ferguson has managed or performed technical review of numerous water modeling and master planning studies for utilities in Southern California, including Chino Hills, Riverside, Ontario, Inland Empire Utilities Agency, Los Angeles County Waterworks District No. 40, Las Virgenes, San Bernardino, Thousand Oaks and South Gate.

CONTACT NUMBER

626.568.4302

LICENSES & CERTIFICATIONS

Professional Civil Engineer, CA

Board Certified Environmental Engineer, American Academy of Environmental Engineers & Scientists

Value: David has provided technical guidance and quality reviews for numerous water master plans, including South Gate, Thousand Oaks, and Rosamond Community Services District, in the last 5 years. In addition, Dave worked closely with Paul on RPU's water system hydraulic modeling project and recycled water plan validation project.

TITLE/NAME/PHONE NUMBER	VALUE	BIO
GIS JOSE OSORIO 415.243.2532	Jose's 23 years of experience as a GIS Specialist and his valuable experience working closely with this entire team, while working on the Thousand Oaks Water Master Plan, will add an element of productive fluidity though communication and work product.	Jose Osorio is a GIS Analyst in KJ's Integrated Solutions Group. He has 23 years of experience related to multi-disciplinary engineering services. As a Senior Staff GIS Analyst for the last eleven years, he has been responsible for cartography and Web-based data management. In his current role, he primarily develops infrastructure and utilities GIS, environmental databases, water quality databases, and infrastructure geo-databases. He has GIS project experience related to utility infrastructure, environmental data, and water resources. He has cartographic experience in coordinating large mapping projects, integrating digital photogrammetry, as-built CAD layouts, digital topographic maps, and databases.
WATER DEMAND PROJECTIONS MEREDITH CLEMENT 805.973.5718	Meredith has beneficial experience working closely with this entire team, while working on the Thousand Oaks Water Master Plan.	Meredith Clement has over 20 years of water resources consulting experience on projects throughout California. Meredith has special expertise with water planning projects, urban planning, and environmental compliance documentation, including completion of over a dozen Urban Water Management Plans (UWMP) and their associated demand projections. She currently serves on the Department of Water Resources' UWMP Guidebook Advisory Committee.

EXHIBIT “B”

COMPENSATION SCHEDULE AND HOURLY FEE RATE SCHEDULE

Proposal Fee Estimate

Kennedy/Jenks Consultants

CLIENT Name: Riverside Public Utilities
 PROJECT Description: Focused Water Master Plan
 Proposal/Job Number: B10440020/0009/PROPR 5/21/2020

Classification:	Eng-Sci-9 David Ferguson	Eng-Sci-7 Meredith Clement	Eng-Sci-6 Paul Chau	Eng-Sci-5 Mario Osorio	Eng-Sci-3 Melanie Rivera	Project Admin.	Total	KJ Total Labor	KJ ODCs	Total Expenses	Total Labor + Expenses
Hourly Rate:	\$295	\$260	\$230	\$205	\$170	\$125	Hours	Fees	Fees		Fees
Task 1 - PM, QA/QC, Meetings											
1.1 Project Management			30			10	40	\$8,150		\$0	\$8,150
1.2 QA/QC	16						16	\$4,720		\$0	\$4,720
1.3 Meetings & Conference Calls	5		28		15		48	\$10,350	\$250	\$250	\$10,600
Task 1 - Subtotal	21	0	58	0	15	10	104	\$23,220	\$250	\$250	\$23,470
Task 2 - Water Demand Projections											
2.1 Review Existing Planning Documents			4		8		12	\$2,280		\$0	\$2,280
2.2 Water Demand Analysis											
2.2.1 Peaking Factor Analysis			2		8		10	\$1,820		\$0	\$1,820
2.2.2 System Future Demands		4	4	12	24		44	\$8,500		\$0	\$8,500
2.2.3 Downtown Riverside Water Use Metrics		2	12	4	16		34	\$6,820		\$0	\$6,820
2.2.4 Water Demand Analysis TM Preparation		2	8		24		34	\$6,440	\$50	\$50	\$6,490
Task 2 - Subtotal	0	8	30	16	80	0	134	\$25,860	\$50	\$50	\$25,910
Task 3 - Design Standards											
Design Standards	2		2		4		8	\$1,730	\$0	\$0	\$1,730
Task 3 - Subtotal	2	0	2	0	4	0	8	\$1,730	\$0	\$0	\$1,730
Task 4 - Scenario Creation											
Scenario Creation			8		40		48	\$8,640		\$0	\$8,640
Task 4 - Subtotal	0	0	8	0	40	0	48	\$8,640	\$0	\$0	\$8,640
Task 5 - Hydraulic Deficiency Analysis											
5.1 Hydraulic Modeling Analysis											
5.1.1 Ultimate Scenario Analysis	4		10		40		54	\$10,280		\$0	\$10,280
5.1.2 Intermediate Scenario Analysis	4		14		50		68	\$12,900		\$0	\$12,900
5.2 Hydraulic Analysis TM Preparation			8		40		48	\$8,640	\$50	\$50	\$8,690
Task 5 - Subtotal	8	0	32	0	130	0	170	\$31,820	\$50	\$50	\$31,870
Task 6 - Capital Improvement Planning											
6.1 Unit Cost Analysis	2		4		8		14	\$2,098		\$0	\$2,098
6.2 CIP Development	4		16		32		52	\$7,372		\$0	\$7,372
6.3 CIP TM Preparation			4		24		28	\$3,124		\$0	\$3,124
Task 6 - Subtotal	6	0	24	0	64	0	94	\$12,594	\$0	\$0	\$12,594
Task 7 - Draft & Final Reports											
7.1 Draft Report Preparation	4		8		40		52	\$6,500	\$50	\$50	\$6,550
7.2 Final Report Preparation	2		4		24		30	\$3,634	\$100	\$100	\$3,734
Task 7 - Subtotal	6	0	12	0	64	0	82	\$10,134	\$150	\$150	\$10,284
BASE SCOPE OF WORK - Tasks 1 - 7 Total	43	8	166	16	397	10	640	\$113,998	\$500	\$500	\$114,498
OPTIONAL TASK											
Task 8 - Knowledge Transfer Workshop											
Knowledge Transfer Workshop	6		10		14		30	\$6,450	\$50	\$50	\$6,500
Task 8 - Subtotal	6	0	10	0	14	0	30	\$6,450	\$50	\$50	\$6,500