

Supplemental Agreement for Assigned Project

SUPPLEMENTAL AGREEMENT FOR ASSIGNED PROJECT

Consultant: WATER SYSTEM CONSULTING, INC.

Project Name: 2020 Urban Water Management Plan

The Scope of Services for Professional Services for the preparation of 2020 Urban Water Management 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 30th 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 \$87,300.00, 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 _____.

CITY OF RIVERSIDE, a California
charter city and municipal corporation

By: _____
City Manager

By: _____
City Clerk

WATER SYSTEMS CONSULTING, INC.,
a California corporation

By: [Signature] President
(Name and Title) Jeff Szytel

By: [Signature] Secretary
(Name and Title) Leven Athol

CERTIFIED AS TO AVAILABILITY OF FUNDS:

By: Kristie Thomas
Director of Finance

APPROVED AS TO FORM:

By: Susan Wilson
Assistant City Attorney

EXHIBIT "A"



2020 URBAN WATER MANAGEMENT PLAN





Mr. Leonardo Ferrando

City of Riverside
Public Utilities Department
3750 University Avenue
3rd Floor
Riverside, CA 92501

WSC Main Office

805 Aerovista Place, Suite 201
San Luis Obispo, CA 93401
Phone: (805) 457-8833

WSC Rancho Cucamonga Office

9375 Archibald Avenue, Suite 200
Rancho Cucamonga, CA 91730
Phone: (909) 483-3200

WSC's Project Manager

Jeroen Olthof ^{PE, MS, MBA}
(858) 397-2617, ext. 301
jolthof@wsc-inc.com

WSC's Principal in Charge

Jeff Szytel ^{PE, MS, MBA}
(805) 457-8833, ext. 101
jszytel@wsc-inc.com

Dear Mr. Ferrando,

The City of Riverside Public Utilities (City or RPU) has a great opportunity, through the development of the 2020 Urban Water Management Plan (UWMP), to create a compliant UWMP document that also clearly establishes and communicates your progress toward a sustainable and resilient water future. Water Systems Consulting, Inc. (WSC) is excited to have the opportunity to present our team and approach that will deliver a compliant and value-added UWMP for the City. Based on our understanding of RPU's priorities and objectives, WSC will provide a comprehensive approach that delivers:

Understanding of RPU's Resources and Vision. WSC's proposed core team for the 2020 UWMP completed RPU's 2015 UWMP, working closely with RPU staff to meet all DWR requirements and incorporate additional analysis and discussion of the City's water supply portfolio. Since then, we have worked consistently with RPU and your local and regional partners on planning efforts related to recycled water, habitat enhancement, and groundwater basin management. Our close working relationships and knowledge of RPU's data, resources, and vision mean we will hit the ground running in the same direction.

Trusted Guidance. WSC is participating in the California Department of Water Resources (DWR) UWMP Guidebook Workgroup to help develop the 2020 UWMP Guidebook. We understand the new requirements because we are helping to create them. Using this expertise, we will guide you through new DWR requirements and help you achieve your objectives and DWR compliance.

Effective Collaboration and Communication. WSC will foster effective collaboration and maintain timely communication by leveraging technology, including virtual meetings and online collaboration platforms, to drive efficiency, accountability and transparency.

We are excited for the opportunity to work alongside the City and to help achieve your 2020 UWMP objectives. WSC is prepared to enter into a contract under the terms and conditions prescribed in the Request for Proposal and the Sample Supplemental Agreement. We welcome the opportunity to discuss our proposal with you in more detail, and to answer any questions you may have. Please contact our Project Manager, Jeroen Olthof, or our Principal in Charge, Jeff Szytel, with any questions. Thank you for this opportunity, and we look forward to your response.

Sincerely,
Water Systems Consulting

 A stylized, handwritten signature in black ink, appearing to read "J. Olthof".

Jeroen Olthof ^{PE, MS, MBA}
Project Manager

 A stylized, handwritten signature in black ink, appearing to read "J. Szytel".

Jeff Szytel ^{PE, MS, MBA}
Principal in Charge

Collaborative & Efficient 2020 UWMP Compliance



City of Arts & Innovation

Understanding and Approach

Project Understanding

The City has a long history of integrated water resources planning that exceeds state mandated requirements. The City's planning efforts include robust resources and facilities plans for its water, sewer, wastewater treatment, and recycled water systems in addition to the City's strategic and business plans. The City is seeking to hire a consultant to prepare its 2020 UWMP. The UWMP will build from, and integrate with, the City's other important planning efforts to meet DWR's requirements while presenting a cohesive and coherent view of the City's 25-year plan for managing its water supplies and demand.

Project Approach

WSC will prepare a complete and high quality 2020 UWMP that meets DWR's requirements, integrates with the City's related planning efforts, and provides a clear and well-communicated view of the RPU's 25-year water resources plan.

WSC's Approach Delivers:

Understanding of RPU's Resources and Vision. WSC understands much has changed since 2015, and we will apply our knowledge and familiarity with your resources and systems to deliver a UWMP that accurately reflects the City's current and future conditions. We are preparing 2020 UWMPs for several local wholesale and retail water providers, including Western Municipal Water District and San Bernardino Valley Municipal Water District. This relevant regional work, coupled with our strong understanding of your data, resources, and vision enables us to efficiently update your 2020 UWMP.

Trusted Guidance. WSC is participating in the DWR UWMP Guidebook Workgroup to help develop the 2020 UWMP Guidebook. We understand the new requirements because we are helping to create them. Using this expertise, we will guide you through new DWR requirements and help you achieve your objectives and DWR compliance as we update demand, supply, 5-year Drought Risk Assessment (DRA), and Water Shortage Contingency Plans (WSCP) analyses.

Effective Collaboration and Communications. Communication and collaboration are the foundation of our work. WSC will foster effective collaboration and maintain timely communication by leveraging technology, including virtual meetings and online collaboration, to drive efficiency, accountability and transparency. Our integrated engineering and communications teams lead the water industry in outreach and communication and can provide value added services to help the City communicate the results of this work to customers, elected officials, executive management, and staff.

Key Success Factors

Based on our understanding of the City's needs for this project, we have identified the following factors that define project success:



Meet all of DWR's requirements for a 2020 UWMP



Meet internal schedule deadlines and deliver a complete, high-quality plan to DWR by July 1, 2021



Engage with regional partner agencies to prepare plans that demonstrate coordination and consistency



Demonstrate the value of RPU's water assets and the resiliency provided to the community



Update demand projections to reflect new data sets and climate conditions



Provide an effective outreach and communication process that meets DWR's requirements and enhances customer relations



Inform and engage City staff without overburdening their time

Understanding of RPU's Resources and Vision

An Informed and Engaged Partner You Can Trust

Through our work together on the City's 2015 UWMP and the 2018 Groundwater Atlas, WSC has gained insight into the City's infrastructure, resources, and vision. WSC also brings an in-depth understanding of the regional projects and programs the City is participating in, and our team members have played significant roles in many regional planning efforts. This knowledge and insight will enable us to efficiently update the City's 2020 UWMP and maintain consistency with related regional planning efforts.

Groundwater Basin Management

The City produces most of its water from the San Bernardino Basin Area, which is shared with many other local agencies. The 1969 Judgement defined the City's water rights in these basins. City Management maintains a close dialog with the Western-San Bernardino Watermaster to ensure groundwater compliance is maintained and that the supplies are sustainable. Through our recent work together on the 2018 Groundwater Atlas, WSC developed an in-depth understanding of the City's groundwater resource management activities.

Although the City does not currently produce water from the Arlington Basin due to water quality constraints, the City is an active stakeholder in the development of the Arlington Basin Groundwater Sustainability Plan (GSP). WSC is on the consultant team preparing the Arlington Basin GSP and is leading key tasks including facilitating virtual workshops.

WSC is familiar with current groundwater basin management activities for all of the basins that the City has water rights in and will document Sustainable Groundwater Management Act (SGMA) compliance and coordination in basins used by RPU.

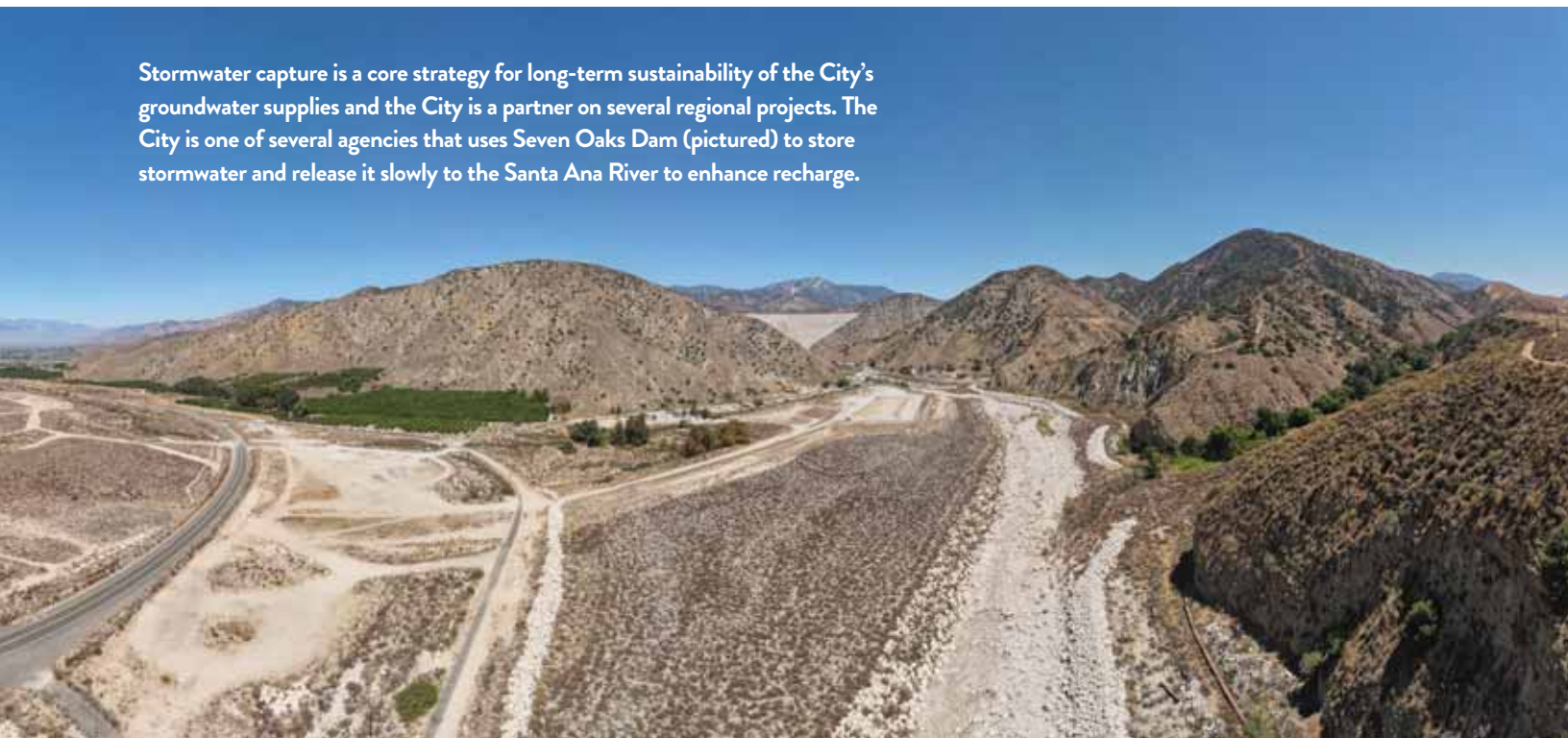
Recycled Water

Originally proposed by the City during the Regional Recycled Water Concept Study that WSC prepared, the City is moving forward with the Santa Ana River Sustainable Parks and Tributaries Water Reuse Project, as well as an expansion of the current recycled water system. The 2020 UWMP will be an opportunity to demonstrate how the expanded use of this valuable resource will enhance the City's water supply portfolio and increase resilience.

Regional Planning Documents and Projects

WSC is also currently leading the Upper Santa Ana River Watershed 2020 Integrated Regional Urban Water Management Plan and the Western Municipal Water District 2020 UWMP. The City is a stakeholder in both plans and there will be many shared projects and resources with the City's 2020 UWMP. This provides WSC the ability to efficiently update the City's UWMP and ensure consistency with these regional planning documents where relevant.

Stormwater capture is a core strategy for long-term sustainability of the City's groundwater supplies and the City is a partner on several regional projects. The City is one of several agencies that uses Seven Oaks Dam (pictured) to store stormwater and release it slowly to the Santa Ana River to enhance recharge.



Trusted Guidance

We Will Prepare a Seamless Update and Provide Expert UWMP Guidance

WSC has worked on approximately 50 UWMPs since the 2005 cycle, including 17 during the 2020 cycle and 28 during the 2015 cycle. We are UWMP experts, and we apply best practices and DWR insight across every UWMP that we prepare. We will apply this expertise to operate efficiently and complete the City's UWMP to meet all statutory requirements on a compact schedule. There have been some significant changes to UWMP requirements since 2015. WSC's UWMP Lead, Spencer Waterman, is serving on DWR's 2020 UWMP Guidebook Workgroup. Our proposed Project Manager, Jeroen Olthof, is participating in DWR's 2020 Data Streamlining Workgroup. WSC will proactively monitor and report back on changes to UWMP requirements through WSC staff's participation on the guidebook workgroup, enabling the team to bring the most up-to-date knowledge to this project and to get a head-start on the process.

Positioned for Ongoing Compliance

New WSCP requirements will include laying out protocols for future annual reporting. WSC will work with RPU to develop a plan and toolset that sets the framework for these annual reports to be produced efficiently and accurately.

Partnering with the City

Leveraging the City's expertise, knowledge and completed work will allow WSC to target its efforts towards developing only what is necessary. Previous and ongoing work from the City will provide a bulk of the information needed to update the 2020 UWMP.

We will focus most of our efforts to fill in gaps and meet new requirements that haven't already been addressed. WSC intends to review and provide guidance on the City's existing WSCP, which can be leveraged to develop the 5-Year DRA. DWR's new DRA methodology offers an opportunity to consider "new normal" supply and demand trends and projections. These methodologies and data can be incorporated with WSC's UWMP toolset to develop the basis for DWR's required new five-year reliability analysis.

The table below shows the level of effort that is expected to meet all major new UWMP requirements, with the WSCP and 5-Year DRA typically requiring the largest effort. The WSCP likely meets most new requirements except for the Water Supply and Demand Assessment (WSDA) requirements. DWR is still developing updated guidance for the WSDA, but the City will need to develop a written decision-making process to make a determination each year about the risk of a shortage. WSC will work with the City to develop the appropriate framework for inclusion in the UWMP and set the foundation for the City's first required WSDA, which will be due in July 2022.

New Requirements Increase the Level of Effort to Develop the 2020 UWMP and Allow Water Agencies to Manage Water Resources Locally

UWMP	TYPE OF EFFORT	ESTIMATED EFFORT
1 WSCP with prescriptive elements	Analysis, Description, Policy Decisions & Codification	Significant
2 5-Year DRA	Analysis, Description, Policy	Significant
3 Layperson's description of reliability	Description	Limited
4 Long-term forecast for each water supply source, including climate change and supporting information	Analysis, Description	Potentially Significant
5 Incorporation of projected land use changes in demand forecasting	Analysis, Description	Potentially Significant
6 Seismic risk assessment and mitigation plan	Description	Limited to Potentially Significant
7 Energy analysis now required	Analysis, Description	Limited to Potentially Significant
8 Water savings from codes/standards/etc. now required	Analysis, Description	Limited to Potentially Significant
9 Include 5 previous years of system water losses	Analysis, Description	Limited to Potentially Significant
10 Include GSP	Description	Limited

The new requirements provide the opportunity to:

Define and plan out short/long-term water shortage scenarios specific to your system. **Opportunity** to define what a water shortage means for your agency, not the State or other agencies.

Customize Shortage response actions, demand management measures, and supply projects to address potential supply gaps. **Opportunity** to justify short/long-term demand reduction programs/projects or supply projects.

Prepare for required annual reporting or other communication channels. **Opportunity** to connect UWMP data to annual reporting and management actions for customer education.

Effective Collaboration and Communication

We Build Upon Our Existing Outreach and Communication Success

Timely communication and effective collaboration with the City is critical to deliver a high quality document on schedule and within budget.

Collaboration Tools Drive Efficiency, Transparency, and Accountability

WSC proposes to use Microsoft Teams as an online collaboration tool to collect data, track action items, share updates, review and edit draft documents and collaborate with the entire project team. The Teams site will serve as the hub for project information and status and will facilitate flow of information to keep the project on track. It can be accessed by any team member at any time and will provide efficiency, accountability and transparency.

WSC's planning documents are organized for content clarity that supports compliance and communication. Our reader friendly documents utilize explanatory graphics and integrated tools and datasets that will bring your vision to life.

Effective Virtual Communication Connects Stakeholders and Team Members

WSC has always embraced and incorporated technology into our work. Clients have come to rely on and appreciate our ability to work remotely as an internal team, with client teams and with stakeholders. Through the duration of COVID-19 restrictions, WSC will deliver interactive workshops as virtual experiences using meeting platforms like Microsoft Teams, GoToMeeting, or Zoom, and collaboration tools like virtual white-boarding. Since March, our team has successfully led public presentations, stakeholder workshops, and client working sessions using several platforms selected based on the needs for each event. Our prior experience has proved essential in delivering productive workshops and we have received praise from multiple clients for their productivity and efficiency.



Enhanced Executive Summary for Multiple Audiences Can Promote the City and Your Programs

If the City desires, as an optional task, WSC can prepare an executive summary of the UWMP. This will invite non-technical audience's to engage with the plan and foster continued input and collaboration after the UWMP development. This would include a focus on de-jargoning technical content so that the public can understand and appreciate the daily work that the City does. This will show how the City delivers value to customers and their communities by providing safe, reliable, economical and environmentally sustainable water service. The look and feel could be similar to the 2018 Groundwater Atlas that WSC and the City recently collaborated on and serve as a companion to that document.

If the City desires, this enhanced executive summary can be delivered as an interactive digital experience rather than a static document. The WSC Team includes communication experts who can work with your team to envision and deliver an interactive platform to allow users to explore the rich and varied regional data contained within the UWMP, such as maps, graphs, and data tables. We envision a platform that functions like an intuitive website, allowing the user to run custom reports, visualize key metrics, and overlay data sets to visualize the complex interactions of RPU's water resource features, demographics, partnerships, and management strategies. If directed by the City, WSC could prepare a detailed scope and fee for this optional task as either a static document or an interactive digital experience.

Trusted Performance and Quality

WSC applies a multi-faceted approach to project and quality management that begins with a thorough scope, schedule, budget, and work plan, and extends through successful project completion with proactive monitoring and reporting along with comprehensive, well-timed reviews by highly qualified senior staff. WSC will prepare a compliant 2020 UWMP by July 1, 2021 by applying an efficient work plan that minimizes burdens on City staff time.

Collaboration and Clear Communication Maintains Project Momentum and Drives Quality Results

Our team's detailed schedule for the 2020 UWMP, shown at the end of this section, provides the framework for our team to prepare a high quality document on schedule. The following are key elements to successfully implement our proposed workplan:

- **Clearly defined roles and responsibilities:** We have laid out our team with clearly defined roles and responsibilities to support efficient project execution. We have defined technical teams to deliver each technical element.
- **Clear and frequent communication streamlines project delivery and drives project success:** Effective communication is critical for keeping the project on schedule and is at the core of our project management approach. This will consist of formal meetings (status meetings, workshops, etc.) and less formal communications, such as phone calls and emails. This flow of information will be critical for the team to gather information to keep the analysis moving, as well as to provide information to the City.
- **Status meetings keep the City and WSC in close contact throughout the project:** WSC will establish a standing agenda for these meetings that includes the team's progress, planned work, data needs, action item log, and plans for upcoming workshops and submittals.

Proactive Management to Meet Project Schedule and Budget

Early detection and mitigation of issues through scope, schedule, and budget management leads to successful project delivery. We will implement the following important project management approaches to deliver a successful project:

- **Identify critical success factors (CSFs).** CSFs are the key metrics that the City will use to define project success. We will jointly brainstorm CSFs at the Kickoff Meeting to solidify a shared vision of project success. The CSFs will be used to confirm the project implementation approach. They will be revisited periodically during project execution to confirm that the project is on track to meet the key project metrics.
- **Scope management, tracking schedule, and budget using earned value.** Schedule, budget, and scope are interdependent project elements and changes to any of these elements will likely impact others. Tracking schedule and budget and actual percent complete (earned value) identifies issues early when corrective actions can be taken. Any task found to be falling behind expended budget will be flagged for corrective action.
- **Project status reporting.** The WSC team will provide monthly project status reports with invoices. The progress reports will include work completed during the reporting period, work anticipated during the next reporting period, a summary of expenditures, earned value analysis, schedule assessment, identification of any project issues, and updated project logs. WSC will review the monthly reports with the City as part of the status meetings.
- **Clear tracking of actions, issues, and decisions throughout the life of the project.** An important part of keeping the project on schedule is accurate documentation of all directions and decisions. An action item log and data request log will be continually updated throughout the project on the Teams site and reviewed periodically with the project team.

Scope of Work

Key to Scope of Work

Additional /Augmented Information

The following is the Scope of Work provided in Request for Proposals (RFP) with suggested additions or modifications by WSC indicated in **green text**.

Task 1 – Project Management

1.1 Kickoff Meeting. Conduct a kickoff meeting with RPU to discuss the goals and objectives for the project. At this kickoff meeting, project reporting/communication protocols will be established, a project schedule will be provided, and key technical issues will be discussed to establish the project guidelines. Consultant will prepare a meeting agenda for RPU's review prior to the kickoff meeting and draft meeting minutes with action items within five working days following the meeting.

1.2 Monthly Team Meetings. Conduct monthly project team meetings throughout the project duration to include RPU and key subconsultants. Consultant to prepare meeting agenda for RPU's review prior to each meeting, and also meeting minutes with action items within five working days following each meeting.

1.3 Bi-Weekly Project Updates. Provide bi-weekly updates consisting of an email report. The updates will identify and discuss project issues, coordination efforts, action items, schedule, budget, and other items of concern.

1.4 Monthly Invoice and Progress Report. Provide a detailed billing breakdown with each invoice submitted listing all individuals and subconsultants who worked on the project, along with billing rates, multipliers and hours charged. Provide a detailed budget summary with each invoice, showing budget spent, remaining, and forecast for next billing period. Also, include a written summary of work performed for the invoice period, and to be performed during the next billing period.

1.5 Review Workshops. Conduct three two-hour workshops to review and gather feedback on draft documents.

Assumptions

All meetings will be held virtually using Microsoft Teams or an alternate on-line platform.

Deliverables

- Meeting agendas and minutes, delivered electronically
- Bi-weekly project updates, delivered electronically
- Monthly invoice and progress report, delivered electronically
- Electronic PDF files for draft and final report
- Five hard copies of the final report

Task 2 – 2020 UWMP Update

2.1 Data Collection and Review

2.1.1 Review and adhere to the 2020 UWMP Guidebook for Urban Water Suppliers and the Urban Water Management Planning Act. It's expected that the final guidelines will be released by November 2020.

2.1.2 Review and build from RPU's 2015 UWMP.

2.1.3 Request, review, and analyze available historical data from RPU needed to complete the Plan.

2.2 Update Sections from 2015 UWMP

2.2.1 Update the System Description for RPU's service area.

2.2.2 Update RPU's service area and population projections through 2045 using the City of Riverside adopted General Plan and data from the Department of Finance (DOF).

2.2.3 Analyze billing data from RPU finance and determine consumption by customer class.

2.2.4 Analyze indoor and outdoor water use.

2.2.5 Update the supply and demand projections within the 2015 UWMP for the RPU service area and use the same methodology to develop projections through 2045.

2.2.6 Include Baselines and Targets analysis section.

2.2.7 Update description of Demand Management Measures.

2.3 Incorporate 2020 DWR Requirements

2.3.1 Incorporate socioeconomic information into system description and demand projections.

2.3.2 Coordinate with local land use authorities to determine appropriate land uses for demand projections.

2.3.3 Prepare discussion of SGMA compliance and coordination in basins used by RPU.

2.3.4 Assess Potential Climate Change Impacts on Demands and Supplies.

2.3.5 Prepare Drought Risk Assessment.

2.3.6 Update Water Shortage Contingency Plan.

2.3.7 Prepare Distribution System Asset Management .Program Description.

2.3.8 Develop Layperson Description of the Fundamental Determinations of the UWMP.

2.4 UWMP Document

2.4.1 Prepare an Administrative Draft UWMP report compiling information developed in previous tasks for review by RPU.

2.4.2 Incorporate RPU comments into a Final Draft UWMP report for public review.

2.4.3 Prepare a final 2020 UWMP incorporating resolution of adoption and any changes made before adoption.

2.4.4 Upload document and data tables to Water Use Efficiency Data Portal.

Assumptions

The requirements in the Final DWR Guidebook for Urban Water Suppliers will not be significantly different than the ones in the public review draft Guidebook dated August 2020.

Deliverables

- Draft and Final UWMP in PDF format
- Electronic standard tables from DWR for submittal to the Water Use Efficiency Data Portal
- Supporting files used in analysis, including
 - GIS files used
 - Word files used
 - Excel files used
 - Documentation detailing any assumptions
 - Documentation showing how calculations were derived
 - Methodology for unit demand analysis
 - Methodology for service area population
 - Methodology for residential and non-residential growth

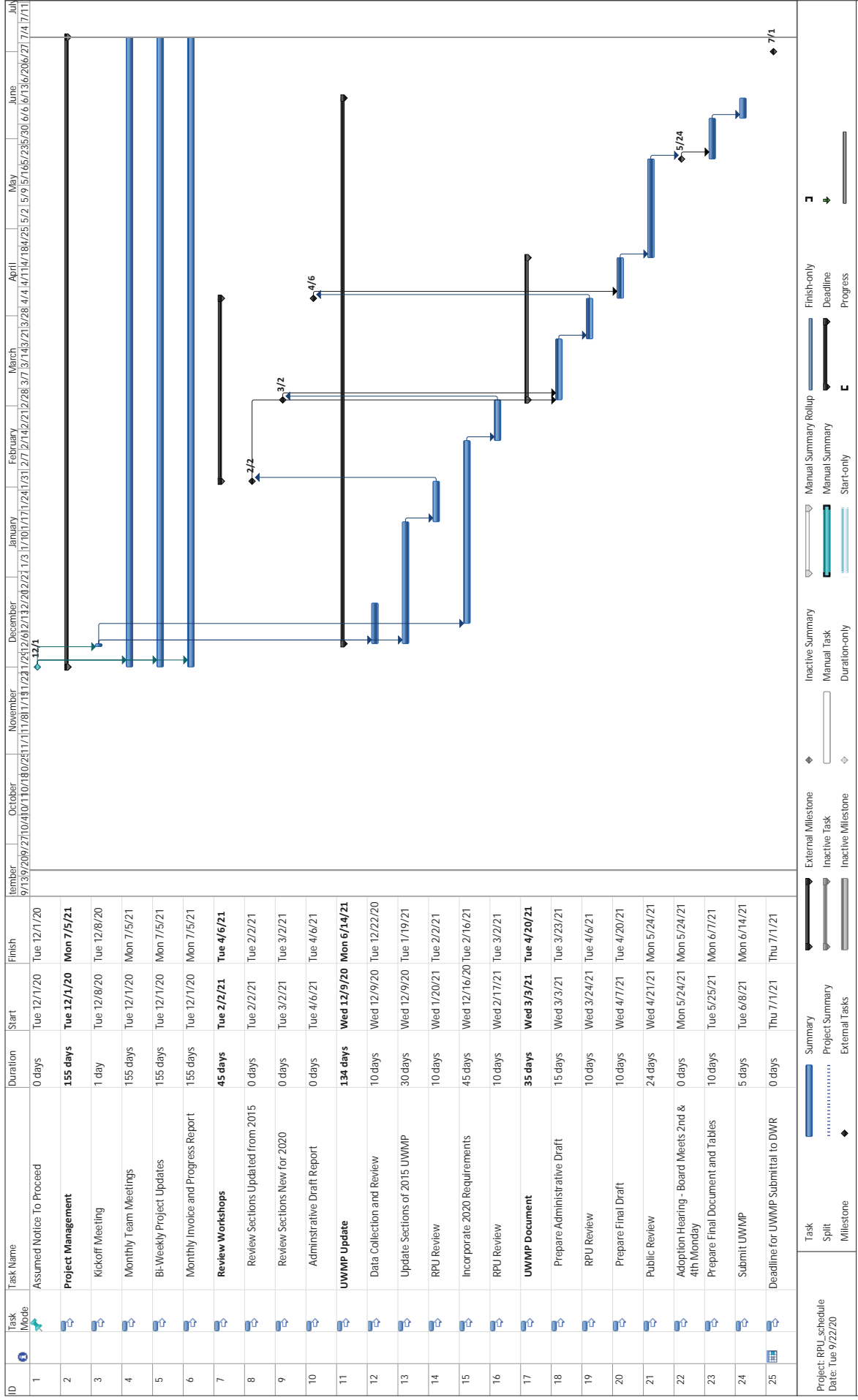
Task 3 Additional Regulatory Requirements (Optional)

3.1 Provide additional regulatory support to RPU on an as-requested basis.

Assumptions

The fee for this task shall not exceed \$15,000.

Proposed Schedule



Team Qualifications

Meet Your Team

WSC's team is organized to work collaboratively with the City to apply proven approaches, state-of-the-art tools, and knowledge-driven innovation to deliver truly outstanding results.

WSC's proposed Project Manager for the 2020 UWMP Update is Jeroen Olthof. Jeroen is an UWMP expert whose experience includes leading the City's 2015 UWMP, as well as the San Bernardino Valley Municipal Water District's Regional UWMP and nine retail agencies in 2015 and 2020. He will be supported by our proposed Lead Author, Spencer Waterman. Spencer has completed nearly 40 UWMPs for clients across California. Laine Carlson will provide her extensive regional insight to our team in the role of Quality Control/Quality Assurance Lead. Laine has led numerous local water resources and water system planning projects in the area.

Our team includes subject matter experts, planners, engineers, and hydrogeologists who have relevant knowledge and experience working in the region and will support the development of an efficient, defensible, and compliant UWMP. Resumes for WSC's proposed staff are included in Appendix A. WSC's contact information for its offices and Jeroen Olthof can be found in the cover letter.



City of Arts & Innovation

Principal
In Charge

Jeff Szytel PE, MS, MBA

Project Manager

Jeroen Olthof PE, MS, MBA

QA/QC

Laine Carlson PE, T2 & D2 Water Op

Lead Author

Spencer Waterman

Groundwater Advisor

Michael Cruikshank PG, CHG, MS

Communications Support

Tiffany Meyer

Recycled Water and
Imported Water Advisor

Rob Morrow PE, MS

Engineering Support

Erik Cadaret MS, EIT

Patricia Olivas MS, EIT

Our core team has completed numerous UWMPs together, including RPU's 2015 UWMP, and we have developed tools, processes, and working relationships that increase quality and efficiency.



Jeroen Olthof PE, MS, MBA

Project Manager

Jeroen has more than 25 years of experience developing water resources planning studies, databases, and integrating GIS with hydraulic models. He has worked on nearly 20 UWMPs, including as project manager for RPU's 2015 UWMP and the 2015 San Bernardino Valley Regional UWMP. He is currently participating in DWR's 2020 Data Streamlining Workgroup.

PROJECT EXPERIENCE

- 2015 UWMP, City of Riverside Public Utilities, Project Manager
- 2015 and 2020 Regional UWMP, San Bernardino Valley Municipal Water District, Project Manager
- 2015 UWMP, City of Victorville, Technical Advisor
- 2020 Regional UWMP, Desert Water Agency, Project Manager
- 2020 Enhanced UWMP, City of Santa Barbara, Decision Support Systems & UWMP Contributing Author
- 2020 Metro Plan and UWMP, City of Fresno, Decision Support Systems & UWMP Contributing Author
- 2015 UWMPs (for 5 districts, including Los Angeles County), California American Water, Technical Advisor
- 2015 UWMP, Soquel Creek Water District, QA/QC
- 2010 UWMP, Nipomo Community Services District, Task Lead
- 2010 UWMP, Hi-Desert Water District, Task Lead



Jeff Szytel PE, MS, MBA
PRINCIPAL IN CHARGE

Jeff has over 22 years of experience that includes leading the development of dozens of UWMPs, Master Plans, and water resources planning projects. He will provide strategic leadership during the development of a collaborative, innovative, and technically sound plan. His experience and detailed knowledge of water resources planning efforts enables him to make sure the right resources are available to our team in order to provide you with high-quality, responsive service.

PROJECT EXPERIENCE

- 2015 UWMP, City of Riverside Public Utilities, Principal in Charge
- 2015 and 2020 Regional UWMP, San Bernardino Valley Municipal Water District, Principal in Charge
- 2015 UWMPs (for 5 districts, including Los Angeles County), California American Water, Principal in Charge
- 2015 UWMP, City of Victorville, Principal in Charge
- 2020 Regional UWMP, Desert Water Agency, Principal In Charge
- 2020 Metro Plan and UWMP, City of Fresno, Project Manager
- 2020 Enhanced UWMP, City of Santa Barbara, Project Manager
- 2015 UWMP, City of Pismo Beach, Principal in Charge
- 2015 UWMP, Big Bear City Community Services District, Principal in Charge
- 2015 UWMP, Soquel Creek Water District, Principal In Charge



Laine Carlson PE, T2 & D2 Operator
QA/QC

Laine brings over 15 years of experience to water resources planning projects and programs. She has an extensive local knowledge of the regional and statewide issues and regulations relating to water resources, water conservation, and urban water management planning.

PROJECT EXPERIENCE

- 2020 UWMP, Western Municipal Water District, Project Manager
- 2015 UWMP, City of Riverside Public Utilities, QA/QC
- 2015 and 2020 Regional UWMP San Bernardino Valley Municipal Water District, QA/QC
- 2015 UWMP, City of Victorville, Project Manager
- Regional Recycled Water Concept Study, San Bernardino Valley Municipal Water District, Project Manager
- Chino Basin Program Preliminary Design Report, Inland Empire Utilities Agency, Conveyance System Lead
- 2018 Water Master Plan, City of Victorville, Project Manager



Spencer Waterman
UWMP LEAD AUTHOR

Spencer is a planner with more than 10 years experience in water resources planning and water use efficiency. His experience includes developing UWMPs, evaluating water demands, analyzing water supply portfolios, addressing water use efficiency and conservation, and developing supply strategies and state water law compliance documents. He has worked on more than 40 UWMPs and is a member of DWR's 2020 UWMP Guidebook Workgroup.

PROJECT EXPERIENCE

- 2015 UWMP, City of Riverside Public Utilities, Supporting Author
- 2015 and 2020 Regional UWMP, San Bernardino Valley Municipal Water District, Supporting Author
- 2015 UWMPs (for 5 districts, including Los Angeles County), California American Water, Lead Author
- 2020 Regional UWMP, Desert Water Agency, Supply and Demand Lead
- 2020 Metro Plan and UWMP, City of Fresno, Supply and Demand Lead
- 2020 Enhanced UWMP, City of Santa Barbara, Supply and Demand Lead
- 2020 UWMP, City of Oxnard, Lead Author
- 2015 UWMP, City of Victorville, Supporting Author
- 2015 UWMP, City of Pismo Beach, Project Manager
- 2015 UWMP, City of Arroyo Grande, Project Manager



Michael Cruikshank PG, CHG, MS
GROUNDWATER ADVISOR

Michael is a certified hydrogeologist and engineer with more than 14 years of professional experience. He has technical expertise in hydrogeologic basin analysis, water resource planning, and evaluating water quality. He has managed projects in large stakeholder environments and assisted in the development of groundwater and surface water models that are used to make important water resource management decisions.

PROJECT EXPERIENCE

- 2020 Enhanced Urban Water Management Plan, City of Santa Barbara, Groundwater Lead
- Groundwater Sustainability Plan, Arlington Basin, Western Municipal Water District, Senior Hydrogeologist
- Proposition 1 IRWMP Grant Support, San Bernardino Valley Municipal Water District, Project Manager
- Chino Basin Program Preliminary Design Report, Inland Empire Utilities Agency, Recharge Facilities Lead
- Feasibility Study for the Expansion of the Arlington Desalter System, Western Municipal Water District, Staff Hydrogeologist.
- 2020 Metro Plan and UWMP, City of Fresno, Groundwater Lead
- 2013 Amendment to 2010 Recharge Master Plan Update, Inland Empire Utilities Agency and Chino Basin Watermaster, Project Manager/ Engineer



Tiffany Meyer
COMMUNICATIONS SUPPORT

Tiffany has 20 years of communications strategy, group facilitation, and stakeholder engagement experience that includes nearly a decade in the water resources, renewable energy, and sustainable urban development industries. She is leading facilitation efforts for water management programs in communities throughout California. Her recent experience includes co-facilitating the Strategic Plan development for the San Bernardino Valley Municipal Water District.

PROJECT EXPERIENCE

- 2020 Enhanced Urban Water Management Plan, City of Santa Barbara, Workshop and Outreach Facilitator
- Strategic Plan, San Bernardino Valley Municipal Water District, Co-Facilitator
- San Luis Obispo Valley Groundwater Sustainability Plan, City and County of San Luis Obispo, Strategic Communications Lead
- VenturaWaterPure, City of Ventura, Strategic Communications Content Lead
- AWIA Risk and Resilience Assessment (RRA) and Emergency Response Plan (ERP), Mesa Water District, Communications Support



Rob Morrow PE, MS
RECYCLED WATER AND IMPORTED WATER ADVISOR

Rob has 20 years of water resources engineering experience focused on the implementation of recycled water projects, from concept to operation, for applications ranging from agricultural irrigation to potable reuse. He has served as the Project Manager for multiple UWMPs and has a thorough understanding of the regulations and legislation relating to recycled water, water conservation, and urban water management planning.

PROJECT EXPERIENCE

- 2020 Enhanced UWMP, City of Santa Barbara, Assistant Project Manager
- 2020 UWMP, Antelope Valley East Kern Water Agency, Project Manager
- 2020 Regional UWMP, Coachella Valley Water District, Recycled Water Advisor
- 2015 UWMP, Goleta Water District, Project Manager
- 2020 UWMP, Eastern Municipal Water District, Recycled Water and Imported Water Lead
- Sterling Recycled Water Center/ Groundwater Recharge Project, East Valley Water District, Project Engineer
- Groundwater Basins Master Plan, Water Replenishment District of Southern California, Recycled Water Lead
- Cuyama Valley Groundwater Sustainability Plan, Cuyama Groundwater Sustainability Agency, Project Lead

WSC UWMP Qualifications and References

Recent UWMP and Regional and Integrated Water Planning Experience

The table below summarizes WSC's recent experience providing clients with UWMP and water planning services.

WSC has developed water planning documents for agencies throughout California. We apply this experience to develop clear, forward-looking planning documents that help our clients to meet regulatory and funding requirements, maintain and operate their facilities, and budget and plan for the future.

	UWMP	REGIONAL PLANNING	WHOLESALE	RETAIL	IMPORTED/ SURFACE WATER	RECYCLED WATER	GROUNDWATER	STAKEHOLDER COMMUNICATION
SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT	✓	✓	✓	✓	✓	✓	✓	✓
DESERT WATER AGENCY	✓	✓	✓	✓	✓	✓	✓	✓
CITY OF RIVERSIDE PUBLIC UTILITIES	✓		✓	✓		✓	✓	
CITY OF VICTORVILLE	✓			✓	✓	✓	✓	
CALIFORNIA AMERICAN WATER	✓			✓	✓	✓	✓	✓
CITY OF FRESNO	✓	✓		✓	✓	✓	✓	✓
CITY OF SANTA BARBARA	✓	✓		✓	✓	✓	✓	✓
CITY OF OXNARD	✓			✓	✓	✓	✓	✓
BIG BEAR CITY COMMUNITY SERVICES DISTRICT	✓	✓		✓			✓	✓
CITY OF PISMO BEACH	✓	✓		✓		✓	✓	✓
CITY OF ARROYO GRANDE	✓			✓	✓		✓	
CITY OF GROVER BEACH	✓			✓	✓		✓	
RINCON DEL DIABLO MUNICIPAL WATER DISTRICT	✓			✓	✓	✓		
CITY OF LOMPOC	✓			✓			✓	
SOQUEL CREEK WATER DISTRICT	✓			✓		✓	✓	✓
CAMBRIA COMMUNITY SERVICES DISTRICT	✓			✓		✓	✓	✓
SAN LORENZO VALLEY WATER DISTRICT	✓			✓	✓	✓	✓	
NIPOMO COMMUNITY SERVICES DISTRICT	✓			✓	✓	✓	✓	
SAN ANTONIO WATER COMPANY			✓	✓	✓		✓	
INLAND EMPIRE UTILITIES AGENCY		✓	✓		✓	✓	✓	✓
CASITAS MUNICIPAL WATER DISTRICT			✓	✓	✓		✓	
CITY OF PASO ROBLES		✓		✓			✓	
SANTA BARBARA COUNTY WATER AGENCY		✓	✓	✓	✓	✓	✓	
CITY OF SANTA MARIA				✓	✓		✓	
SAN LUIS OBISPO COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT		✓	✓		✓		✓	
CITY OF SAN LUIS OBISPO				✓	✓	✓	✓	✓



2015 Regional Urban Water Management Plan

San Bernardino Valley Municipal Water District, San Bernardino, CA

WSC led a collaborative group that included the SBVMWD and nine retail suppliers to develop a Regional UWMP during the 2015 cycle. These agencies use imported groundwater, State Water Project water, local surface water and recycled water to meet the needs of approximately 700,000 people. Customers in the planning area are served by a network of regional pipelines and surface water treatment plants.

A coordinated database was developed that consolidated and standardized water supply and demand data for each agency, ensuring that all usage was accounted for and supplies were not double-counted. This database enabled the simulation of future changes in each agency's water supply portfolio to visualize the impacts to the regional water balance.

The project included a series of stakeholder workshops to gather data, discuss alternative approaches to enhancing supply reliability, review the database and preliminary results, and discuss the project deliverables. Each agency tailored its WSCP to the needs of its local service area, and as the wholesale supplier, SBVMWD outlined its plan for regional drought response. A voluntary analysis of energy intensity in water deliveries and climate change impacts was also developed by WSC.

Team Members' Roles: Jeff Szytel, PIC; Jeroen Olthof, Project Manager; Spencer Waterman, Lead Author; and Laine Carlson, QA/QC.

Reference: Mr. Bob Tincher, PE, Deputy General Manager - Resources, San Bernardino Valley Municipal Water District
(909) 387-9211 | bobt@sbvmwd.com



2015 Urban Water Management Plan

City of Riverside Public Utilities, Riverside, CA

For the 2015 UWMP, WSC updated the City's water supply and demand projections through 2040 based on changes since the 2010 UWMP. The City's water supplies come from groundwater and recycled water, and imported water from MWD is available to supplement supplies as needed, via a connection with Western Municipal Water District. The City's groundwater is pumped from five different groundwater basins, and each basin has its own management agreements with stakeholders and constraints to discourage over-extraction. The UWMP included an assessment of potential impacts of climate changes on the future reliability of these supplies.

For demand projections, WSC developed an approach that accounted for projected population growth and potential changes in per-capita demand as customers adopt water conservation practices. The team developed a comprehensive assessment of demands by customer type and location using the City's billing data. This data was used to populate a model that allowed what-if scenarios that considered future changes in water consumption patterns. The City maintains an econometric demand forecasting tool that was used to independently assess the likelihood of future increases in water consumption.

WSC addressed new requirements for the 2015 UWMP cycle which included compliance reporting with SB X7-7, distribution system losses reporting, and digital submittal through DWR's templates and online submittal database. The UWMP also included the discussion of potential opportunities to increase use of recycled water and development of a WSCP.

Team Members' Roles: Jeff Szytel, PIC; Jeroen Olthof, Project Manager; Laine Carlson, QA/QC; and Spencer Waterman, Water Use Efficiency Lead.

Reference: Mr. Michael Plinski, Engineering Manager, City of Riverside Public Utilities

(951) 826-5766 | mplinski@riversideca.gov



2015 Urban Water Management Plan

City of Victorville, Victorville, CA

WSC prepared the 2015 UWMP for the City, a retail agency that receives water from imported, groundwater, and recycled water sources. The 2015 UWMP included development of updated demand projections, a WSCP, a water loss report for the distribution system, and an energy intensity analysis of the City's booster pump stations.

The City relies primarily on groundwater supplies, but it works collaboratively with Mojave Water Agency to manage these resources and supplement them with imported water from the State Water Project. The Regional Recharge and Recovery (R3) Project allows the City to take advantage of imported supplies that may only be available in some years. Additional uses of recycled water, both regional and sub-regional, are also being developed as part of a long-term supply portfolio.

Following the successful completion of the UWMP, the City selected WSC to develop its most recent Water and Recycled Water Master Plans. WSC is also providing on-call consultant services to the City, which includes developing a GIS-based tool for conducting Water Feasibility Studies. The tool tracks incremental water supply and storage requirements for each proposed development, and the impact on the pressure zone and the entire system. The tool also quantifies the cumulative demands and capacity requirements to identify triggers for development related system improvements.

Team Members' Roles: Jeff Szytel, PIC; Laine Carlson, Project Manager; Jeroen Olthof, Senior Engineer; Spencer Waterman, Supporting Author.

Reference: Mr. Victor Fajardo, PE, Senior Civil Engineer, City of Victorville

(760) 243-6311 | vfajardo@ci.victorville.ca.us

2020 Regional Urban Water Management Plan

Desert Water Agency, Coachella, CA

WSC is preparing a RUWMP for six water purveyors in the Coachella Valley: Coachella Valley Water District, the City of Coachella, Desert Water Agency, the City of Indio, Mission Springs Water District, and Myoma Dunes Water Company. Each of the participating agencies prepared individual UWMPs in 2015 and are participating in a Regional UWMP in 2020 to leverage the benefits of regional planning, including a regional Integrated Regional Water Management Plan (IRWMP), while incorporating individual agency UWMP reporting requirements. The 2020 RUWMP will fulfill revised legislative requirements and the UWMP Act.

The RUWMP incorporates past planning efforts by the agencies including the IRWMP, Stormwater Resource Plan, and two groundwater sustainability plans. The agencies are working together to prepare consistent projections of population growth and demand, and where possible, align their WSCPs and communication with customers. The process and analysis will result in a set of tools that facilitate data collection and production of the RUWMP to economize efforts and enable the participating agencies to perform additional analysis and reporting.

Team Members' Roles: Jeff Szytel, PIC; Jeroen Olthof, Project Manager; Laine Carlson, QA/QC; Spencer Waterman, Primary Author; Rob Morrow, Recycled Water Advisor.

Reference: Ms. Ashley Metzger, Outreach and Conservation Manager, Desert Water Agency

(760) 323-4971, ext. 184 | ashley@dwa.org

"WSC has provided for the City's engineering needs for water modeling and water feasibility studies for many years. Currently they are entrusted to complete the City's 2018 Water Master Plan. During all this time WSC has consistently delivered high quality engineering documents and services, and have been valuable team members to the City of Victorville. Their staff is knowledgeable, courteous, and easy to work with. I recommend WSC to anyone requiring water engineering services."

Mr. Victor Fajardo, PE, Project Manager, City of Victorville



2020 Enhanced Urban Water Management Plan

City of Santa Barbara, Santa Barbara, CA

The City of Santa Barbara (City's) current water supply portfolio is one of the most diverse in California. It includes local surface water, groundwater from two main aquifers, tunnel infiltration, ocean desalination, imported State Water Project water, and a separate recycled water system. WSC is conducting an integrated evaluation of optimized supply portfolios of the City's water assets to produce a strategic road map for long-term water security.

WSC is working with the City to develop an integrated document that combines their Long Term Water Supply Plan (LTWSP) and UWMP into a 2020 Enhanced UWMP. For over 25 years, the City's primary water supply management tool has been its LTWSP.

Since 2011, the City has experienced the most severe and long-lasting drought on record coupled with other evolving issues with the potential to affect the City's availability of current water supplies. The Enhanced UWMP leverages and innovates on the City's past UWMP efforts and the LTWSP to build a single reference to guide water resources decisions, set water resources policy, and meet State 2020 UWMP reporting requirements.

WSC is developing a clear road map for the City's current and future supply portfolio that includes a plan for the role of desalination (the City's newest supply) as conditions change. Going beyond traditional cost and reliability factors, WSC's expanded evaluation and alternative process incorporated risks and future uncertainties into the evaluation. Risks and uncertainties are used in multiple steps throughout the planning process, including the development of alternatives, developing risk scores for the alternatives, and developing resilience scenarios to test the top alternatives.

Team Members' Roles: Jeff Szytel, PM; Rob Morrow, Assistant PM; Spencer Waterman, UWMP; Jeroen Olthof, Decision Support Systems; Laine Carlson, QA/QC; Tiffany Meyer, Strategic Communication.

Reference: Mr. Joshua Haggmark, Water Resources Manager, City of Santa Barbara (805) 564-5393 | JHaggmark@SantaBarbaraCA.gov



2005, 2010, and 2015 UWMPs

California American Water, all California Districts

WSC has provided California American Water (Cal Am) with engineering consulting services since our founding, and completed the UWMPs for all of their districts during the 2015, 2010, and 2005 UWMP cycles. This includes UWMPs for the Los Angeles County, Ventura, San Diego, Monterey, and Sacramento districts.

For each district, WSC:

- Developed 20-year per capita water use projections. WSC developed customized service area population data in GIS by intersecting block-level Census population data within the Cal Am service areas. Using the service area population, WSC calculated per capita water usage and used it to determine the baseline per capita water usage.
- Examined local water supplies to evaluate water availability for the next 20 years. WSC evaluated water supply reliability by reviewing historical water supply and demand data during multiple dry year periods.
- Completed voluntary analysis of energy intensity in water deliveries and climate change impacts.

WSC worked across districts to standardize data and coordinate report development. With each subsequent UWMP, WSC refined its tools and improved data consistency.

Team Members' Roles: Jeff Szytel, PIC/PM; Spencer Waterman, UWMP Author; Jeroen Olthof, QA/QC, Author and Technical Advisor; Laine Carlson, Technical Advisor

Reference: Ms. Nina Miller, Manager of Capital Program and Asset Planning, California American Water

(831) 884-3175 | nina.miller@amwater.com

Riverside Public Utilities
2020 Urban Water Management Plan
Cost Proposal



Task No.	Task Description	WSC											ALL FIRMS		
		Principal in Charge	Project Manager	QA/QC	Recycled Water	Groundwater Advisor	Lead Author	Communications Support	Administration	Supporting Author	WSC Labor Hours	WSC Labor Fee	Expenses	WSC Fee	Total Fee
		Jeffery Sytel	Jeroen Olthof	Laine Carlson	Robert Morrow	Michael Cruikshank	Spencer Waterman	Tiffany Meyer	Kay Merrill	Patricia Olivas					
	Billing rates, \$/hr	\$305	\$280	\$250	\$250	\$240	\$190	\$175	\$145	\$135					
1	Project Management														
1.1	Kickoff Meeting	2	2	2		2				2	10	\$ 2,420	\$ 100	\$ 2,520	\$ 2,520
1.2	Monthly Team Meetings		12							4	16	\$ 3,900	\$ 200	\$ 4,100	\$ 4,100
1.3	Bi-Weekly Project Updates		8								8	\$ 2,240	\$ 100	\$ 2,340	\$ 2,340
1.4	Monthly Invoice and Progress Report		8						12		20	\$ 3,980	\$ 200	\$ 4,180	\$ 4,180
1.5	Review Workshops		6	6		2				6	20	\$ 4,470	\$ 200	\$ 4,670	\$ 4,670
	SUBTOTAL	2	36	8	0	4	0	0	12	12	74	\$ 17,010	\$ 800	\$ 17,810	\$ 17,810
2	UWMP Update														
2.1	Data Collection and Review		4			8	8			16	28	\$ 4,800	\$ 200	\$ 5,000	\$ 5,000
2.2	Update Sections of 2015 UWMP		12		8		16	8		60	112	\$ 19,820	\$ 800	\$ 20,620	\$ 20,620
2.3	Incorporate 2020 Requirements		8			4	24			40	76	\$ 13,160	\$ 500	\$ 13,660	\$ 13,660
2.4	UWMP Document	2	8	12			16	8		32	78	\$ 14,610	\$ 600	\$ 15,210	\$ 15,210
	SUBTOTAL	2	32	12	8	12	64	16	0	148	294	\$ 52,390	\$ 2,100	\$ 54,490	\$ 54,490
	COLUMN TOTALS	4	68	20	8	16	64	16	12	160	368	\$ 69,400	\$ 2,900	\$ 72,300	\$ 72,300
OT 1	Additional Regulatory Support														
OT 1.1	Additional Regulatory Support					60					60	\$ 14,400	\$ 600	\$ 15,000	\$ 15,000
	Additional Regulatory Support TOTAL	0	0	0	0	60	0	0	0	0	60	\$ 14,400	\$ 600	\$ 15,000	\$ 15,000
	OPTIONAL TASKS TOTAL	0	0	0	0	60	0	0	0	0	60	\$ 14,400	\$ 600	\$ 15,000	\$ 15,000

10% mark-up on direct expenses: 15% mark-up for sub-contracted services
Standard mileage rate \$0.57 per mile (or current Federal Mileage Reimbursement Rate)
Airplane mileage rate \$1.27 per mile (or current Federal Airplane Mileage Reimbursement Rate)
Rates are subject to revision as of January 1 each year.

Resumes

Jeroen Olthof, PE, MS, MBA

Education

MBA, USC

MS, Civil Engineering, University of Washington

BS, Civil Engineering, University of Colorado Boulder

Professional Registrations

Professional Engineer - Civil, California, No. C58597

Professional Engineer – Civil, Oregon, No. C94671

Alternative Ranking and Decision-Making Tools.

Jeroen has developed many decision algorithms that support planning projects at the critical decision-making level. He has developed decision algorithms that:

- are integrated with clients' GIS tool sets
- identify needed system improvements, new infrastructure and rehabilitation projects
- can generate and rank alternatives and allow client staff to review and refine recommendations before projects are packaged for design and construction
- incorporate estimated operating and capital costs to identify the optimal combination of affordable improvements that meet program goals.

He has completed these types of projects for the City and County of Honolulu, City of San Diego, City of Los Angeles, and City of San Luis Obispo.

Professional Experience

Mr. Olthof brings 25 years of experience in planning and management of water and wastewater infrastructure. He specializes in Urban Water Management Plan (UWMP) development, hydraulic modeling, and master planning. His experience includes database development and integration of GIS with hydraulic models, recycled water customer databases, and asset databases. He is currently on the Department of Water Resources (DWR)'s Data Streamlining Workgroup. He has developed and maintained custom databases to track recycled water customers and generate reports for regulatory agencies and other stakeholders. He has also developed condition assessment programs and decision algorithms to support capital improvement planning and maintenance optimization.

Representative Projects

2015 Urban Water Management Plan, Riverside Public Utilities, Riverside, CA. Project Manager. Prepared the 2015 UWMP to fulfill the requirements of the Urban Water Management Planning Act. Updated water supply and demand projections through 2035 based on changes since the 2010 UWMP and compliance with SB-7. New requirements were addressed, including distribution losses reporting as part of the demand and digital submittal through DWR's templates and online submittal database.

2015 Regional Urban Water Management Plan, San Bernardino Valley Municipal Water District, San Bernardino, CA. Project Manager. Developed with the participation of the following agencies: SBVMWD, East Valley Water District, Riverside-Highland Water Company, West Valley Water District, Yucaipa Valley Water District, the City of San Bernardino Municipal Water District, and the Cities of Colton, Loma Linda, Redlands, and Rialto. Collaborated and collected data from the agencies listed above to update water supply and demand projections through 2035 based on changes since the 2010 UWMP and compliance with SB-7. Voluntary analysis of energy intensity in water deliveries and climate change impacts were completed during the update.

2015 Urban Water Management Plan, City of Victorville, Victorville, CA. Technical Advisor. Developed 20-year per capita water use projections in accordance with California Senate Bill x 7-7. Evaluated and updated supply, supply reliability, demand, supply and demand comparison, demand management measures and the WSCP components.

2020 Regional Urban Water Management Plan, Desert Water Agency, Coachella, CA. Project Manager. Updating the 2020 Regional UWMP for 6 agencies to fulfill revised legislative requirements and the UWMP Act. Building on a regional Integrated Regional Water Management Plan and other planning associated efforts. Developing consistent methodologies for population, demand, and supply projections across agencies and to align WSCPs. The process and analysis will result in a set of tools that facilitate data collection and production of the Regional UWMP to economize efforts and enable the participating agencies to perform additional analysis and reporting.

2020 Enhanced Urban Water Management Plan, City of Santa Barbara, Santa Barbara, CA. Decision Support Systems and UWMP Development. Jeroen helped develop a decision support tool to allow the project team to evaluate a wide range of alternative water supply portfolios. The tool was structured to provide flexibility for the project team and transparency to share results with technical and non-technical stakeholders.

Articles

San Diego's Recipe for Overflow Reduction, Public Works, June, 2004.

Capacity Assurance Sets Stage for CMOM Success, Waterscapes, Vol. 13, No. 2, May, 2002

Presentations

Management of Sewers in Environmentally Sensitive Areas, ASCE Pipelines Conference, San Diego, CA 2004

Lessons Learned in San Diego's Collection System Assessment Program, Water Environment Federation (WEF) Collection Systems Conference, Austin, TX, June, 2003

Automated Decision Tools for Sewer Collection System Assessment, California Water Environment Association Conference (CWEA), Ontario, CA, 2003

Improved Collection System Management Using GIS, Water Environment Federation Technology and Exposition Conference (WEFTEC), Chicago, IL, October, 2002

An Incremental Approach to GIS and Floodplain Mapping, Floodplain Management Association Conference, Sacramento, CA, September, 2000

A Hydrogen Sulfide Screening Tool Within GIS, WEFTEC, Collection Systems Conference, Salt Lake City, UT, May, 1999

2020 Metro Plan and UWMP, City of Fresno, Fresno, CA. Decision Support Systems and UWMP Contributing Author. Working with the City to develop an updated Metropolitan Water Resources Management Plan (Metro Plan) that will provide a road map for the City's water supplies, water infrastructure, and sustainable growth for the next 50 years. The 2020 Metro Plan will include preparation and certification of a Programmatic/Project Environmental Impact Report, as well as a 2020 UWMP. The 2020 Metro Plan is intended to update the 2014 Metro Plan to incorporate physical and institutional changes and new available data. Land use based demand projections analysis will include estimating a "demand envelope" of possible scenarios impacting future water demands, such as conservation programs and sensitivity.

2015 Urban Water Management Plan, California American Water, Los Angeles County District, Los Angeles, CA. QA/QC. Prepared the 2015 UWMP to fulfill the requirements of the Urban Water Management Planning Act. Developed 20-year per capita water use projections in accordance with California Senate Bill x 7-7. Evaluated and updated supply, supply reliability, demand, supply and demand comparison, demand management measures and the water shortage contingency plan components of the UWMP.

2015 Urban Water Management Plan, Rincon del Diablo, Escondido, CA. Project Manager. Prepared the 2015 UWMP to fulfill the requirements of the Urban Water Management Planning Act. Developed 20-year per capita water use projections in accordance with California Senate Bill x 7-7. Evaluated and updated supply, supply reliability, demand, supply and demand comparison, demand management measures and the water shortage contingency plan components of the UWMP.

2015 Urban Water Management Plan, California American Water, Ventura County District, Ventura, CA. QA/QC. Developed 20-year per capita water use projections in accordance with California Senate Bill x 7-7. Evaluated and updated supply, supply reliability, demand, supply and demand comparison, demand management measures and the WSCP components of the UWMP.

2015 Urban Water Management Plan, California American Water, San Diego County District, Coronado, CA. QA/QC. Evaluated and updated supply, supply reliability, demand, supply and demand comparison, demand management measures and the water shortage contingency plan components of the UWMP.

2015 Urban Water Management Plan, Soquel Creek Water District, Soquel, CA. QA/QC. Updated water supply and demand projections through 2045 based on changes since the 2010 UWMP including unprecedented shifting demand patterns and new supplemental supply opportunities. New requirements were addressed, such as distribution system losses reporting as part of demand and digital submittal. Voluntary analysis of energy intensity in water deliveries and climate change impacts will also be completed.

2015 Urban Water Management Plan, California American Water, Monterey County District, Monterey, CA. Senior Project Engineer. Prepared the 2015 UWMP to fulfill the requirements of the UWMP Act. Developing 20-year per capita water use projections in accordance with California Senate Bill x 7-7. Evaluated and updated supply, supply reliability, demand, supply and demand comparison, demand management measures and the water shortage contingency plan (WSCP) components of the UWMP.

2010 Urban Water Management Plan, Nipomo Community Services District, Nipomo, CA. Task Manager. The project included the development of a parcel-level demand database. Five years of billing data for each account were compiled in a database, and each account was assigned to a geographic location. Estimates of future demand were based on allowable density, environmental constraints, and anticipated rates of population growth.

Jeffery Szytel, PE, MS, MBA

Professional Experience

Education

MBA, UCLA Anderson School of Management

MS, Civil Engineering, University of California Los Angeles

BS, Civil and Environmental Engineering, University of California Davis

Professional Registrations

Professional Engineer - Civil, California, No. C63004

Additional UWMP Experience

- Big Bear City Community Services District
- City of Pismo Beach
- City of Victorville
- Coachella Valley Water District
- Soquel Creek Water District
- Riverside Public Utilities
- California American Water Company, Monterey County
- California American Water Company, Sacramento County District
- California American Water Company, Ventura County District
- California American Water Company, Los Angeles County District

Mr. Szytel has nearly 25 years of experience in civil and environmental engineering specializing in water resources planning, including Urban Water Management Plans (UWMPs). He is the founder and president of WSC and provides oversight to our team to assure they have the appropriate resources to deliver a UWMP that meets your goals and objectives. He is focused on developing water resources planning documents that are built through collaborative processes and maximize the benefit across environmental, economic, and social factors.

Representative Projects

2015 Urban Water Management Plan, Riverside Public Utilities, Riverside, CA.

Principal in Charge. Oversaw preparation of the 2015 UWMP to fulfill the requirements of the Urban Water Management Planning Act. Updated water supply and demand projections through 2035 based on changes since the 2010 UWMP and compliance with SB-7. New requirements were addressed, including distribution losses reporting as part of the demand and digital submittal through DWR's templates and online submittal database.

2015 Regional Urban Water Management Plan, San Bernardino Valley Municipal Water District, San Bernardino, CA. Principal in Charge.

Developed a Regional UWMP with the participation of the following agencies: SBVMWD, East Valley Water District, Riverside-Highland Water Company, West Valley Water District, Yucaipa Valley Water District, the City of San Bernardino Municipal Water District, and the Cities of Colton, Loma Linda, Redlands, and Rialto. Collaborated and collected data from the agencies to update water supply and demand projections through 2035 based on changes since the 2010 UWMP and compliance with SB-7. New requirements were addressed, such as distribution system losses reporting as part of demand and digital submittal through DWR's new templates and online submittal database. Voluntary analysis of energy intensity in water deliveries and climate change impacts were completed during the update.

Los Angeles County District 2015 Urban Water Management Plan, California American Water, Los Angeles, CA. Principal in Charge.

Prepared the 2015 UWMP to fulfill the requirements of the UWMP Act. Developed 20-year per capita water use projections in accordance with California Senate Bill x 7-7. Evaluated and updated supply, supply reliability, demand, supply and demand comparison, demand management measures and the WSCP components of the UWMP.

2015 Urban Water Management Plan, City of Victorville, Victorville, CA. Principal in Charge.

Prepared the 2015 UWMP to fulfill the requirements of the UWMP Act. Developed 20-year per capita water use projections in accordance with California Senate Bill x 7-7. Evaluated and updated supply, supply reliability, demand, supply and demand comparison, demand management measures and the WSCP components of the UWMP.

2020 Enhanced Urban Water Management Plan, City of Santa Barbara, Santa Barbara, CA. Project Manager.

Leading the development of a long-term water supply plan and UWMP update through a collaborative, adaptive management process. The project included evaluating the City's existing water supply system and alternatives for supplemental supplies, including desalination, recycled water, increased reservoir storage, and imported water. Each option is being evaluated to sustainably reduce risk and improve resiliency to the water supply. The long-term water supply plan is being developed in tandem with a compliant UWMP for the 2020 cycle.

Professional Affiliations

American Water Works Association, Member

American Public Works Association, Member

American Society of Civil Engineers, Member

Association of California Water Agencies, Committee Member

Association of Clean Water Administrators

California Water Environment Association

Water Environment Federation
WaterReuse

Dale Carnegie Training

Toastmasters International

Publications

Supply from the Sea: Exploring Ocean Desalination. Journal AWWA, February 2005, 97:2

The Business of Water.
Contributing Author for *Supply from the Sea: Exploring Ocean Desalination.* AWWA. March, 2008.

2015 Urban Water Management Plan, City of Pismo Beach, Pismo Beach, CA.

Principal in Charge. Prepared the 2015 UWMP to fulfill the requirements of the UWMP Act. Developed 20-year per capita water use projections in accordance with California Senate Bill x 7-7. Evaluated and updated supply, supply reliability, demand, supply and demand comparison, demand management measures and the WSCP components of the UWMP.

2015 Urban Water Management Plan, Big Bear City Community Services District, Big Bear, CA . Principal in Charge.

Prepared the 2015 UWMP to fulfill the requirements of the UWMP Act. Developed 20-year per capita water use projections in accordance with California Senate Bill x 7-7. Evaluated and updated supply, supply reliability, demand, supply and demand comparison, demand management measures and the WSCP components of the UWMP.

Ventura County District 2015 Urban Water Management Plan, California American Water, Ventura, CA. Principal in Charge.

Prepared the 2015 UWMP to fulfill the requirements of the UWMP Act. Developed 20-year per capita water use projections in accordance with California Senate Bill x 7-7. Evaluated and updated supply, supply reliability, demand, supply and demand comparison, demand management measures and the WSCP components of the UWMP.

2020 Metro Plan and UWMP, City of Fresno, Fresno, CA. Project Manager.

Working with the City to develop an updated Metropolitan Water Resources Management Plan (Metro Plan) that will provide a road map for the City's water supplies, water infrastructure, and sustainable growth for the next 50 years. The 2020 Metro Plan will include preparation and certification of a Programmatic/Project Environmental Impact Report, as well as a 2020 UWMP. The 2020 Metro Plan is intended to update the 2014 Metro Plan to incorporate physical and institutional changes and new available data. Land use based demand projections analysis will include estimating a "demand envelope" of possible scenarios impacting future water demands, such as conservation programs and sensitivity.

2020 Urban Water Management Plan, City of Oxnard, Oxnard, CA. Principal in Charge.

Developing a new 5-Year Drought Risk Assessment and Water Shortage Contingency Plan (WSCP) as part of the City's 2020 UWMP based on new legislated requirements. Recent groundwater allocation changes based on Sustainable Groundwater Management Act -related actions and a shift in the recycled water program have prompted the need to re-evaluate their water supply portfolio options for long-term planning direction. The revised portfolio evaluation will be incorporated into reliability evaluation and WSCP development. WSCP development includes establishing supply reliability estimates by source, procedures for annual water supply and demand assessment, six water shortage levels, response actions, communications, enforcement, legal authority, financial consequence, monitoring procedures, and reevaluation procedures. Future phases of work include on-call services to complete UWMP-related Water Shortage Assessment Annual Report, Water Use Objective Annual Report, and the 2024 UWMP Supplement.

2015 Urban Water Management Plan, Soquel Creek Water District, Soquel, CA.

Principal in Charge. Updated water supply and demand projections through 2045 based on changes since the 2010 UWMP including unprecedented shifting demand patterns and new supplemental supply opportunities. New requirements were addressed, such as distribution system losses reporting as part of demand and digital submittal. Voluntary analysis of energy intensity in water deliveries and climate change impacts were completed.

Laine E. Carlson, PE

Education

BS, Civil Engineering, California
State Polytechnic University,
Pomona, CA

Professional Registrations

Professional Engineer - Civil,
California, No. C72424

Certifications

SWRCB Registered T2 Water
Operator #34907

SWRCB Registered D2 Water
Operator #41981

Professional Affiliations

American Water Works
Association, Member

California Water Environment
Association, Member

Professional Experience

Mrs. Carlson has over 15 years of experience working for a public utility and as a consulting engineer, focusing on water, wastewater, and recycled water systems. Her experience includes project management, construction administration, capital improvement planning, hydraulic analysis, water and wastewater master planning, pipeline design, pump station design and analysis, and water standard development. She has completed many regional water resources projects in the Santa Ana River Watershed and has a detailed understanding of the region's water issues, opportunities, and stakeholders.

Representative Projects

2015 Urban Water Management Plan, Riverside Public Utilities, Riverside, CA.

QA/QC. Prepared the 2015 UWMP to fulfill the requirements of the Urban Water Management Planning Act. Updated water supply and demand projections through 2035 based on changes since the 2010 UWMP and compliance with SB-7. New requirements were addressed, including distribution losses reporting as part of the demand and digital submittal through DWR's templates and online submittal database.

2015 Regional Urban Water Management Plan, San Bernardino Valley Municipal Water District, San Bernardino, CA. Technical Advisor. The 2015 Regional UWMP was developed with the participation of 10 local agencies. For the 2015 Regional UWMP, WSC collaborated and collected data from all agencies to update water supply and demand projections through 2035 based on changes since the 2010 UWMP, and compliance with SB7. Additionally, new requirements were addressed, such as distribution system losses reporting as part of demand and digital submittal through DWR's new templates and submittal database.

2015 Urban Water Management Plan, City of Victorville, Victorville, CA. Project Manager. Developed 20 year per capita water use projections in accordance with California Senate Bill x 7-7. Evaluated and updated supply, supply reliability, demand, supply and demand comparison, demand management measures and the WSCP components.

Regional Recycled Water Concept Study, San Bernardino Valley Municipal Water District, San Bernardino, CA. Project Manager. The study was a collaboration with nine agencies to identify regional recycled water projects to improve local water supply reliability and sustainability. Developed a triple bottom line scoring process to evaluate alternatives on the basis of economic, social and environmental criteria. The process was integrated with the Upper Santa Ana River Habitat Conservation Plan, which is critical to achieving local habitat sustainability and permitting regional recycled water projects.

2018 Water Master Plan, City of Victorville, Victorville, CA. Project Manager. Prepared a master plan to address both hydraulic capacity deficiencies and rehabilitation and replacement needs driven by aging infrastructure. The project included hydraulic modeling using InfoWater to evaluate capacity limitations, planning-level estimates of required capital spending each year based on system inventory and expected remaining useful life values, and a comprehensive 10-year Capital Improvement Plan.

2015 Water Master Plan & Urban Water Management Plan Update, City of Pismo Beach, Pismo Beach, CA. Technical Advisor. Performed an update of the City of Pismo Beach 2004 Water Master Plan. Created and calibrated an all-pipes, spatially allocated demand hydraulic model of the City's water distribution system using Bentley's WaterGEMS software. Used the hydraulic model to evaluate capacity limitations for current and future buildout scenarios and opportunities to optimize operations. Developed condition

based-replacement plans for aging infrastructure and an updated CIP project list to prepare the City for budget planning.

On-Call Water Modeling, City of Victorville, Victorville, CA. Project Manager.

Providing staff support services for hydraulic water modeling and development planning. Converted the City's existing hydraulic model to GIS based InfoWater and updated the model to include projects completed since it was developed in 2009. Performing general model review and calibrating a previously un-calibrated portion of the model. Preparing Feasibility Studies and Water Supply Assessments as needed to support the City's review and conditioning of proposed development projects.

Chino Basin Program, Inland Empire Utilities Agency, Chino, CA. Pipeline

Distribution System Lead. Leading the conveyance system portion of the preliminary design report for the Chino Basin Program which will create a new, drought-resistant supply to the region. Through effective partnerships with State Water Project Contractors, the California Department of Water Resources and the California Department of Fish and Wildlife, the project will develop new water supplies that will be stored in the Chino Basin Water Bank for ecological benefit in the Bay-Delta watershed.

Santa Ana River Conservation and Conjunctive Use Project, Santa Ana Watershed

Project Authority, Riverside, CA. Project Manager. Coordinated between five member agencies and individual stakeholders to maximize development and use of local water supplies. Project involved habitat improvement, improving efficient water use, groundwater banking, assessing groundwater supplies and quality, and provided additional decision-support modeling.

Flair Spectrum Water Supply Assessment, El Monte, CA. Project Manager. Project Manager of the Water Supply Assessment (WSA) for the proposed Flair Spectrum project located in the City of El Monte within California American Water's (CAW) water service area. The proposed project includes a 220-room hotel, 500,000 sq. ft. of retail outlet, 50,000 sq. ft. of restaurant and 600 condominium units with a total estimated water demand of 202 acre-feet per year. In accordance with California Water Code Section 10910-10915 (SB 610), the size of the development requires a WSA to determine whether the projected water supplies are sufficient to satisfy the demands of the project, in addition to existing and planned future uses. The WSA requires evaluating and documenting potential supplemental water supplies since CAW's 2010 Urban Water Management Plan did not account for the increased water demand associated with this project.

City of Hope Water Supply Assessment, Duarte, CA. Project Manager. Managed the WSA for the proposed City of Hope Specific Plan project located in the City of Duarte within CAW water service area. The proposed project includes more than 1,428,000 square feet of additions to the existing outpatient, inpatient, research, office, industrial, warehouse and hospitality uses. In accordance with SB 610, the size of the development requires a WSA to determine that water supplies are sufficient to satisfy the demands of the project, in addition to existing and planned future uses. The WSA requires evaluating and documenting potential supplemental water supplies since CAW's 2010 Urban Water Management Plan did not account for the increased water demand associated with this project.

Replenish Big Bear, Big Bear Area Regional Wastewater Agency, Big Bear, CA.

Project Manager. Leading the planning, permitting, and preliminary design of the program. Initial tasks included reviewing prior studies to determine a preferred alternative, facilitating numerous technical working sessions, and preparing the preliminary design for the program. Alternatives were analyzed based on treatment and regulatory requirements, water supply yield, social and environmental benefits, and life-cycle cost. Coordinated with several regional, state, and federal regulatory and funding agencies. Secured a \$75,000 State Water Resources Control Board Water Recycling Facilities Planning Grant.

Spencer J. Waterman

Education

BS, City & Regional Planning,
California Polytechnic State
University, San Luis Obispo

Certifications

American Water Works
Association, California-Nevada
Section, Water Use Efficiency
Practitioner Grade 1, Certificate
1714

Professional Affiliations

American Water Works
Association, Member

Additional UWMP Experience

- California American Water
– Monterey, Los Angeles,
Ventura, and Coronado
Districts
- San Lorenzo Valley Water
District
- City of Victorville
- Rincon del Diablo
Municipal Water District
- City of Colton
- East Valley Water District
- City of Loma Linda
- City of Redlands
- City of Rialto
- City of Riverside Public
Utilities
- Riverside Highland Water
Company
- West Valley Water District
- Yucaipa Valley Water
District
- Nipomo Community
Services District

Professional Experience

Mr. Waterman is a planner who focuses on Urban Water Management Plans (UWMPs). He has worked on UWMPs for more than 40 water utilities and is a member of the Department of Water Resources (DWR)'s 2020 UWMP Guidebook Workgroup, which is responsible for developing guidance to meet new requirements. His experience includes development of water master plans, wastewater master plans, recycled water master plans, grant funding applications, water use efficiency and conservation services, and state water law compliance documents including UWMPs, AB 1420 Self-Certification Statement materials, and California Urban Water Conservation Council Best Management Practices reports.

Representative Projects

2015 Urban Water Management Plan, Riverside Public Utilities, Riverside, CA.

Supporting Author. Prepared the 2015 UWMP to fulfill the requirements of the Urban Water Management Planning Act. Updated water supply and demand projections through 2035 based on changes since the 2010 UWMP and compliance with SB-7. New requirements were addressed, including distribution losses reporting as part of the demand and digital submittal through DWR's templates and online submittal database.

2015 Regional Urban Water Management Plan, San Bernardino Valley Municipal Water District, San Bernardino, CA. Supporting Author.

Collaborated with and collected data from the agencies to update water supply and demand projections through 2035 based on changes since the 2010 UWMP and for compliance with SB-7. Participating agencies included: East Valley Water District, Riverside-Highland Water Company, West Valley Water District, Yucaipa Valley Water District, the City of San Bernardino Municipal Water District, and the cities of Colton, Loma Linda, Redlands, and Rialto.

2015 Urban Water Management Plan, California American Water Company, Los Angeles County, Los Angeles, CA. Lead Author.

Evaluated and updated supply, supply reliability, demand, supply and demand comparison, demand management measures and the water shortage contingency plan components. Also provided support as a Lead Author on the 2010 and 2005 UWMPs.

2020 Regional Urban Water Management Plan, Desert Water Agency, Coachella, CA.

Supply and Demand Lead. Updating the 2020 Regional UWMP for 6 agencies to fulfill revised legislative requirements and the UWMP Act. Building on a regional Integrated Regional Water Management Plan and other planning associated efforts. Developing consistent methodologies for population, demand, and supply projections across agencies and to align WSCPs. The process and analysis will result in a set of tools that facilitate data collection and production of the Regional UWMP to economize efforts and enable the participating agencies to perform additional analysis and reporting.

2020 Metro Plan and UWMP, City of Fresno, Fresno, CA. Supply and Demand Lead.

Working with the City to develop an updated Metropolitan Water Resources Management Plan (Metro Plan) that will provide a road map for the City's water supplies, water infrastructure, and sustainable growth for the next 50 years. The 2020 Metro Plan will include preparation and certification of a Programmatic/Project Environmental Impact Report, as well as a 2020 UWMP. The 2020 Metro Plan is intended to update the 2014 Metro Plan to incorporate physical and institutional changes and new available data. Land use-based demand projections analysis will include estimating a "demand envelope" of possible scenarios impacting water demands, such as conservation programs and sensitivity.

2020 Enhanced Urban Water Management Plan, City of Santa Barbara, Santa Barbara, CA. Supply and Demand Lead. Working with the City to lead and develop an Enhanced UWMP that: evaluates the adequacy and reliability of the City's water supply in unprecedented drought conditions; provides a long-term view of how the City's water supplies will be managed in the future; incorporates a stakeholder-driven process that reflects community values; and meets State UWMP requirements. The supply and demand analysis includes consideration of multiple scenarios considering social, economic, political and technical factors. Supply and demand reliability scenarios consider post-drought and post-recession demand "rebound" intensities and durations, climate change, resiliency factors, water conservation program sensitivity, energy intensity, and cost considerations. The Enhanced UWMP development is driven by workshops and collaboration with multiple stakeholder groups and City committees and Council as well as the public.

2020 Urban Water Management Plan, City of Oxnard, Oxnard, CA. Project Manager. Developing a new 5-Year Drought Risk Assessment and Water Shortage Contingency Plan (WSCP) as part of the City's 2020 UWMP based on new legislated requirements. Recent groundwater allocation changes based on Sustainable Groundwater Management Act - related actions and a shift in the recycled water program have prompted the need to re-evaluate their water supply portfolio options for long-term planning direction. The revised portfolio evaluation will be incorporated into reliability evaluation and WSCP development. WSCP development includes establishing supply reliability estimates by source, procedures for annual water supply and demand assessment, six water shortage levels, response actions, communications, enforcement, legal authority, financial consequence, monitoring procedures, and reevaluation procedures. Future phases of work include on-call services to complete UWMP-related Water Shortage Assessment Annual Report, Water Use Objective Annual Report, and the 2024 UWMP Supplement.

2015 Urban Water Management Plan, City of Victorville, Victorville, CA. Supporting Author. Developed 20-year per capita water use projections in accordance with California Senate Bill x 7-7. Evaluated and updated supply, supply reliability, demand, supply and demand comparison, demand management measures and the WSCP components.

2015 Urban Water Management Plan, Cities of Pismo Beach and Arroyo Grande, Northern Cities Management Area Technical Group, Pismo Beach and Arroyo Grande, CA. Project Manager. Prepared the 2015 UWMP to fulfill the requirements of the UWMP Act. Developing 20-year per capita water use projections in accordance with California Senate Bill x 7-7. Evaluated and updated supply, supply reliability, demand, supply and demand comparison, demand management measures and the WSCP components of the UWMP.

2015 Urban Water Management Plan, Big Bear City Community Services District, Big Bear, CA. Project Manager. Developed 20-year per capita water use projections in accordance with California Senate Bill x 7-7. Evaluated and updated supply, supply reliability, demand, supply and demand comparison, demand management measures and the water shortage contingency plan components of the UWMP.

2015 Urban Water Management Plan and Water Shortage Contingency Plan, City of Camarillo, Camarillo, CA. Lead Author. Prepared the 2015 UWMP to fulfill the requirements of the Urban Water Management Planning Act for the City of Camarillo. Evaluated supply, supply reliability, demand, supply, and demand comparison.

Robert Morrow, PE, MS

Education

MS, Civil / Environmental
Engineering, U.C. Berkeley

BS, Civil / Environmental
Engineering, Vanderbilt
University

Professional Registrations

Professional Engineer - Civil,
California, No. C68916

Professional Associations

WaterReuse Association, Central
Coast Chapter Trustee

Water Environment Foundation,
Member

American Society of Civil
Engineers, Member

Professional Experience

Mr. Morrow has 20 years of water resources engineering experience focused on the implementation of recycled water projects, from concept to operation, for applications ranging from agricultural irrigation to potable reuse. He has served as the Project Manager for multiple Urban Water Management Plans (UWMPs) and has a thorough understanding of the regulations and legislation relating to recycled water, water conservation, and urban water management planning.

Representative Projects

2020 Enhanced Urban Water Management Plan, City of Santa Barbara, Santa Barbara, CA. Assistant Project Manager. Leading the development of a long-term water supply plan and UWMP update through a collaborative, adaptive management process. The project included evaluating the City's existing water supply system and alternatives for supplemental supplies, including desalination, recycled water, increased reservoir storage, and imported water. Each option is being evaluated to sustainably reduce risk and improve resiliency to the water supply. The long-term water supply plan is being developed in tandem with a compliant UWMP for the 2020 cycle.

2020 Regional UWMP, Coachella Valley Water District, Coachella, CA. Recycled Water Advisor. Providing recycled water technical support as part of 2020 Regional UWMP. Building on a regional Integrated Regional Water Management Plan and other planning associated efforts. Developing consistent methodologies for population, demand, and supply projections across agencies and to align WSCPs.

2015 Urban Water Management Plan Update, Goleta Water District, Goleta, CA. Project Manager. UWMP met the requirements set forth by the California Department of Water Resources 2015 UWMP Guidebook. Rob prepared baseline demand and gallons per capita per day targets (GPCD) in compliance with SBx7-7, supply projections, supply reliability, and coordinated with DWR.

2020 Urban Water Management Plan, City of Oxnard, Oxnard, CA. Recycled Water Permitting. Providing technical support for the development of the City's 2020 UWMP based on new legislated requirements. Recent groundwater allocation changes based on Sustainable Groundwater Management Act -related actions and a shift in the recycled water program have prompted the need to re-evaluate their water supply portfolio options for long-term planning direction. The revised portfolio evaluation will be incorporated into reliability evaluation and WSCP development. WSCP development includes establishing supply reliability estimates by source, procedures for annual water supply and demand assessment, six water shortage levels, response actions, communications, enforcement, legal authority, financial consequence, monitoring procedures, and reevaluation procedures. Rob is working on the recycled water portions of this effort.

Long Term Supplemental Water Supply Alternatives Report, Santa Barbara County Water Agency, Santa Barbara, CA. Recycled Water/Integrated Systems Task Lead. Identified and evaluated potential supplemental surface water supply alternatives for the Santa Barbara County Water Agency. Developed planning level cost estimates for proposed supplemental water supply alternatives. Participated in inter-regional, regional, and intra-regional stakeholder meetings to identify, discuss, review, and receive feedback on potential supplemental water supply alternatives.

Water Environment & Reuse Foundation (WE&RF), White Paper on Groundwater Replenishment with Recycled Water on Agricultural Lands (Ag-GWR-RW) (WRRF 16-03), CA

Project Manager for white paper that explores potential issues associated with implementation of Ag-GWR-RW and potential solutions, best practices, and research to address these issues. This project was funded through the WE&RF Tailored Collaboration Research Program in combination with Sacramento County Regional San and The Nature Conservancy

2020 Metro Plan and UWMP, City of Fresno, Fresno, CA. Recycled Water Lead.

Working with the City to develop an updated Metropolitan Water Resources Management Plan (Metro Plan) that will provide a road map for the City's water supplies, water infrastructure, and sustainable growth for the next 50 years. The 2020 Metro Plan will include preparation and certification of a Programmatic/Project Environmental Impact Report, as well as a 2020 UWMP. The 2020 Metro Plan is intended to update the 2014 Metro Plan to incorporate physical and institutional changes and new available data. Land use based demand projections analysis will include estimating a "demand envelope" of possible scenarios impacting water demands, such as conservation programs and sensitivity.

Sterling Recycled Water Center / Groundwater Recharge Project, East Valley Water District, Highland, CA. Project Engineer. Project Manager leading the program, permitting/approvals, and funding aspects of the project, which includes construction of a new 10 mgd MBR plant with conveyance to recharge ponds. Rob is developing the Groundwater Recharge with Recycled Water Engineering Report to obtain SWRCB approval and RWQCB permit. Efforts include coordination with SWRCB DDW, RWQCB, USFWS, CDFW, and multiple local public agencies responsible for groundwater management, basin recharge, stormwater management, and habitat conservation. Funding efforts are focused on positioning for local, state, and federal grant funds and preparation of a SRF application for a low interest loan. In addition, Rob is supporting the legal team on the CWC 1211 Petition process, the consultant preparing a CEQA+ document, and the design-build entity.

Cuyama Valley Groundwater Basin Sustainability Plan, Cuyama Groundwater Sustainability Agency, Cuyama, CA. Task Lead. Leading development and evaluation of project and actions to meet groundwater sustainability goals for the Cuyama Basin, which DWR designated in critical overdraft, in compliance with the Sustainable Groundwater Management Act (SGMA). Alternatives include demand management, stormwater capture, river diversion and recharge, regional water exchanges, and importing water. The evaluation included an economic analyses of agricultural water supply and demand management action.

Water Resources Plan 2040, Marin Municipal Water District, Marin, CA. Technical Reviewer. The project involved identifying current and future demands and supply availability and assessing the District's ability to meet projected future demands given potential future disruptions caused by extended drought conditions, climate change, earthquakes, fires, and other hazards.

Groundwater Basins Master Plan, Water Replenishment District of Southern California, CA. Recycled Water Lead/Project Engineer. As Project Engineer, provided technical and strategic support for the development of a long-term plan for the Central and West Coast Groundwater Basins of southern Los Angeles County. Working closely with the basin pumpers and other stakeholders, the plan identified and evaluated alternatives for meeting anticipated future groundwater demands. Issues addressed included identification of additional potential sources of recycled water for providing groundwater replenishment via surface spreading and well injection and replacing non-potable groundwater demands by industrial users with recycled water. A set of projects, concepts and a roadmap for implementing them that meets the plan's goals and objectives was developed.

Carpinteria Recycled Water Facilities Plan and Recharge Project Program Management, Carpinteria Valley Municipal Water District, Carpinteria, CA. The plan focused on some of the largest potable water users in the area and groundwater recharge, including surface spreading, inland injection, and seawater barrier injection. The treatment evaluation identified partial reverse osmosis for agricultural uses and full advanced water treatment for groundwater recharge. Mid-basin injection of advanced treated water was recommended.

Michael Cruikshank, PG, CHG, MS

Education

MS, Civil and Environmental Engineering, California State University, Fullerton, CA

BS, Geology, California State University, Fullerton, CA

Professional Registrations

Professional Geologist, California, No. 8854

Certified Hydrogeologist, No. 994

Engineer-in-Training No. 142007

Professional Affiliations

National Groundwater Association, Member

Groundwater Resources Association of California, Southern California Branch Treasurer

WaterReuse, Member

Professional Experience

Mr. Cruikshank is a certified hydrogeologist and engineer with more than 14 years of professional experience. He has technical expertise in hydrogeologic basin analysis, water resource planning, and evaluating water quality. Mr. Cruikshank has managed projects in large stakeholder environments and assisted in the development of groundwater and surface water models that are used to make important water resource management decisions. His technical experience includes hydrologic data analysis, piezometric data collection and interpretation, production and monitoring well installation, well design, aquifer testing and analysis, managing field data collection programs, geographical information systems (GIS) applications, data management, data visualizations, and report graphics.

Representative Projects

2020 Enhanced Urban Water Management Plan, City of Santa Barbara, Santa Barbara, CA. Groundwater Lead. Working with the City to lead and develop an Enhanced UWMP that: evaluates the adequacy and reliability of the City's water supply in unprecedented drought conditions; provides a long-term view of how the City's water supplies will be managed in the future; incorporates a stakeholder-driven process that reflects community values; and meets State UWMP requirements. The supply and demand analysis includes consideration of multiple scenarios considering social, economic, political and technical factors. Supply and demand reliability scenarios consider post-drought and post-recession demand "rebound" intensities and durations, climate change, resiliency factors, water conservation program sensitivity, energy intensity, and cost considerations. **Reference:** Mr. Joshua Haggmark, Water Resources Manager, (805) 564-5393, JHaggmark@SantaBarbaraCA.gov

Groundwater Sustainability Plan, Arlington Basin, Western Municipal Water District, Riverside, Ca. Senior Hydrogeologist. Mr. Cruikshank is the project manager for WSC to develop the groundwater sustainability plan for the Arlington Basin. Mr. Cruikshank is responsible for developing the sustainability criteria and implementation projects needed to achieve sustainability.

Proposition 1 IRWMP Grant Support, San Bernardino Valley Municipal Water District, Upper Santa Ana River Watershed. Project Manager. Provided technical and strategic support through several workshops to help project proponents navigate through the SAWPA OWOW process. WSC rated and ranked the projects and developed strategies to prepare the project proponents for the SAWPA OWOW process. **Reference:** Mr. Bob Tincher, PE, Deputy General Manager – Resources, (909) 387-9211, bobt@sbvmwd.com

Chino Basin Program Preliminary Design Report, Inland Empire Utilities Agency, Chino, CA. Recharge Facilities Lead. Responsible for developing the preliminary design and siting of approximately 15 injection wells and 20 extraction wells, and the development of groundwater model scenarios (PUT and TAKE alternatives) designed to determine the efficacy of the program alternatives. The groundwater model runs are evaluated against parameters established by Chino Basin Watermaster and the Material Physical Injury process. The program alternative model runs are evaluated using sustainability criteria in existing production wells, determination of hydraulic control, and migration of known groundwater contaminate plumes. **Reference:** Ms. Liza Munoz, PE, Senior Engineer, (909) 993-1522, lmunoz@ieua.org

Feasibility Study for the Expansion of the Arlington Desalter System, Western Municipal Water District, Riverside, CA. Staff Hydrogeologist. Developed the conceptual model of the Arlington Basin for the MODFLOW groundwater model.

2020 Metro Plan and UWMP, City of Fresno, Fresno, CA. Groundwater Lead. Working with the City to develop an updated Metropolitan Water Resources Management Plan (Metro Plan) that will provide a road map for the City's water supplies, water infrastructure, and sustainable growth for the next 50 years. The 2020 Metro Plan will include preparation and certification of a Programmatic/Project Environmental Impact Report, as well as a 2020 UWMP. The 2020 Metro Plan is intended to update the 2014 Metro Plan to incorporate physical and institutional changes and new available data.

2013 Amendment to 2010 Recharge Master Plan Update, Inland Empire Utilities Agency and Chino Basin Watermaster, Chino Basin, CA. Project Manager/Engineer. The 2013 Amendment consisted of the evaluation of yield enhancement projects analyzed in the 2010 RMP as well as the yield enhancement projects recommended by the RMP Update Steering Committee. Over 35 yield enhancement projects were analyzed at 25 separate recharge facilities for cost and increased storm water capture arriving at a unit cost. The yield enhancement projects were ranked by unit cost and projects with a unit cost less than the Metropolitan Water District of Southern California Tier 1 rate were selected for implementation.

Groundwater Sustainability Plan, Fox Canyon Groundwater Management Agency, Ventura County, CA. Senior Hydrogeologist. Developed groundwater balances used in the Groundwater Sustainability Plans (GSP's) for the four groundwater basins within the Agency's jurisdiction: (1) Las Posas; (2) Arroyo Santa Rosa Valley; (3) Pleasant Valley; and (4) Oxnard. The budget accounts for and assesses the total annual volume of groundwater and surface water entering and leaving the basin, including historical, current, and projected water budget conditions, and the change in the volume of water stored. DBS&A's Distributed Parameters Watershed Model (DPWM) is being applied to evaluate key groundwater balance components including groundwater recharge by deep percolation of precipitation and irrigation and mountain front recharge.

North Pleasant Valley Desalter Project, City of Camarillo, Camarillo, CA.

Hydrogeologist. WSC is providing program management services for a new Desalter Facility that will treat 4,500 AFY of brackish groundwater and yield up to 3,800 AFY of potable water using Reverse Osmosis technology. The project will allow the City to more than double its local water supply. Brine from the RO treatment will be disposed of through an existing brine pipeline and ocean outfall. Mr. Cruikshank assisted with the bidding process of three triple nested monitoring wells designed to monitor the water quality improvements as a result of the desalter wells.

Central Coast Blue, Northern Cities Management Area, Pismo Beach, CA. Senior Hydrogeologist. As part of WSC's program management of Central Coast Blue, managed the development of a groundwater flow model focused in the Northern Cities Management Area of the Santa Maria Groundwater Basin. SMGB is a coastal aquifer that has observed increased chloride concentrations in previous prolonged droughts and been drastically impacted by the current drought. Central Coast Blue is a One Water regional recycled water project that will develop a sustainable water supply and protect the basin from seawater intrusion by creating a seawater barrier through a series of wells that will inject advanced treated recycled water that is currently treated and discharged to the ocean. Michael oversaw the preparation of preliminary design associated with five injection wells and three nested monitoring wells, and reviewed the technical specification for a test injection well and associated nested monitoring well.

Tiffany Meyer

Education

BA, English, Oregon State University

Training

Cornell University, MBA Level Certificate, Marketing Strategy

Blackbird Studio for Writers, two-year intensive in creative writing

Nonviolent Communication training and practicum (150 hours)

Community Mediation training (40 hours)

Center for Diversity and the Environment, DEI training (2-1/2 days)

Professional Experience

Tiffany has 20 years of communications strategy, group facilitation, and stakeholder engagement experience that includes nearly a decade in the water resources, renewable energy, and sustainable urban development industries. She is leading facilitation efforts for water management programs in communities throughout California and has provided support developing WSC's AWIA workshops. Her recent experience includes co-facilitating the Strategic Plan development for the San Bernardino Valley Municipal Water District and serving as the strategic communications lead for the San Luis Obispo Valley Groundwater Sustainability Plan.

Representative Projects

2020 Enhanced Urban Water Management Plan, City of Santa Barbara, Santa Barbara, CA. Workshop and Outreach Facilitator. Providing facilitation support for the development of a long-term water supply plan and UWMP update through a collaborative, adaptive management process. The project included evaluating the City's existing water supply system and alternatives for supplemental supplies, including desalination, recycled water, increased reservoir storage, and imported water. Each option is being evaluated to sustainably reduce risk and improve resiliency to the water supply. The long-term water supply plan is being developed in tandem with a compliant UWMP for the 2020 cycle.

Strategic Plan, San Bernardino Valley Municipal Water District, San Bernardino, CA. Co-Facilitator. Co-leading a comprehensive and inclusive process to develop the District's first Strategic Plan during a general manager transition. Process incorporates meaningful discovery (interviews, desktop research) to assess perceptions, opportunities, and barriers among key stakeholders. Designed and facilitated meaningful stakeholder group engagement experiences (workshops, working sessions) and follow-up deliverables to build buy-in and land shared agreement on Districts' mission, vision, values; as well as plan goals and priority actions to fulfill that mission. Leading creative production of an accessible, digestible Strategic Plan document that supports decision-making and communication with staff.

San Luis Obispo Valley Groundwater Sustainability Plan, City and County of San Luis Obispo, San Luis Obispo County, CA. Strategic Communications Lead. In partnership with a technical hydrogeology team and the basin's Groundwater Sustainability Commission (GSC), leading all stakeholder engagement and outreach activities for this 'high priority' basin. Support has included designing and facilitating stakeholder mapping, messaging, and planning meetings with the GSC and communications task force; key message, collateral and website development; and the design and facilitation of four stakeholder workshops to meaningfully consider all beneficial users and uses of groundwater in the development of the basin's management plan.

AWIA Risk and Resilience Assessment (RRA) and Emergency Response Plan (ERP), City of Victorville, Communications Support. Supported the development of workshops that effectively gather data and evaluate risks during the development of the RRA.

AWIA Risk and Resilience Assessment (RRA) and Emergency Response Plan (ERP), Mesa Water District, Communications Support. Supported the development of workshops that effectively gather data and evaluate risks during the development of the RRA.

Erik Cadaret, MS, GIT

Education

MS, Hydrogeology, University of Nevada, Reno, NV

BS, Geology, California State University, Fullerton, CA

Registrations / Certifications

Geologist-in-Training, No. 941

OSHA 40-hour HAZWOPER

MSHA 24-hour Part 48

Professional Affiliations

American Geophysical Union,
Member

American Water Resources
Association, Member

Geological Society of America,
Member

Groundwater Resources
Association of California,
Member

National Groundwater
Association, Member

Publications

*Vegetation canopy cover effects
on sediment erosion processes
in the Upper Colorado River
Basin Mancos Shale formation,
Price, Utah, USA, CATENA,*
December, 2016

*Experimental investigation of the
effect of vegetation on soil,
sediment erosion, and salt
transport processes in the Upper
Colorado River Basin Mancos
Shale formation, Price, Utah,
USA, CATENA, December, 2016*

Mapping erosion risk for saline
rangelands of the Mancos Shale
using the rangeland hydrology
erosion model, Land
Degradation and Development,
April, 2020

Professional Experience

Mr. Cadaret is a Geologist-in-Training with extensive field and rigorous scientific research experience. He has technical expertise in experimental design, data analysis and interpretation, conducting field data collection activities, and project management tasks. His technical experience includes managing projects and field operations, training staff, well logging, piezometric data collection and interpretation, aquifer testing and analysis, water quality evaluation, geographical information systems (GIS) applications, data management and visualization, and applied computer programming for data analysis and automation. His graduate studies focused on novel research to assist the Bureau of Land Management and the Bureau of Reclamation develop land management strategies to mitigate sediment and salinity contributions to the Colorado River.

Representative Projects

Annual Groundwater Assessment Report 2018, City of Riverside, Riverside, CA. Staff Hydrogeologist. WSC was selected to develop and implement the Annual Groundwater Assessment Report to establish a high-level reporting mechanism to describe the current condition of the groundwater basins it produces from and support its goals and effective decision making as it relates to groundwater management. Work included creation of report figures, data tables, and text content.

Recomputation of Ambient Water Quality for the Period 1999 to 2018, Basin Monitoring Program Task Force, Santa Ana Watershed Project Authority, Santa Ana River Watershed, CA. Staff Hydrogeologist. WSC is part of a multi-firm team: WSC, Daniel B. Stephens & Associates, LeClaire & Associates, and Environmental Science Solutions. The Water Quality Control Plan (Basin Plan) for the Santa Ana River Basin requires the implementation of a watershed-wide total dissolved solids (TDS) and nitrogen groundwater monitoring program to determine ambient water quality in groundwater, assess compliance with groundwater quality objectives, and determine if assimilative capacity exists in groundwater management zones.

Proposition 1 IRWMP Grant Support, San Bernardino Valley Water District, San Bernardino, CA. Staff Hydrogeologist. WSC was selected to provide technical and strategic decision-making support through several workshops to help project proponents navigate the SAWPA OWOW process. WSC evaluated projects according to the SAWPA OWOW ranking and rating criteria and developed strategies to prepare the project proponents. WSC's efforts lead to project proponents to being prepared when filing their application and were provided feedback for future consideration when applying for the next round of funding.

Extension of Staff Support Services, Eastern Municipal Water District, Perris, CA. Staff Hydrogeologist. WSC is providing extension of staff services to the District's Groundwater Development department on a variety of water resource projects. Tasks include overseeing inspection services during municipal supply production well installations, technical review of project deliverables and technical specifications, preparing RFPs, evaluating downhole surveys and pumping tests for new and existing production wells, and providing technical review support for groundwater modeling projects. Also, providing technical support for the development of a water quality pilot study which includes all aspects of planning.

Chino Basin Program Preliminary Design Report, Inland Empire Utilities Agency, Chino, CA. Staff Hydrogeologist. WSC is a part of the Brown and Caldwell team providing water engineering services to produce the Preliminary Design Report (PDR) for the Chino Basin Program. WSC will be assisting in identifying, evaluating, and developing PUT and TAKE alternatives and develop and evaluate scenarios of the alternatives. WSC has lead roles in evaluating recharge/PUT facilities alternatives, pipeline distribution system alternatives, and modeling/decision making of alternatives. Current work includes preliminary siting for injection wells for modeling evaluation and monitoring well designs and costing.

Groundwater Sustainability Plan, Arlington Basin, Western Municipal Water District, Riverside, CA. Staff Hydrogeologist. WSC is a part of a two-firm team, WSC and Geoscience, that was selected to develop the groundwater sustainability plan for the Arlington Basin. Anticipated to assist with development of sustainability criteria and identifying implementation projects needed to achieve sustainability. Current work includes evaluation of water quality in the basin.

Groundwater Sustainability Plan, Bear Valley Basin, City of Big Bear Lake Department of Water and Power, Big Bear Lake, CA. Staff Hydrogeologist. WSC is a part of a two-firm team, WSC and Tom Harder & Co., that was selected to develop the groundwater sustainability plan for the Bear Valley Basin. Anticipated to assist with development of sustainability criteria and identifying implementation projects needed to achieve sustainability.

Central Coast Blue – Regional Groundwater Sustainability Study, Multiple Agencies, Pismo Beach, CA. Project Hydrogeologist. WSC is providing program management, preliminary design, funding, and environmental document support services for the Central Coast Blue project. A new advanced treatment facility will be constructed to treat the secondary wastewater effluent before injecting the treated effluent into the Santa Maria Groundwater Basin to supplement water supplies and protect the basin from seawater intrusion. Current work includes siting preliminary injection wells, creating injection well and monitoring technical specifications and construction layouts, identifying land ownership and piped water sources, and producing a monitoring and reporting plan.

North Pleasant Valley Desalter Project, City of Camarillo, Camarillo, CA. Project Hydrogeologist. WSC is providing program management services for a new Desalter Facility that will treat 4,500 AFY of brackish groundwater and yield up to 3,800 AFY of potable water using Reverse Osmosis technology. The project will allow the City to more than double its local water supply. Brine from the RO treatment will be disposed of through an existing brine pipeline and ocean outfall. The facility is expected to be operational in Spring 2020. Assisted with the bidding process of the monitoring wells project and well evaluations of select wells within the Fox Canyon Groundwater Basin monitoring network. Provided well construction oversight and management services and well rehabilitation recommendations.

Groundwater Sustainability Plan, San Luis Obispo Basin, County of San Luis Obispo, San Luis Obispo, CA. Project Hydrogeologist. WSC is a part of a multi-firm team: WSC, GSI Water Solutions, GEI Consultants, Cleath-Harris Geologist, and Stillwater Sciences. The WSC lead team was selected to develop the groundwater sustainability plan for the San Luis Obispo Basin. Anticipated to assist with development of sustainability criteria, identifying implementation projects and management actions needed to achieve sustainability, and surface water modeling as part of an integrated model. The surface water modeling work is anticipated to leverage Python as a tool to do data processing and preparation as well as raster and grid calculations.

Patricia Olivas, EIT

Education

BS, Civil Engineering, California
Polytechnic State University,
Pomona, CA

Professional Registrations

Engineer-in-Training - Civil,
California,
No. 167815

Professional Experience

Ms. Olivas is an Engineer-in-Training with civil engineering experience focused on water and sewer hydraulic analysis, distribution and collection system design, and construction management support. Her academic projects focused on water and wastewater treatment systems.

Representative Projects

Water Supply Assessment for the SCLA Specific Plan, City of Victorville, Victorville, CA. Assistant Engineer. Prepared water supply and demand analyses and assessment report. Developed demands using historical and projected demands using a variety of sources, including past planning documents, proposed project phasing, historical customer usage, and land use. Determined water supply sufficiency and drafted report explaining the project, water consumption, system overview, analyses, supply reliability and sufficiency.

On-Call Water Engineering Services, City of Victorville, Victorville, CA. Engineering Intern. Develops water demand estimates based on land use, water demand factors, and/or assumptions stated in the City's current Water Master Plan. Utilizes the existing hydraulic model to perform hydraulic analysis for proposed developments, including storage and fire flow analysis, and sizing and location of distribution pipelines. Creates water feasibility reports and various maps using hydraulic model results.

System Mapping and GIS Database, San Antonio Water Company, Upland, CA. Engineering Intern. Assisted in the creation of a GIS system mapping project. Analyzed and summarized information provided by the client in the form of CAD drawings, system index maps, meter data, and billing information. Researched requirements and potential applications to use for implementing a mobile mapping system and compiled information in a technical memorandum.

Comprehensive System Water Master Plan, San Antonio Water Company Upland, CA. Assistant Engineer. Created a new hydraulic model using InfoWater that combines both the domestic and irrigation system, prepared the fire flow testing plan, and draft report. Created demand scenarios for average and maximum day demands, and minimum and peak hour demands.

Water Hydraulic Distribution Model and On-Call Hydraulic Modeling Services, Elsinore Valley Municipal Water District, Lake Elsinore, CA. Assistant Engineer. Created a new and updated hydraulic model using InfoWater, developed technical memorandums documenting the model development process, existing and future demands approach, and a water system hydraulic model reference manual for District staff. Analyzed historical production and consumption data to develop existing and future demands, loaded demands in model, and created scenarios for steady-state average day demand, steady-state maximum day demand, steady-state peak hour demands, and 72-hour extended period simulation for maximum day demands.

As-Needed Hydraulic Modeling, Otay Water District, Spring Valley, CA. Assistant Engineer. Utilizes existing hydraulic model to perform potable water system modeling services. Hydraulic model is used to determine the available supply for fire-flow demands and verify pressure. Created exhibits to depict calculated pressure results.

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EXHIBIT “B”

Riverside Public Utilities
2020 Urban Water Management Plan
Cost Proposal



Task No.	Task Description	WSC										ALL FIRMS			
		Principal in Charge	Project Manager	QA/QC	Recycled Water	Groundwater Advisor	Lead Author	Communications Support	Administration	Supporting Author	WSC Labor Hours	WSC Labor Fee	Expenses	WSC Fee	Total Fee
		Jeffery Sytel	Jeroen Olthof	Laine Carlson	Robert Morrow	Michael Crulskshank	Spencer Waterman	Tiffany Meyer	Kay Merrill	Patricia Olivas					
	Billing rates, \$/hr	\$305	\$280	\$250	\$250	\$240	\$190	\$175	\$145	\$135					
1	Project Management														
1.1	Kickoff Meeting	2	2	2		2				2	10	\$ 2,420	\$ 100	\$ 2,520	\$ 2,520
1.2	Monthly Team Meetings		12							4	16	\$ 3,900	\$ 200	\$ 4,100	\$ 4,100
1.3	Bi-Weekly Project Updates		8								8	\$ 2,240	\$ 100	\$ 2,340	\$ 2,340
1.4	Monthly Invoice and Progress Report		8						12		20	\$ 3,980	\$ 200	\$ 4,180	\$ 4,180
1.5	Review Workshops		6	6		2				6	20	\$ 4,470	\$ 200	\$ 4,670	\$ 4,670
	SUBTOTAL	2	36	8	0	4	0	0	12	12	74	\$ 17,010	\$ 800	\$ 17,810	\$ 17,810
2	UWMP Update														
2.1	Data Collection and Review		4				8			16	28	\$ 4,800	\$ 200	\$ 5,000	\$ 5,000
2.2	Update Sections of 2015 UWMP		12		8	8	16	8		60	112	\$ 19,820	\$ 800	\$ 20,620	\$ 20,620
2.3	Incorporate 2020 Requirements		8			4	24			40	76	\$ 13,160	\$ 500	\$ 13,660	\$ 13,660
2.4	UWMP Document	2	8	12			16	8		32	78	\$ 14,610	\$ 600	\$ 15,210	\$ 15,210
	SUBTOTAL	2	32	12	8	12	64	16	0	148	294	\$ 52,390	\$ 2,100	\$ 54,490	\$ 54,490
	COLUMN TOTALS	4	68	20	8	16	64	16	12	160	368	\$ 69,400	\$ 2,900	\$ 72,300	\$ 72,300
OT 1	Additional Regulatory Support														
OT 1.1	Additional Regulatory Support					60					60	\$ 14,400	\$ 600	\$ 15,000	\$ 15,000
	Additional Regulatory Support TOTAL	0	0	0	0	60	0	0	0	0	60	\$ 14,400	\$ 600	\$ 15,000	\$ 15,000
	OPTIONAL TASKS TOTAL	0	0	0	0	60	0	0	0	0	60	\$ 14,400	\$ 600	\$ 15,000	\$ 15,000

10% mark-up on direct expenses: 15% mark-up for sub-contracted services

Standard mileage rate \$0.57 per mile (or current Federal Mileage Reimbursement Rate)

Airplane mileage rate \$1.27 per mile (or current Federal Airplane Mileage Reimbursement Rate)

Rates are subject to revision as of January 1 each year.