PROPOSAL
FOR THE CITY OF BEAUMONT
ADAPTIVE MANAGEMENT AND MITIGATION PLAN

Submitted to:

BEAUMONT
California

Submitted by:

Tom Dodson and Associates
P.O. Box 2307
San Bernardino, California 92406
(909) 882-3612

In Partnership with:

West Yost
23692 Birtcher Drive
Lake Forest, CA 92630
(949) 420-3030

and

Jacobs
(Lisa Patterson, Biological Resources/Regulatory Team)

Proposal Due Date and Time:

July 25, 2023
2:00 p.m.

Table of Contents

Fee Rate Schedule and Cost Proposal are provided under a separate cover

ATTACHMENTS

MEMORANDUM

July 22, 2023

FROM: Tom Dodson & Kaitlyn Dodson-Hamilton, Tom Dodson & Associates
Samantha Adams, West Yost
Lisa Patterson, Jacobs

TO: Grace Wichert, City of Beaumont

SUBJECT: Proposal to Provide Consulting Services to Prepare an Adaptive Management and Mitigation Plan for the City of Beaumont

Tom Dodson & Associates (TDA), in partnership with West Yost Associates, Inc. (West Yost) and Jacobs is pleased to submit this proposal to provide consulting services to prepare an Adaptive Management and Mitigation Plan (AMMP) for the City of Beaumont (City).

It is our understanding that the City intends to submit a Petition for Change of Wastewater Discharge to the State Water Resources Control Board for its recycled water discharge to Cooper's Creek (Riverside County, CA). The water that is currently discharged to Cooper's Creek can then be delivered for direct or indirect reuse (such as irrigation or groundwater recharge). The City has recognized that reducing its discharge has the potential to impact downstream biological resources (e.g. creek and riparian habitat). To address the potential for impacts, the City will develop the AMMP, the objective of which is to establish a monitoring, analysis, and reporting framework that will document changes in the hydrogeologic system and biological resources as discharge is reduced and inform the need for implementing management measures that will mitigate impacts of the reduced discharge. The development of the AMMP will be a multi-year effort produced in phases.

Our team carefully reviewed the RFP and have prepared an approach and scope of work that we believe will result in the development and approval of a robust AMMP that will serve as the framework for implementing the City's recycled water program. Our proposal includes all the requisite elements defined in the RFP, including submitting our cost proposal under separate cover. Our proposal provides an approach that will be implemented over three to five years and will include the following three phases:

- Phase 1 – Characterize Historical and Current Conditions to Support Development of AMMP
- Phase 2 – Assess Feasibility of Reduced Discharge and Perform Initial Baseline Monitoring
- Phase 3 – Prepare Adaptive Monitoring and Mitigation Plan and Continue Baseline Monitoring

Our project team has extensive experience working together to develop and implement complex water management programs, including development of monitoring and mitigation programs to address environmental, hydrogeologic, and biologic impacts of water resources projects. We believe that our team is well suited to support the City in achieving its recycled water use and discharge goals. We have a strong resume demonstrating successful outcomes for our clients, most particularly our team's support of the Chino Basin Watermaster in the development and implementation of its

Optimum Basin Management Program, which includes a robust adaptive monitoring and mitigation program for the Prado Basin Habitat Sustainability Committee.

Our team is fully committed and available to perform the multi-year services requested by the City and will enhance your capacity to efficiently develop the AMMP. We are confident that the City will be completely satisfied with the quality of our work and our commitment to provide the highest possible level of support while considering cost and efficiency. The team will provide the City:

- A commitment to working collaboratively. We are committed to working with City staff to develop an approach that will result in a high-quality, scientifically defensible AMMP that will provide for ease of adaptation as new information is learned or the City's plans and priorities evolve.
- Leadership you can trust to deliver. Our project team leadership is comprised of industry leaders in environmental, water, and biological resources. Our team will be led by Project Manager, Kaitlyn Dodson-Hamilton (TDA). She will be supported by Principles-in-Charge, Tom Dodson (TDA) and Samantha Adams (West Yost) and technical advisor Andy Malone, PG (West Yost). Technical work will be led by Veva Weamer (West Yost) and Lisa (Jacobs). This team brings a strong history of delivering on challenging multi-disciplinary projects.
- A team with a deep bench to deliver projects that expertly meet your needs. Our team offers a full-service approach across the entire spectrum of disciplines, including: planning, data analysis, modeling, engineering feasibility, CEQA, regulatory support, and grant funding.
- A project management plan that will keep the team engaged. Our project managers will keep our internal team and City staff engaged and meet the project goals and objectives. Our proactive project management plans include monthly updates (or other frequencies as appropriate), action item and decision logs, and oversight by our team's Principal-in-Charge and Technical Advisor.

We appreciate this opportunity to serve the City and we look forward to discussing our recommended approach and scope of work.

Sincerely,

Kaitlyn Dodson-Hamilton, Vice President, TDA.

Please contact Kaitlyn, Tom, or Samantha. Our direct contact information is below:

Kaitlyn Dodson-Hamilton
Email: kaitlyn@tdaenv.com
Phone: (909) 882-3612

Samantha Adams
Email: sadams@westyost.com
Phone: 949.238.0698

Tom Dodson
Email: tda@tdaenv.com
Phone: (909) 882-3612

B. Introduction

Tom Dodson & Associates, in partnership with West Yost and Jacobs, has prepared this proposal to develop an Adaptive Management and Mitigation Plan (AMMP) for the City of Beaumont (City). Our team carefully reviewed the RFP and have prepared an approach and scope of work that we believe will result in the development and approval of a robust AMMP that will serve as the framework for implementing the City's recycled water program.

It is our understanding that the City intends to submit a Petition for Change of Wastewater Discharge to the State Water Resources Control Board for its recycled water discharge to Cooper's Creek (Riverside County, CA). The water that is currently discharged to Cooper's Creek can then be delivered for direct or indirect reuse (such as irrigation or groundwater recharge). The City has recognized that reducing its discharge has the potential to impact downstream biological resources (e.g. creek and riparian habitat). To address the potential for impacts, the City will the AMMP, the objective of which is to establish a monitoring, analysis, and reporting framework that will document changes in the hydrogeologic system and biological resources as discharge is reduced and inform the need for implementing management measures that will mitigate impacts of the reduced discharge.

Our team has extensive experience working together to develop and implement complex water management programs, including development of monitoring and mitigation programs to address environmental, hydrogeologic, and biologic impacts of water resources projects. We believe that our team is well suited to support the City in achieving its recycled water use and discharge goals. We have a strong resume demonstrating successful outcomes for our clients, most particularly our team's support of the Chino Basin Watermaster in the development and implementation of its Optimum Basin Management Program, which includes a robust adaptive monitoring and mitigation program for the Prado Basin Habitat Sustainability Committee.

Our team has a successful approach and record in achieving our clients' objectives. We will do the same for the City in accomplishing the scope of services to develop an AMMP through our tried and true practices for project management and communication, which include:

1. Prior to entering into contract. We will work with the City to review the proposed scope of work and ensure we are in alignment on the project needs and objectives. Key milestones are defined as well as "off-ramps" that lead to revisiting the scope if initial investigations and analysis warrant a change to the project or approach. Through this process, the scope, schedule, and cost are refined as necessary to establish a final budget that considers any necessary contingencies to address challenges that may arise.
2. As early as possible, we identify the data and tools needed and available to support the project development, define the technical approaches that could be applied to meet the project objectives, and establish criteria to evaluate analytical outcomes. We strive to communicate when there are important data and analytical tool gaps that could impact the implementation of the scope of work so that adjustments to the scope of work and expected outcomes can be made.
3. We create a team whose skills match the unique needs of the project, including senior technical review at defined points within the scope. Our project team has a deep bench of skilled scientists, engineers, hydrogeologists, and biologists available to build a multi-disciplinary team that will ensure all aspects of the project are expertly addressed.

4. We Communicate in a clear and timely manner. We pride ourselves on being responsible, approachable, clear, and professional. As technical experts, we must always strive to present complex information in a manner that leads to effective decision making. Communication skills are essential to ensuring maximum efficiency for activities such as conducting meetings, reporting to regulators, and providing data, information, or presentations to decision makers as well as stakeholders. Our team leaders have extensive experience working for, communicating with, and speaking on behalf of multi-stakeholder groups, such as the Chino Basin Watermaster and the Santa Ana Watershed Project Authority, among others.
5. Ensure that we have subject matter experts assigned to perform Senior Technical Review and QA/QC of Reports and Deliverables. We execute every project to ensure that our methods, data, and results can hold up to peer-review, regulatory scrutiny, and court processes. To ensure high-quality deliverables, our Project Manager will be responsible to ensure that principal-level technical experts review the team's work to ensure they meet the intended goals and objectives of the project and are prepared to the highest technical standards and are communicated in a clear and concise manner.
6. We perform regular project management reviews of the scope, schedule, and budget to track progress and report out on key project milestones and financial status. We will involve the City at the first indication of a challenge with the scope, schedule, or financial status, and work together to resolve the challenge.

The project manager and primary contact for our team is Kaitlyn Dodson-Hamilton with Tom Dodson and Associates, located at: Tom Dodson and Associates: P.O. Box 2307, San Bernardino, California 92406. Phone: (909) 882-3612

C. APPROACH

In this Section, we describe our team's approach to developing the AMMP, including our understanding of the Project, our articulation of the steps to accomplish the City's objectives, the technical approach to implementing the work, our project management approach, and our project budgeting approach.

Project Understanding

The AMMP approach, which is iterative in nature, is valuable in that it will allow the City to develop and implement a "right size" approach to characterizing and analyzing local physical and operational conditions. The level of analysis and monitoring performed over time can be tailored to the local physical conditions (hydrogeologic and biologic), the robustness of available data and analytical tools, and the feasibility of filling data gaps and enhancing analytical tools to support adaptive management. Based on our team's experience, the development of an AMMP is a multi-year process that evolves over multiple phases.

The RFP describes the following work to be performed by the consultant in developing an AMMP for the City:

- Assess the hydrologic and operational feasibility of diverting discharge from the current point of discharge on Cooper's Creek
- Identify the potential impacts to biological resources downstream of the Cooper's Creek discharge point
- Assess the feasibility of implementing operation and mitigation alternatives
- Develop a monitoring program to assess baseline conditions and support an adaptive management plan
- Assist the City in seeking and applying for funding opportunities
- Any additional services required or recommended to secure approval of the AMMP

Technical Approach

The RFP defines a two-phase approach to developing the AMMP and performing the above listed work. We have reviewed the recommended phases and tasks and have developed a recommended technical approach to accomplish the work that includes all of the required tasks. Below we describe our articulation of the necessary steps to accomplish the City's objectives for preparing an AMMP and define an alternative phased approach to completing the work.

Steps to accomplish the City's Objectives

Based on our team's experience in developing and implementing similar adaptive management programs, we have articulated the following 12 steps as the approach to developing the AMMP:

1. Describe the Project and the objectives/requirements of the AMMP. This includes describing/defining the recycled water operations, change petition, future recycled water reuse, study area, and goals and objectives of the City.
2. Collect and review all relevant data, information, reports, and models/analytical tools (surface water and groundwater).
3. Characterize the historical extent/health of the biological resources within the Cooper's Creek floodplain up to the present day.
4. Characterize all factors that could have supported or affected the extent/health of the biological resources over time (e.g., surface-water discharge, groundwater levels, climate, pests, fire, etc.). Describe the relationships of these factors to the extent/health of the biological resources and define preliminary metrics for habitat sustainability.
5. Characterize the data and models (or analytical tools) that are available for assessing and projecting future hydrogeologic and biologic conditions and identify gaps in the available data and tools. Define approaches to improve the available data and tools. This step will include a review of the County of Riverside's Flow Ecology Investigation and its associated modeling tool/results.
6. Prepare Cooper's Creek Habitat Characterization and Sustainability Report. This report will summarize the results and conclusions of all prior steps, will describe preliminary metrics for habitat sustainability (e.g., depth to groundwater, surface-water discharge, etc.), and define a scope of work for (i) baseline monitoring /data collection and (ii) using existing, or developing new, models/tools for assessing the hydrologic and operational impacts and feasibility of reducing discharge to Cooper's Creek.
7. Assess the hydrologic feasibility of diverting at the current point of discharge. This would include performing predictive model simulations of the surface-water and groundwater hydrology of Cooper's Creek with and without the Project and comparing the model results against the preliminary metrics for habitat sustainability. Depending on the state of existing models and tools, this task may include:
    - Construct and calibrate (or update) a surface-water model that is capable of simulating: (i) historical discharge in Cooper's Creek and (ii) future discharge in Cooper's Creek under climate change, water conservation, and various future wastewater discharge scenarios.
    - Construct and calibrate (or update) a groundwater-flow model that is capable of simulating: (i) historical groundwater levels and GW/SW interactions within the alluvial aquifer and regional aquifer beneath Cooper's Creek and (ii) future groundwater levels and GW/SW interactions in Cooper's Creek under climate change, water conservation, and various future wastewater discharge scenarios.
8. Define potential project operations or other management actions to mitigate impacts to biologic resources.
9. Assess the engineering/operational feasibility of alternative project operations and management actions. This would include defining facility descriptions, level 5 cost opinions, and a CEQA checklist.
10. Prepare Cooper's Creek Discharge Hydrogeologic and Operational Feasibility Report. This report will summarize the results and conclusions of steps 7 through 9.

11. Concurrent with steps 7 through 10, implement the first year of the baseline monitoring program defined in the Cooper's Creek Habitat Characterization and Sustainability Report.
12. Using the information from steps 1 through 10, prepare the AMMP report. This report will include the following chapters, at a minimum:
    - Background.
        - Project Description and Regulatory Requirements
        - Description of the study area and Cooper's Creek hydrology/habitat [taken from Cooper's Creek Habitat Characterization and Sustainability Report]
        - Objectives of the AMMP
    - Predicted changes in Cooper's Creek hydrology/habitat. [taken from Cooper's Creek Discharge Hydrogeologic and Operational Feasibility Report]
    - Preliminary metrics for habitat sustainability. [taken from Cooper's Creek Habitat Characterization and Sustainability Report]
    - Monitoring program. This section will describe the monitoring program to track the extent/health of the Cooper's Creek riparian habitat and the factors that could affect it. The initial years of monitoring preceding Project startup (and the historical characterization) will be considered "baseline" conditions. The monitoring program will consider outcomes of the initial year of baseline monitoring performed pursuant to the Cooper's Creek Habitat Characterization and Sustainability Report. The monitoring program will be designed to compare the monitoring data versus the preliminary metrics for habitat sustainability, which could trigger mitigation measures.
    - Potential mitigation measures. This section will provide a list of potential strategies to mitigate adverse impacts to the riparian habitat in the event that such impacts are identified by the monitoring program and attributed to Project implementation. [taken from Cooper's Creek Discharge Hydrogeologic and Operational Feasibility Report]
    - Annual reporting. This section will describe the commitment to prepare annual reports that document the monitoring program and data analysis. The AMMP will include an annotated table of contents for the Annual Report.
    - Process to update the AMMP. This section will describe the process to revise the AMMP in the future based on the results and conclusions of the monitoring program. Revisions could include modifications to the monitoring program or the metrics for habitat sustainability.

In parallel to the technical work, the Team can provide support to the City in applying and negotiating terms of the change petition, communicating the project to interested and impacted stakeholders, and identifying grant opportunities.

Project Phases

The RFP defines a two-phase approach to developing the AMMP. We recommend organizing the above 12 steps into the following three phases:

1. Phase 1 – Characterize Historical and Current Conditions to Support Development of AMMP. Phase 1 includes steps 1 through 7 through the completion of the Cooper's Creek Habitat Characterization and Sustainability Report.
2. Phase 2 – Assess Feasibility of Reduced Discharge and Perform Initial Baseline Monitoring. Phase 2 includes steps 8 through 11. This phase should be performed in two-parallel processes:
    a. Phase 2A - Assess Project Hydrologic and Operational Feasibility
    b. Phase 2B - Implement First year of Baseline Monitoring
3. Phase 3 – Prepare Adaptive Monitoring and Mitigation Plan. This Phase includes step 12.

Grant Funding and USBR

The RFP requires that the AMMP meet all of the requirements of the Bureau of Reclamation reporting requirements of Title XVI-Water Reclamation and Reuse Program. The purpose of such a requirement is to be able to obtain grant funding, or comply with any grants received from the USBR to perform the project. Some elements of the Title XVI reporting are outside the scope of work envisioned for developing the AMMP. For these items, it is assumed that the City will provide or prepare the requisite information for Title XVI compliance. Alternatively, this work can be added to the scope at a later date, if requested by the City. The following items required for Title XVI compliance are not included in our proposed approach/scope of work.

- Providing a Crosswalk from the AMMP to a Title XVI Compliant format
- Detailed description of current and projected water supplies, demands, or water quality concerns
- Detailed description of water reclamation, recycling, and desalination opportunities
- Description of technology options
- Economic Analysis
- Selection of Recycled Water Reuse project (we are focused on selection of discharge alternatives only)
- CEQA considerations on the above bullets
- Legal and Institutional requirements for recycled water use
- Financial capability of City to implement project
- Research needs beyond the data gaps and tools needed to assess hydrogeologic and biologic impacts of reduced discharges

Project Management Approach

TDA's project management will keep our internal, subconsultant, and City staff engaged and meet the project goals and objectives on time and within budget. Our proactive project management plans include monthly updates (or other frequencies as appropriate), coordinating team meetings, and oversight by our team's Principal-in-Charge and Project Managers. West Yost has developed additional tools to help our project managers and team maintain accountability and project momentum. In our view, the most important tool at our disposal is internal review for quality assurance and quality control (QA/QC), to ensure that the work product meets the standards we deem acceptable for the work product at hand. The internal QA/QC will be undertaken by our team's Principal-in-Charge and Project Managers, between West Yost and Tom Dodson & Associates. The internal reviewer will conduct detailed technical review of the approach, technical findings, and project deliverables. Additionally, we value flexibility in our project management approach to meet the needs of the client, in this case the City of Beaumont, to ensure that the communication levels, management styles, and review processes meet the client's expectations.

Project Budget Approach

Our team has extensive experience in developing and implementing multi-year adaptive monitoring and management programs. Preparing cost estimates for multi-year, multi-phase work can be challenging because the scope of work in later phases is directly impacted by the conclusion of preceding phases. For this reason, we have prepared a budget (See Cost Proposal under separate cover), that provides a detailed line-item estimate for the tasks in Phase 1 and a range of potential costs for the tasks in Phases 2 and 3, based on our experience in performing similar work.

D. Firm Profile

Tom Dodson and Associates

Tom Dodson and Associates (TDA), incorporated in 1983, is a small environmental consulting and regulatory compliance firm located in San Bernardino. The principal partners, Tom Dodson (President) and Kaitlyn Dodson-Hamilton (Vice President), are directly involved in day-to-day operation of the firm and are also involved in each project undertaken by TDA. This approach provides the company owners with direct knowledge and oversight for each project, thus ensuring that each project receives the firm's high standard for product quality. A common theme of all TDA projects is compliance with environmental requirements while meeting project schedules. TDA works with clients to meet schedules and identify reasonable and ethical environmental requirements. For every project, TDA has found there is a mutually acceptable balance between development goals and the need to protect the environment. TDA strives to define this balance for clients and regulators and present workable solutions that both parties can accept as the basis for implementation of projects. With over 50 years of collective experience in environmental problem-solving, TDA has been remarkably successful in meeting objectives.

West Yost

TDA has partnered with West Yost in response to this proposal. TDA shall serve as project manager overseeing the tasks required to meet the needs to the scope of services discussed under "G. Scope of Services," while West Yost shall serve as the expert team performing the majority of the project tasks.

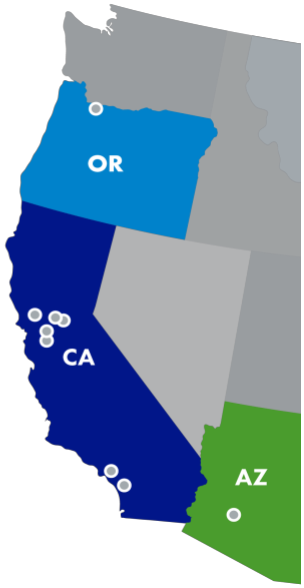
West Yost is a consulting engineering firm that was founded in 1990. Our focus is exclusively water, wastewater, recycled water, groundwater, and stormwater. We have broad experience in providing planning, design, construction management, and program management services in these areas.

West Yost is headquartered in Davis, California, and has about 225 staff members in nine offices in California, Oregon, and Arizona. Our staff includes certified or registered professionals in chemical, civil, control systems, electrical, environmental, and mechanical engineering; wastewater treatment and regulatory compliance; geology, engineering geology, and hydrogeology; architecture; GIS; cybersecurity and risk management; asset management and condition assessment; project management; and construction management and inspection services.

OREGON
Lake Oswego

CALIFORNIA
Concord
Davis (Corporate HQ)
Lake Forest
Oceanside
Pleasanton
Sacramento
Santa Rosa

ARIZONA
Phoenix



West Yost's groundwater team offers a full-service approach across the entire spectrum of disciplines from which we can build diverse, multi-disciplinary teams with the skills and experience that will bring innovative and efficient solutions to meet the unique needs of our clients. Our areas of expertise include: groundwater management planning (including SGMA compliance); hydrogeologic investigations; surface and groundwater modeling; land subsidence management; salt and nutrient management planning; development and implementation of monitoring programs; monitoring and management of groundwater dependent ecosystems; water rights compliance and reporting; regulatory and permitting assistance; database management; well rehabilitation and new municipal and ASR well design; managed aquifer recharge (MAR); and funding assistance.

Jacobs Engineering

TDA has a relationship with Jacobs because of Lisa Patterson—their California and Southwest Operating Divisions Lead—who previously worked for TDA for more than 20 years. In total, Lisa Patterson has teamed with TDA for about 30 years as an Ecologist, Biologist, and Regulatory Specialist. Jacobs has proven expertise guiding clients through the environmental permitting and regulatory compliance process in challenging environments throughout the United States. Jacobs combines decades of experience in permitting projects in areas of sensitive water resources, threatened and endangered species and vital natural resources. In addition, Jacobs has the tools to identify potential impacts to biologic resources and develop monitoring program to characterize baseline condition pursuant to Phase 1: Tasks 5 and 6, and Phase 2b.

E. Firm Location

Tom Dodson and Associates
Mailing Address: PO Box 2307, San Bernardino, CA 92406
Physical Address: 2150 N. Arrowhead Avenue, San Bernardino, CA 92405

F. Proposed Team

Tom Dodson & Associates

Tom Dodson, MA will serve as the Tom Dodson & Associates Principal-in-Charge. Tom is the President of Tom Dodson and Associates since its incorporation. He has more than 40 years of experience in the environmental consulting world. He personally prepares environmental documentation for a broad variety of projects and acts as a resource person in working with clients, governmental agencies, and decision-makers in finding solutions to complex problems. He negotiates with regulators at the federal, state, and local level, and designs formal presentations to committees. He serves as program manager on many projects undertaken by the firm and maintains close contacts with subconsultants and specialists who can provide technical information, as needed, in a timely manner.

Kaitlyn Dodson-Hamilton, will serve as the Tom Dodson & Associates Project Manager. Kaitlyn is an Environmental Specialist for Tom Dodson and Associates. Ms. Dodson-Hamilton has more than eight years of experience at TDA in environmental and resource management, with special expertise in CEQA and NEPA compliance. She has over 10 years of part-time experience providing support at TDA in research and mapping for CEQA, NEPA, and regulatory purposes at TDA. Ms. Dodson-Hamilton personally prepares environmental documentation for a broad variety of CEQA and NEPA projects, as well as regulatory permits for the State Department of Fish and Game, U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers. She works in conjunction with Tom to work with clients, governmental agencies, and decision-makers to find solutions to complex problems. For this Project, she will be the CEQA lead, in preparation of the necessary CEQA documentation to complete Phase 2. Tom and Kaitlyn will work in conjunction to accomplish this task based on the results of Phase 1.

West Yost

Samantha Adams, MESM will serve as the West Yost Principal-in-Charge. Samantha will be a secondary point of contact for the City and will support the Project Manager by ensuring that the requisite West Yost project team resources are available and that work is performed in accordance with the approved project approach, or as directed by the City and TDA. Samantha has 17 years of professional experience in water resources management and has overseen the development of numerous groundwater management plans, salt and nutrient management plans, and monitoring and reporting programs throughout the Santa Ana River watershed and elsewhere in southern California.

Andy Malone, PG will serve as the project Technical Advisor and QA/QC Reviewer. Andy has over 25 years of professional experience in water resources consulting and in geologic sciences. His technical expertise includes basin characterization, hydrogeologic and hydrologic analyses, aquifer mechanics, land subsidence, groundwater dependent ecosystems, and development of monitoring programs to support groundwater management. Andy currently serves as the technical advisor for the Chino Basin Watermaster's Prado Basin Habitat and Sustainability Program, for which he has served an integral role in developing and implementing the Prado Basin Adaptive Monitoring and Mitigation Program since 2014.

Veva Weamer, MS will serve as the Lead Project Scientist for the development of the AMMP. Veva has 15 years of experience in groundwater management. Her expertise includes SGMA compliance, surface and groundwater monitoring program design and implementation, groundwater dependent ecosystems, database management, water quality monitoring and analysis, salt and nutrient management planning, and regulatory compliance reporting. Veva is the project manager the Chino Basin Watermaster's Prado Basin Habitat and Sustainability Program, for which she has served an integral role in developing and implementing the Prado Basin Adaptive Monitoring and Mitigation Program since 2014.

Eric Chiang, PhD will serve as a project scientist, supporting review of models, developing modeling approaches, and supporting data management. Eric has 30 years of experience in the water resources industry focused on research and application of numerical groundwater and surface water modeling, 3D Visualization, software development, data management, planning and decision analysis, and GIS. Eric is West Yost's chief groundwater and surface water modeler. In addition, he develops and applies HydroDaVE – a cloud based groundwater and surface water data management system that enables users to remotely

manage, visualize, analyze, and share groundwater, surface water, climatic data, model results, and gridded data sets (like NDVI) on a map based user interface.

Carolina Sanchez, PE will serve as the project engineer to support surface water data analysis and modeling. Carolina has over nine years of experience in water resources engineering and groundwater management. Her expertise includes recharge master planning, surface water modeling, salt and nutrient management planning, Watermaster services, leading multi-stakeholder groups through decision making processes, and groundwater management planning.

Lucy Hedley, MESM will serve as the project engineer to support data collection and analysis. Her areas of expertise include regulatory support and compliance reporting, management of field groundwater and surface water monitoring programs, analysis of water quality data, implementation of salt and nutrient management plans, utilization of visual tools to analyze the interactions between surface water and groundwater, groundwater dependent ecosystems, and database management. Lucy currently serves as a project scientist for the Prado Basin Adaptive Monitoring and Mitigation Program.

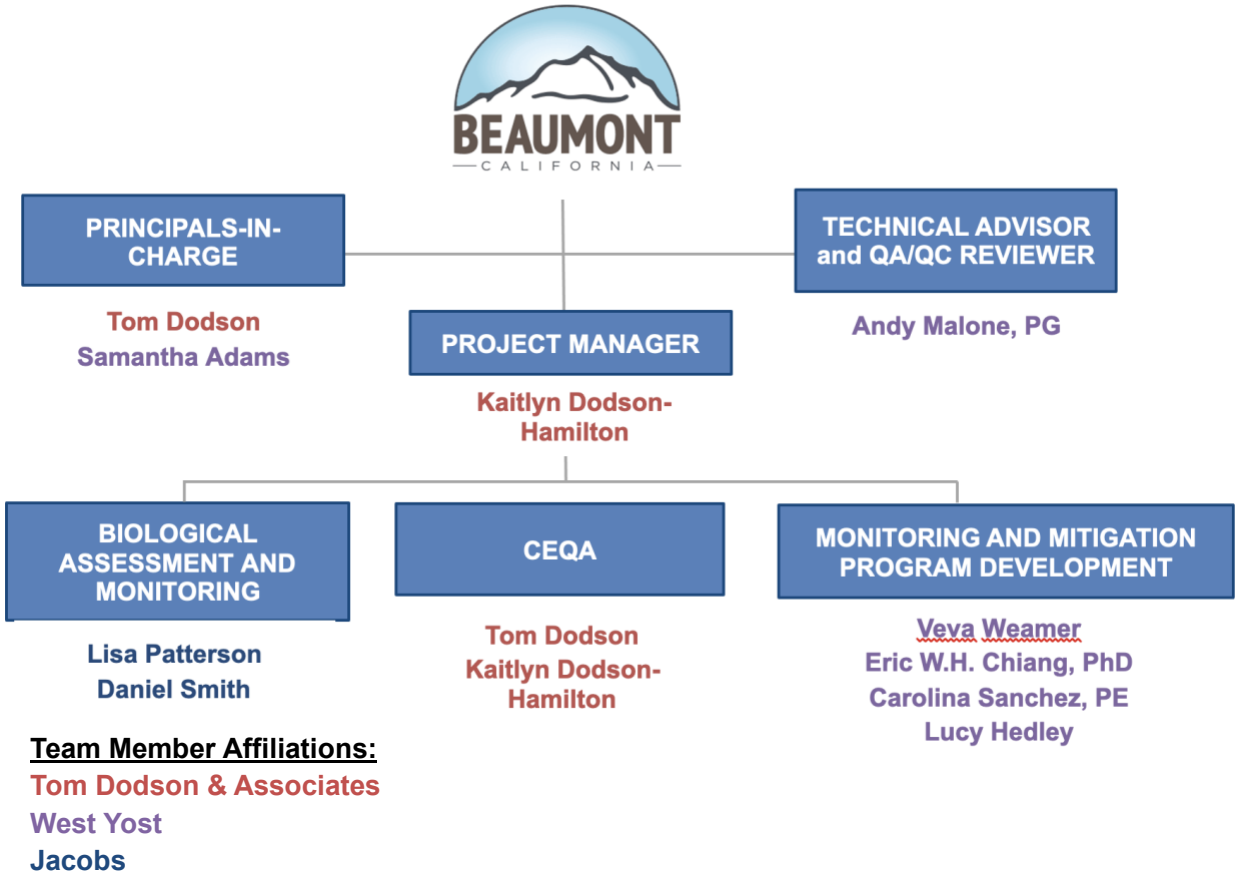
Jacobs

Lisa Patterson will serve as senior project biologist, assessing potential impacts to biological resources utilizing the existing discharge point under a reduced base flow regime as outlined in the RFP to develop a monitoring program to characterize baseline habitat conditions. Lisa will work with the West Yost and TDA teams to develop a monitoring plan to determine the impacts on biological resources from further reductions in flow. With over 30 years of experience, Lisa is a Senior Ecologist and an expert delivering environmental work with IEUA, Water Districts, Light and Class 1 Rail clients nationwide. She is a regulatory specialist and is responsible for preparing and obtaining regulatory permits, managing compliance of regulatory permits, and conducting a wide range of studies and evaluations for absence or presence of endangered species (plants and animals), habitat assessments, biological assessments, impact analyses, mitigation plans, implementation plans, construction monitoring, general biological surveys protected species studies. replacements.

Daniel Smith will serve as project biologist, performing the fieldwork and surveys necessary to support the development of the monitoring program. Daniel will also assist in any write ups resulting from the survey results. Daniel has 13 years of direct environmental consulting experience with BNSF Railway Company, supporting BNSF's Structures Division. He has conducted and/or assisted in conducting protocol USFWS and CDFW threatened and endangered species surveys and jurisdictional waters assessments. He has also prepared permit applications and monitored permit compliance, providing full project cycle management and reporting. Daniel has conducted jurisdictional waters delineations conforming to USACE and RWQCB standards on project sites throughout California.

Individual Resumes can be found as Attachment 2 to this Proposal.

ORGANIZATIONAL CHART



F. REFERENCES

Our Team has compiled 6 project references to demonstrate our team's experience with similar projects. For each project, client contact information is provided (name, agency, email, phone number). All projects were active within the last five years. The projects included are:

TDA References

INLAND EMPIRE UTILITIES AGENCY

Chino Basin Program (CBP) Environmental Impact Report (2021-2022)

PROJECT TEAM: Kaitlyn Dodson Hamilton, Tom Dodson, Lisa Patterson, Daniel Smith, in addition to team members at West Yost (Carolina Sanchez, Mark Wildermuth, Garrett Rapp, Lauren Sather, and Samantha Adams) and many other technical subconsultants.

REFERENCE: Ms. Elizabeth Hurst, Chino Basin Program Manager

- Tel: (909) 993-1646
- Email: ehurst@ieua.org
- Address: 6075 Kimball Avenue Chino, CA 91708

The CBP was submitted for Proposition 1 – Water Storage Investment Program (WSIP) funding and was awarded $206.9M in conditional funding in July 2018. Under the WSIP, the CBP is proposed to be a 25-year conjunctive use project that proposes to use advanced water purification to treat and store up to 15,000 AFY of recycled water in the Chino Basin and extract the water during call years. TDA prepared the Program Environmental Impact Report, and served as Project Manager overseeing the preparation of all technical studies, providing input to the Grant Feasibility Studies, and reviewing the Hydrology Studies prepared by West Yost in support of IEUA's Chino Basin Program. The preparation and processing of this PEIR was notable for the short time available to prepare, process and certify the PEIR (essentially two months) and team with another IEUA on-call environmental firm (Rincon) to successfully complete the effort in order to stay in the running to receive up to about $210 million dollars from the State. TDA and Rincon worked together seamlessly to produce this document and relied upon a variety of sources to produce a document with 4,534 pages, including technical appendices. The biological resources research, and preparation of the biological resources assessment and extensive responses to biological resources comments on the EIR were prepared by Jacobs in conjunction with TDA. The City of Ontario has chosen to file a legal challenge to this CEQA document which is currently in process. Regardless, this effort was commendable by the whole of the Project Team, and exemplifies the efficiency and collaboration of the Project Team that TDA worked with to complete this effort.

CHINO BASIN WATERMASTER

Optimum Basin Management Program (OBMP) and Optimum Basin Management Program Update (OBMPU) Environmental Impact Report (2000-present)

PROJECT TEAM: Kaitlyn Dodson Hamilton, Tom Dodson, Lisa Patterson, Daniel Smith, in addition to team members at West Yost (Carolina Sanchez, Mark Wildermuth, Garrett Rapp, Lauren Sather, and Samantha Adams) and many other technical subconsultants.

REFERENCE: Mr. Edgar Tellez Foster, Water Resources Management and Planning Director

- Tel: (909) 484-3888
- Email: etellezfoster@cbwm.org
- Address: 9641 San Bernardino Road, Rancho Cucamonga, CA, 91730

The OBMP was developed in a collaborative public process that identified the needs and wants of all Stakeholders of the Chino Groundwater Basin, described the physical state of the groundwater basin, defined a set of management goals, characterized impediments to those goals, and developed a series of actions that could be taken to remove the impediments and achieve the management goals. In 2000, TDA prepared the PEIR for the OBMP, and has prepared all subsequent CEQA documentation for the Chino Basin Watermaster, including the current OBMPU. TDA was given from December 2019 through March 2020 to prepare and initiate processing of a major EIR which would typically require six to nine months – more than the time allotted. TDA developed the strategy to meet the deadlines; organized the project team and assigned technical studies to be prepared over a short period of time; and creatively assisted IEUA, the CEQA Lead Agency, to complete the AB 52 consultation process. TDA must acknowledge that our team member WEI (now West Yost) made major contributions to our ability to meet this schedule. We published an Initial Study in February 2020; published the SEIR by the end of March of 2020. This Project Description for this document was revised and therefore, the document is being recirculated to address these updates. TDA has collaborated with Jacobs, and West Yost to work towards a final draft that will be ready for circulation summer of 2023. As the environmental consultant for the Chino Basin Watermaster and IEUA for the past 20+ years, TDA understands the need for meeting deadlines, understanding agency collaborations and agency mechanics, and applies this to all new client relationships.

SOUTH COAST WATER DISTRICT

Aliso Creek Discharge Reduction Feasibility Investigation (2022-2023)

PROJECT TEAM: Kaitlyn Dodson Hamilton, Tom Dodson, Lisa Patterson, in addition to team members at West Yost (Carolina Sanchez and Mark Wildermuth)
REFERENCE: Rick Shintaku, General Manager

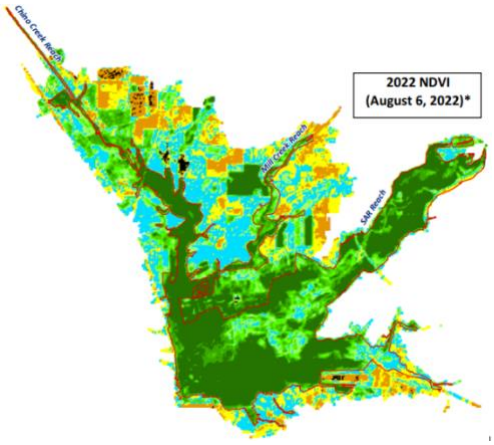
- Tel: (949) 499-4555, ext. 3156
- Email: Rshintaku@scwd.org
- Address: 6075 Kimball Avenue, Chino CA 91708

South Coast Water District (District) proposed the Aliso Creek Urban Runoff Recovery, Reuse and Conservation Project (Project) to capture and reuse urban runoff in Aliso Creek in Laguna Beach, California. The District constructed the diversion and related treatment plant improvements to enable the diversion, treatment, and conveyance of the diverted water for non-potable uses in its service area. The District had not been able to divert water from Aliso Creek due to dry-weather creek discharges being less than the permitted minimum 4.77 cfs bypass flow requirement when non-potable water demand for creek water occurs. TDA, in conjunction with Jacobs and West Yost, aided the District in its process to amend its diversion permit. The scope consisted of assess the hydrologic and operational feasibility of continuing to divert at the current point of diversion and at two other points of diversion located downstream from the current point of diversion. This effort included a field survey and research: to identify (but not assess) potential impacts to biologic resources of at the existing and potential new downstream points of diversion under a reduced base flow regime; and development of a monitoring program to characterize baseline biologic and hydrologic conditions. This effort has been completed, and the District has moved forward with the monitoring program recommendations to establish a baseline and determine the point at which future diversions would cause significant downstream impacts.

West Yost Associates References

CHINO BASIN WATERMASTER, RANCHO CUCAMONGA, CA

Prado Basin Habitat Sustainability Program (2014 to Present – ongoing project)



TEAM: Veva Weamer, Andy Malone, Eric Chiang, Lucy Hedley
REFERENCE: Peter Kavounas, General Manager, 9641 San Bernardino Road, Rancho Cucamonga, CA, 91730, pkavounas@cbwm.org, 909-484-3888

Challenge. The Prado Flood-Control Basin in southern Chino Basin (Prado Basin) is the largest riparian forest in southern California and provides critical habitat for several threatened or endangered species. Depth to groundwater is relatively, which allows for groundwater/surface-water interaction. The Chino Basin Watermaster is implementing groundwater-supply programs that include controlled overdraft of the southern basin, which could result in groundwater-level declines near the Prado Basin. The Subsequent Environmental Impact Report for the groundwater-supply program identified the lowering of groundwater levels as a potential adverse impact to the riparian vegetation in the Prado Basin that consumptively use shallow groundwater.

Project Details. To ensure that the riparian habitat will not incur unforeseeable significant adverse effects, the Watermaster developed and implemented an adaptive management program (AMP) that includes: (i) convening a committee of stakeholders

to supervise the AMP, (ii) conducting a comprehensive monitoring program, (iii) annual reporting on the results and conclusions of the monitoring program, and (iv) adapting the AMP and the monitoring program as appropriate to ensure habitat sustainability. West Yost developed the AMP from 2014 to 2016, which included design and construction of 16 monitoring wells located near the riparian habitat to track changes in groundwater levels within the shallow or perched aquifer systems. The monitoring program, which has been implemented by West Yost since 2016, provides for the annual collection and analysis of:

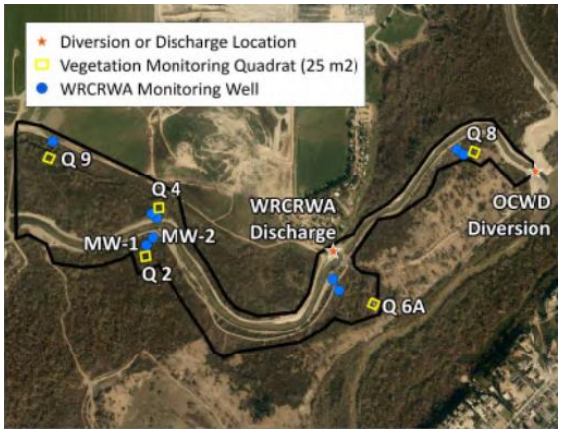
- The extent and quality of the riparian habitat over time, which includes acquisition and analysis of remote-sensing data from the Landsat program (NDVI), high-resolution aerial photography, and field vegetation surveys.
- High-frequency groundwater level data to characterize groundwater level trends regionally and near the riparian habitat.
- Groundwater and surface water quality data to characterize the groundwater/surface water interactions that are important to sustainability of the riparian habitat.
- Other factors that could potentially impact the habitat, including surface-water, precipitation, temperature, wildfire, and pests, among others.
- Groundwater-flow model projections of future drawdown to identify areas of prospective impacts on riparian habitat.

Successful Outcomes

- The Watermaster has published seven annual reports as of 2023.
- The findings have demonstrated:
  - There is no trend in degradation of the riparian habitat that is contemporaneous with decreasing groundwater levels.
  - The observed changes in habitat greenness (increases and decreases) can be attributed to trends in climate, stream discharge, and the presence (or not) of an invasive pest that harms trees.

WESTERN RIVERSIDE COUNTY REGIONAL WASTEWATER AUTHORITY, RIVERSIDE, CA

Monitoring and Reporting Services for the WRCRWA Adaptive Management and Monitoring Program (2018 to Present – ongoing project)



TEAM: Veva Weamer, Lucy Hedley
REFERENCE: Mallory Gandara, Water Resources Specialist, 14205 Meridian Parkway, Riverside, CA, 92518, mgandara@wmwd.com, 951-571-7296

Challenge. The Orange County Water District (OCWD) Santa Ana River Diversion Canal (OCWD Canal) is an unlined canal located within the Prado Flood Control Basin that provides crucial surface water diversion to the OCWD wetlands. The OCWD wetland is home to several critical habitat and endangered species such as the Southwestern Willow Flycatcher and the Santa Ana Sucker. The Western Riverside County Regional Wastewater Authority (WRCWA) treatment plant often discharges its treated wastewater (effluent) into the canal, between the Santa Ana River Diversion Point and the OCWD wetlands. In 2012, WRCWA petitioned for the State Water Board to eliminate its effluent discharges. However, the State Board identified concerns that reduced discharge has the potential to impact the riparian habitat downstream of the WRCWA discharge location.

Project Details. To address the State Board concerns, WRCRWA developed the 2017 Adaptive Management and Monitoring Program (AMMP), the objective of which is to establish baseline conditions (Phase 1), and, after discharges are reduced,

determine if the reduction of effluent discharge negatively impacts the quality of riparian habitat downstream of the discharge (Phase 2). The AMMP consists of quantitative and qualitative vegetation monitoring of riparian habitat, performing annual survey of Least Bells' Vireo nesting/territory locations, the construction of monitoring wells, and hydrologic monitoring. WRCWRA contracted with West Yost in 2018 to perform the hydrologic monitoring, which consists of measuring groundwater and surface water levels via pressure transducers with dataloggers. In 2020, the West Yost scope of work was expanded to include partnering with a biology subconsultant to analyze the annual monitoring data and characterize the current hydrologic and riparian habitat conditions to document the baseline condition of the system prior to reducing WRCRWA's discharges. The results are documented in an annual report that is submitted to the State Board.

Key Findings

Key findings from Phase 1 include:

- Vegetation monitoring reports from fall 2021 and early summer 2022 showed healthy habitat, dominated by native riparian habitat.
- Riparian habitat can access the shallow groundwater, (less than 15 feet below the groundwater surface) making it a groundwater dependent ecosystem (GDE).
- Groundwater elevations are mainly controlled by regional recharge and pumping rather than daily variations in WRCWRA effluent discharge or flow in the OCWD canal.
- In the Oxbow Pond, shallow groundwater is the main source of surface water and was found to have no relationship with the effluent discharge.

In the next phase of work, these findings will inform the long-term monitoring necessary to assess impacts to the habitat as the discharges are reduced.

SAN JUAN BASIN AUTHORITY, SAN JUAN CAPISTRANO/RANCHO SANTA MARGARITA, CA

Water Rights Compliance, Groundwater Management, and Monitoring and Reporting Programs (2010 to Present, ongoing project)

TEAM: Samantha Adams, Eric Chiang, Carolina Sanchez, Lucy Hedley
REFERENCE: Dan Ferons, General Manager of Santa Margarita Water District, 26111 Antonio Parkway, Rancho Santa Margarita, CA, 92688, danf@smwd.com, 949-459-6590

Challenge. The San Juan Basin is a narrow alluvial basin adjacent to the Pacific Ocean in south Orange County, CA, which, from a water rights perspective, is regulated by the State Water Resources Control Board as flow of an underground stream. The Authority holds a Permit for Diversion and Use of Water, which outlines numerous terms and conditions under which the SJBA may extract and use water from the San Juan Basin, including: limits on pumping; monitoring protocols for groundwater pumping, levels, storage, and quality, and riparian vegetation; protection against seawater intrusion; maintaining adequate water in storage, and maintenance of water levels that support riparian vegetation.

Project Details. West Yost was retained in 2010 to implement the SJBA's water rights monitoring and reporting program. West Yost's routine services include: implementing and adapting field groundwater and surface-water monitoring programs, collecting environmental datasets from numerous cooperating entities, managing and analyzing the data, preparing annual reports, submitting water-level data to the DWR in compliance with CASGEM, managing biology sub-consultants,

participating in the Authority's Technical Advisory Group through preparation of meeting materials and attendance at meetings, and preparing presentations to the SJBA's Board of Directors. West Yost also prepares the annual Adaptive Pumping Management (APM) Plan, which sets annual pumping limits that ensure protection of water levels that are supportive of riparian vegetation and protective against seawater intrusion. Other non-routine groundwater management services include: well siting investigations, geophysical investigations, surface and groundwater modeling, and evaluation of groundwater management alternatives.

Successful Outcomes

- In 2013, West Yost prepared the San Juan Basin Groundwater Management and Facilities Plan, which expanded the Authorities monitoring and reporting program beyond what is required by water rights permits to improve water resources management.
- In 2014, water levels were declining due to a combination of prolonged drought and pumping. As a result of the expanded monitoring program, West Yost was able to detect the onset of seawater intrusion and make recommendations for measures to stop and reverse it.
- In 2016, West Yost developed the Adaptive Pumping Management Plan, a first of its kind report for the San Juan Basin, which sets annual pumping limits based on current basin storage and climate conditions to ensure compliance with the SJBA's water rights permit. It includes monitoring protocols that allow for adaptation during the year, and over time.
- In 2023, West Yost updated and recalibrated the integrated surface and groundwater flow model of the San Juan Basin to support the development of the 2023 APM Plan, support development and implementation of recharge project concepts, and support development of strategies to optimize pumping in the riparian habitat area and associated mitigation strategies, if needed.

Jacobs References

- Aliso Creek Discharge Reduction Feasibility Investigation, South Coast Water District (2022-23)
  - See TDA reference and description of services.
- Biological Survey, Monitoring, and Reporting for the Optimum Basin Management Program, and Optimum Basin Management Program Update, Chino Basin Watermaster (2000-Present)
  - See TDA reference and description of services.
- Biological Survey, Monitoring, and Reporting for the Chino Basin Program (2022), Inland Empire Utilities Agency
  - See TDA reference and description of services.

G. Scope of Services

The full scope of services is provided as **Attachment 1**, per the RFP.

H. Project Schedule

The graphic on the following page depicts the estimated project schedule. For teach task the graphic shows the task duration in months.

We estimate the work will take at least three years to complete and up to three and a half years to complete. The precise schedule beyond Phase 1 is difficult to predict as the exact scope of work in Phases 2 and 3 will be dependent on the outcomes of the prior phase.

We assumed a start date of October 1, 2023. The schedule shows:

- Phase 1 work will take one year to complete (October 2023 through September 2024)
- Phase 2 work will take about one and a half to two years to complete:
  - Shorter estimate: October 2024 through April 2026
  - Longer estimate: October 2024 through September 2026
- Phase 3 work will take about one year to complete

Based on the projected schedule, the AMMP could be complete sometime between August 2026 and February 2027.

Schedule to Prepare City of Beaumont Adaptive Management and Mitigation Plan

Proposal Phase/Task	2023			2024												2025												2026												2027		
	Q4			Q1			Q2			Q3			Q4			Q1			Q2			Q3			Q4			Q1			Q2			Q3			Q4			Q1		
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Phase 1 - Characterize Historical and Current Conditions to Support Development of AMMP																																									
Task 1 - Phase 1 Project Management and Meetings																																									
Task 2 - Establish Initial Goals, Objectives, and Project Performance Criteria																																									
Task 3 - Characterize Historical Discharge and Surface Water Flow Hydrology																																									
Task 4 - Characterize Historical Riparian Habitat Health (NDVI)																																									
Task 5 - Characterize Historical and Existing Biological Resources																																									
Task 6 - Identify Potential Impacts to Biological Resources from Reduced Discharge to Coopers Creek																																									
Task 7 - Assess Available Tools for Analyzing Surface Water and Groundwater Impacts																																									
Task 8 - Prepare *Cooper's Creek Habitat Characterization and Sustainability Report*																																									
Phase 2 - Assess Feasibility of Reduced Discharge and Perform Initial Baseline Monitoring																																									
Task 9 - Phase 2 Project Management and Meetings																																									
Phase 2A - Assess Project Hydrologic and Operational Feasibility																																									
Task 10 - Assess the Hydrologic and Operational Capacities from Operating the Discharge Under Current and Future Discharges																																									
Task 11 - Identification of Conceptual Project Mitigations to Biologic Resources																																									
Task 12 - Assess Engineering Feasibility of Operational Alternatives and Mitigation Actions																																									
Task 13 - CEQA Checklist Evaluation of Project Alternatives																																									
Task 14 - Prepare *Cooper's Creek Discharge Hydrogeologic and Operational Feasibility Report*																																									
Phase 2B - Implement Baseline Monitoring																																									
Task 15 - Implement first year of Baseline Monitoring program																																									
Task 16 - Prepare scope of work and cost estimate to prepare the AMMP																																									
Phase 3 - Prepare Adaptive Monitoring and Mitigation Plan																																									
Task 17 - Phase 3 Project Management and Meetings																																									
Task 18 - Prepare the AMMP																																									
Task 19 - Implement Second Year of Baseline Monitoring Program																																									

Legend: Earliest start date; Possible Extended Schedule if Phase 2 takes longer to complete

I. Outstanding Contracts with the City of Beaumont

TDA and our Project Team members have no outstanding contracts with the City of Beaumont.

J. Additional Information and Services

Other Work to Support the City's Change Petition and Approval of the AMMP
In parallel to the technical work in Phases 1, 2, and 3, the Team can provide support to the City in applying and negotiating terms of the change petition, communicating the project to interested and impacted stakeholders, and identifying grant opportunities. This work will be performed at the direction of the City on an as-needed basis.

K. Liability Insurance

TDA will furnish professional liability insurance that will go into effect at the time of contract execution to include liability at a minimum of one million per occurrence, worker's compensation, and vehicle coverage including comprehensive and collision insurance naming the City of Beaumont as additional insured.

ATTACHMENT 1: SCOPE OF SERVICES
FOR THE CITY OF BEAUMONT
ADAPTIVE MANAGEMENT AND MITIGATION PLAN

Submitted to:

BEAUMONT
California

Submitted by:

Tom Dodson and Associates
P.O. Box 2307
San Bernardino, California 92406
(909) 882-3612

In Partnership with:

West Yost
23692 Birtcher Drive
Lake Forest, CA 92630
(949) 420-3030

and

Jacobs
(Lisa Patterson, Biological Resources/Regulatory Team)

Proposal Due Date and Time:

July 25, 2023
2:00 p.m.

G. Scope of Services

The full scope of services is provided under a separate cover, per the RFP.

This section describes the proposed scope of services to develop the AMMP. As presented in *Section C – Approach*, our recommended approach is to perform the steps to complete the AMMP in three Phases as follows:

- Phase 1 – Characterize Historical and Current Conditions to Support Development of AMMP
- Phase 2 – Assess Feasibility of Reduced Discharge and Perform Initial Baseline Monitoring
- Phase 3 – Prepare Adaptive Monitoring and Mitigation Plan and Continue Baseline Monitoring

As noted in Section C, the recommended phasing and order of tasks is different than the order of work presented in the RFP. To help the City understand how the recommended scope of work maps to the Phases and Tasks in the RFP we prepared a table (Table 1) to show how each task of the recommended scope of work maps to the phases and tasks identified in the RFP. To the extent that an item in the recommended scope of work is understood to be in addition to the tasks in the RFP, Table 1 identifies the Task as "ADDITIONAL WORK".

The scope of work for Phases 1, 2 and 3 is below. Phase 1 is described in detail below whereas Phases 2 and 3 are described at a conceptual level that is subject to change based on the outcomes of the preceding phases and tasks.

Following the description of the three Phases is a characterization of additional tasks that can be performed by the team to support the City in applying for and negotiating terms of the change petition, communicating the project to interested and impacted stakeholders, and identifying and applying for grant opportunities – as requested in the RFP. These are tasks that would be relevant to all phases of work to develop the AMMP.

Phase 1 – Characterize Historical and Current Conditions to Support Development of AMMP.

Task 1 - Phase 1 Project Management and Meetings. The objective of this task is to administer Phase 1 of the project in coordination with City Staff. This includes holding a project kick-off meeting, conducting monthly check-in calls on project progress, and performing routine project management activities (staffing, tracking project schedule and budget, managing subcontractors). This task also assumes the team will make one presentation to City Council, if requested.

Task 2 - Establish Initial Goals, Objectives, and Project Performance Criteria. The objective of this task is to work with City staff to describe the project (recycled water operations, change petition, future recycled water reuse, study area), define the City's goals and objectives for adaptive management and project performance. The team will hold one meeting with the City to draft the information, document the goals, objectives, and criteria in a draft task memorandum (TM), hold one meeting to review City comments, and produce a final TM that addresses the City comments. This TM will serve as a guidance document to support various efforts throughout the project.

Task 3 - Characterize Historical Discharge and Surface Water Flow Hydrology. The objective of this task is to collect, review, and analyze all available data relevant to surface water flow and wastewater discharge (climate/precipitation, water conservation, discharge, surface water flow, groundwater levels, etc.). Explanatory graphics will be prepared to characterize historical surface water flow and groundwater conditions and the relationship to the factors that contribute to short term and long-term variations in the observed record.

Task 4 - Characterize Historical Riparian Habitat Health (NDVI). The objective of this task is to collect historical Normalized Difference Vegetation Index information (NDVI) information that can be used to characterize the time history of the extent and health of the riparian habitat in Cooper's Creek. NDVI is calculated from radar imaging collected by NASA satellites. NDVI data is available for a nearly 40-year period and can be used to develop a detailed understanding of how the riparian habitat has changed over time. Explanatory graphics will be prepared to characterize historical habitat conditions and the relationship to the factors that contribute to short term and long-term variations in the observed record.

Task 5 - Characterize Historical and Existing Biological Resources. The objective of this task is to collect and analyze available data on the biological resources in the project area. The team will review the prior biologic resources assessment used to obtain the City's existing discharge permit, review habitat conditions in the field, collect and review reports and data from other relevant investigations. This information will be used to identify the potential impacts to biologic resources when the City reduces its discharges to Cooper's Creek. Exhibits will be prepared to characterize the biologic resources.

Task 6 - Identify Potential Impacts to Biological Resources from Reduced Discharge to Coopers Creek. The objectives of this task are to characterize all the factors that could have supported or affected the extent/health of the biological resources over time, describe the relationships of these factors to the extent/health of the biological resources, and define preliminary metrics for habitat sustainability. In this task, any data gaps that exist will be identified. The impacts, proposed metrics, and data gaps will be documented for review and input by the City. The team will conduct one meeting with the City to refine the characterization of potential impacts, sustainability metrics, and data gaps. The City's comments will be used to update this information for inclusion in the Phase 1 report in Task 8.

Task 7 - Assess Available Tools for Analyzing Surface Water and Groundwater Impacts. The objective of this task is to collect and assess all available surface and groundwater models or analytical tools that could potentially be used to assess hydrogeologic impacts of reduced discharge to Cooper's Creek. This will include a review of the County of Riverside's modeling and related work for the Flow Ecology investigation into Cooper's Creek. An outcome of this task will be articulation of the level of analysis necessary to support development of the AMMP (what is the "right size" level of work to support the City's project) and characterize the ability to use the existing surface and groundwater models/tools in Phase 2 to assess reduced discharges to Cooper's Creek.

Task 8 - Prepare Cooper's Creek Habitat Characterization and Sustainability Report. The objective of this task is to prepare a detailed report summarizing the results and conclusions of Tasks 2 through 7. The report will describe preliminary metrics for habitat sustainability and define a scope of work for (i) baseline monitoring/data

collection and (ii) using existing, or developing new, models/tools for assessing the hydrologic and operational impacts and feasibility of reducing discharge to Cooper's Creek. The *Cooper's Creek Habitat Characterization and Sustainability Report* will form the technical basis for analyzing the feasibility of alternative discharge scenarios in Phase 2. The report can also be used to support applications for grant funding of future phases of work.

PHASE 2 – ASSESS FEASIBILITY OF REDUCED DISCHARGE AND PERFORM INITIAL BASELINE MONITORING

In this phase of work the scope of work defined in the *Cooper's Creek Habitat Characterization and Sustainability Report* will be implemented. This work will be performed in two-parallel processes:

- Phase 2A - Assess Project Hydrologic and Operational Feasibility
- Phase 2B - Implement First year of Baseline Monitoring

The tasks to complete Phase 2 are:

Task 9 - Phase 2 Project Management and Meetings. The objective of this task is to administer the project in coordination with City Staff. This includes conducting monthly check-in calls on project progress and performing routine project management activities (staffing, tracking project schedule and budget, managing subcontractors). This task also assumes the team will make one presentation to City Council, if requested.

Task 10 - Assess the Hydrologic and Operational Capacities from Operating the Discharge Under Current and Future Discharges. The objective of this task is to use surface and groundwater modeling tools (numerical or analytical) to perform predictive model simulations of the surface-water and groundwater hydrology of Cooper's Creek with and without the Project and comparing the model results against the preliminary metrics for habitat sustainability. Depending on the state of existing models and tools as documented in Phase 1, this task may require the City to:

- construct and calibrate (or update) a surface-water model that is capable of simulating: (i) historical discharge in Cooper's Creek and (ii) future discharge in Cooper's Creek under climate change, water conservation, and various future wastewater discharge scenarios.
- Construct and calibrate (or update) a groundwater-flow model that is capable of simulating: (i) historical groundwater levels and GW/SW interactions within the alluvial aquifer and regional aquifer beneath Cooper's Creek and (ii) future groundwater levels and GW/SW interactions in Cooper's Creek under climate change, water conservation, and various future wastewater discharge scenarios.

Once the models are ready for use, we will meet with the City to define the alternatives to be simulated. The alternatives could include those identified in the RPF or other options developed based on the outcomes of Phase 1 work. The consultant team will prepare interim work products to present the work as it is developed to obtain feedback from the City and refine the analysis, as appropriate. The work will be documented in technical memorandum.

Task 11 - Identification of Conceptual Project Mitigations to Biologic Resources. The objective of this task is to define conceptual projects, operation schemes, and management actions to mitigate any impacts identified in the analysis in Task 10 and to meet the goals and objectives defined in Phase 1 for biologic resources. The team will work with the City to determine which level of impact to mitigate and use the models to simulate the

mitigation actions to determine if the mitigation actions achieve the desired effect. The outcomes will be documented in technical memorandum.

Task 12 - Assess Engineering Feasibility of Operational Alternatives and Mitigation Actions. The objective of this task is to perform engineering feasibility assessments of the operational alternatives and mitigation actions analyzed in Task 11 that successfully achieve the desired mitigation goals. This will include describing the facilities, developing level 5 cost opinions, and characterizing implementation feasibility.

Task 13 - CEQA Checklist Evaluation of Project Alternatives. The objective of this task is to compile and process either an Initial Study/Mitigated Negative Declaration (IS/MND) or Environmental Impact Report (EIR) to comply with the CEQA for the feasible operational alternatives and mitigation actions identified in Task 12. Because the modeling work and habitat assessments, including downstream impacts, have not yet been identified, it is unknown whether significant impacts will be identified requiring the preparation of an EIR, or whether all impacts can be mitigated to a level of less than significant. With this in mind, our approach would be to prepare an Initial Study checklist to screen out issues that can be mitigated to a level of less than significant, and if necessary, compile a Focused Environmental Impact Report to address any significant environmental impact issues. TDA will undertake the preparation of the CEQA documentation and will coordinate with the City to determine the scope necessary to reach full compliance with CEQA.

Task 14 - Prepare Cooper's Creek Discharge Hydrogeologic and Operational Feasibility Report. The objective of this task is to prepare a compiled report of the findings from tasks 10 through 13.

Task 15 – Implement first year of Baseline Monitoring Program. The objective of this task is to perform the first year of baseline monitoring pursuant to the scope of work defined in the *Cooper's Creek Habitat Characterization and Sustainability Report* (Task 8 deliverable). The outcomes of the monitoring will be used to inform the AMMP developed in Phase 3. This is additional work that was not included in the RFP. The purpose of performing baseline monitoring prior to development of the AMMP is that the Phase 2 feasibility work could take longer than a year to perform, depending on the modeling tools needed to support the feasibility assessments. This will allow the City to collect more robust baseline information in the AMMP, and could speed up the time until the discharge can begin to be reduced.

Task 16 – Prepare scope of work and cost estimate to prepare the AMMP. The objective of this task is to detail the scope and budget to prepare the AMMP document. The purpose is to ensure that the final phase of work is adequately budgeted.

Phase 3 – Prepare Adaptive Monitoring and Mitigation Plan and Continue Baseline Monitoring

In this phase of work the consultant team will prepare the AMMP. Phase 3 could also include an additional year of baseline monitoring in parallel to the development of the AMMP.
The tasks to complete Phase 3 are:

Task 17 - Phase 3 Project Management and Meetings. The objective of this task is to administer the project in coordination with City Staff. This includes conducting monthly check-in calls on project progress and performing routine project management activities (staffing, tracking project schedule and budget, managing subcontractors). This task also assumes the team will make one presentation to City Council, if requested.

Task 18 – Prepare the AMMP. The objective of this task is to prepare the AMMP pursuant to the scope of work defined in Phase 2, Task 16. This report will include the following chapters, at a minimum:

1. **Background.**
   - Project Description and Regulatory Requirements
   - Description of the study area and Cooper's Creek hydrology/habitat [taken from Cooper's Creek Habitat Characterization and Sustainability Report]
   - Objectives of the AMMP
2. **Predicted changes in Cooper's Creek hydrology/habitat.** This section will summarize the information documented in the Cooper's Creek Discharge Hydrogeologic and Operational Feasibility Report.
3. **Preliminary metrics for habitat sustainability.** This section will be based on the information in the Cooper's Creek Habitat Characterization and Sustainability Report and any refined information developed in Phase 2. This section will also define specific and measurable criteria for determining ecological success of mitigation and to determine if Project impacts are offset.
4. **Monitoring program.** This section will describe the monitoring program to track the extent/health of the Cooper's Creek riparian habitat and the factors that could affect it. The monitoring program will consider outcomes of the initial year of baseline monitoring performed pursuant to the Cooper's Creek Habitat Characterization and Sustainability Report. The monitoring program will be designed to compare the monitoring data versus the preliminary metrics for habitat sustainability, which could trigger mitigation measures.
5. **Potential mitigation measures.** This section will provide a list of potential strategies to mitigate adverse impacts to the riparian habitat in the event that such impacts are identified by the monitoring program and attributed to Project implementation. [taken from Cooper's Creek Discharge Hydrogeologic and Operational Feasibility Report]
6. **Annual reporting.** This section will describe the commitment to prepare annual reports that document the monitoring program and data analysis. The AMMP will include an annotated table of contents for the Annual Report.
7. **Process to update the AMMP.** This section will describe the process to revise the AMMP in the future based on the results and conclusions of the monitoring program. Revisions could include modifications to the monitoring program, metrics for habitat sustainability, and need for mitigation actions.

Other sections will be added, as needed or directed by the City, such as to meet the requirements of the USBR Title XVI requirements.

Task 19 – Implement second year of Baseline Monitoring Program. The objective of this task is to perform the second year of baseline monitoring pursuant to the scope of work defined in the *Cooper's Creek Habitat Characterization and Sustainability Report* (Task 8 deliverable). This is additional work that was not included in

the RFP. The purpose of continuing baseline monitoring prior to completion of the AMMP to potentially will allow the City to potentially speed up the time until the discharge can begin to be reduced.

Table 1. Mapping of Proposal Phases and Tasks to RPF Phases and Tasks to Prepare the AMMP

Proposal Phase/Task	RFP Phase/Task	Notes
Phase 1 - Characterize Historical and Current Conditions to Support Development of AMMP		
Task 1 - Phase 1 Project Management and Meetings	Phase 1, Task 1 - Project Management and Meetings	Represents PM for Phase 1 only
Task 2 - Establish Initial Goals, Objectives, and Project Performance Criteria	Phase 1, Task 2 - Establish Goals, Objectives, and Performance Standards	This task will not develop performance standards at the level of detail described in the RFP. The detailed, numeric performance standards are set in Phase 3, Task 18
Task 3 - Characterize Historical Discharge and Surface Water Flow Hydrology	Phase 1, Task 3 - Review Stream Discharge Data for Coopers Creek and Assess Changes in Discharge due to Climate Change and Water Conservation	Excludes development of a hydraulic diversion model - See Proposal Phase 2, Task 10
Task 4 - Characterize Historical Riparian Habitat Health (NDVI)	***n/a - ADDITIONAL WORK***	Recommended additional work to support understanding historical changes in vegetation health
Task 5 - Characterize Historical and Existing Biological Resources	Phase 2, Task 6 - Identify Potential impacts to Biologic Resources and Develop Monitoring Program to Characterize Baseline Condition	Recommend this is a Phase 1 Task
Task 6 - Identify Potential Impacts to Biological Resources from Reduced Discharge to Coopers Creek	Phase 2, Task 6 - Identify Potential impacts to Biologic Resources and Develop Monitoring Program to Characterize Baseline Condition	Recommend this is a Phase 1 Task
Task 7 - Assess Available Tools for Analyzing Surface Water and Groundwater Impacts	Phase 1, Task 4 Investigate and Review Modeling and Related Work for the County's Flow Ecology Investigation	Additional work is for assessing availability of tools to assess impacts to groundwater that support downstream biological resources, specifically groundwater dependent ecosystems
Task 8 - Prepare *Cooper's Creek Habitat Characterization and Sustainability Report*	Phase 1, Report not assigned to a Task in the RFP Phase 2, Task 8 - Development of Monitoring Plan	
Phase 2 - Assess Feasibility of Reduced Discharge and Perform Initial Baseline Monitoring		
Task 9 - Phase 2 Project Management and Meetings	Phase 1, Task 1 - Project Management and Meetings	Represents PM for Phase 2 only
Phase 2A - Assess Project Hydrologic and Operational Feasibility		
Task 10 - Assess the Hydrologic and Operational Capacities from Operating the Discharge Under Current and Future Discharges	Phase 1, Task 5 - Assess the Hydrologic and Operational Capacities from Operating the Discharge Under Current and Future Discharges	This task could include additional work beyond that envisioned in the RFP, depending on the usability of the available surface and groundwater modeling tools to assess the impact of reduced discharges
Task 11 - Identification of Conceptual Project Mitigations to Biologic Resources	Phase 2, Task 7 - Identification of Project Mitigations to Biologic Resources	
Task 12 - Assess Engineering Feasibility of Operational Alternatives and Mitigation Actions	Phase 1, Task 5 - Assess the Hydrologic and Operational Capacities from Operating the Discharge Under Current and Future Discharges	
Task 13 - CEQA Checklist Evaluation of Project Alternatives	Phase 1, Task 5 - Assess the Hydrologic and Operational Capacities from Operating the Discharge Under Current and Future Discharges	
Task 14 - Prepare *Cooper's Creek Discharge Hydrogeologic and Operational Feasibility Report*	Phase 1, Task 5 - Assess the Hydrologic and Operational Capacities from Operating the Discharge Under Current and Future Discharges	This report serves as the updated AMMP, based on results of Phase 2 work
Phase 2B - Implement Baseline Monitoring		
Task 15 - Implement first year of Baseline Monitoring program	***n/a - ADDITIONAL WORK***	Recommended additional work to support understanding of baseline conditions to be documented in the AMMP.
Task 16 - Prepare scope of work and cost estimate to prepare the AMMP	***n/a - ADDITIONAL WORK***	The purpose of the additional work is to ensure that the final phase of work is adequately budgeted
Phase 3 - Prepare Adaptive Monitoring and Mitigation Plan		
Task 17 - Phase 3 Project Management and Meetings	Phase 1, Task 1 - Project Management and Meetings	Represents PM for Phase 3 only
Task 18 - Prepare the AMMP	Phase 2, Task 9 - Development of Performance Metrics Phase 2, Task 8 - Development of Monitoring Plan Phase 2 - RFP did not have a task explicitly for preparing the AMMP report	
Task 19 - Implement Second Year of Baseline Monitoring Program	***n/a - ADDITIONAL WORK***	The purpose of continuing baseline monitoring prior to completion of the AMMP to potentially will apotentially speed up the time until the discharge can begin to be reduced.

ATTACHMENT 2: RESUMES
FOR THE CITY OF BEAUMONT
ADAPTIVE MANAGEMENT AND MITIGATION PLAN

Submitted to:

Submitted by:

Tom Dodson and Associates
P.O. Box 2307
San Bernardino, California 92406
(909) 882-3612

In Partnership with:

West Yost
23692 Birtcher Drive
Lake Forest, CA 92630
(949) 420-3030

and

Jacobs
(Lisa Patterson, Biological Resources/Regulatory Team)

Proposal Due Date and Time:

July 25, 2023
2:00 p.m.

TOM DODSON &
ASSOCIATES

Tom Dodson

Title

President /
Environmental Specialist

Education

M.A., Geography, University of California, Berkeley, 1973
B.A., Geography, University of California Berkeley, 1968

Experience

30+ years

Summary

Tom Dodson is the President of Tom Dodson and Associates, an environmental consulting firm in San Bernardino, California. He has more than 40 years of experience in land use planning, and environmental and resource management, with special expertise in CEQA, NEPA, regulatory compliance, expert witness testimony and communication/facilitation for resolution of environmental issues. He personally prepares environmental documentation for a broad variety of projects and acts as a resource person in working with clients, governmental agencies, and decision-makers in finding solutions to complex problems. He negotiates with regulators at the federal, state and local level, and designs formal presentations to committees.

Mr. Dodson has served as a facilitator in resolving environmental issues for several agencies, including the Bureau of Land Management, San Bernardino County, City of San Bernardino, and other agencies. Mr. Dodson also provides expert witness testimony on land use and environmental issues on a variety of court cases, primarily in CEQA litigation, takings, land use and regulatory cases. He serves as program manager on most projects undertaken by the firm and maintains close contacts with subconsultants and specialists who can provide technical information, as needed, in a timely manner. Mr. Dodson also serves as the environmental advisor/consultant to the San Bernardino County Local Agency Formation Commission, San Bernardino International Airport Authority, Inland Valley Development Agency, Inland Empire Utilities Agency, Cities of Murrieta and El Monte, and several other agencies. Mr. Dodson has focused much of his career on CEQA compliance for water agencies, particularly those in the Inland Empire and throughout Southern California.

Relevant Experience

Inland Empire Utilities Agency (IEUA, 1999-Present)

As environmental consultant to the IEUA, TDA prepared the Program EIR for the Optimum Basin Management Program which evaluated the whole program that is proposed to be implemented to remove groundwater contamination from the Chino Basin. This EIR was prepared to meet court mandated deadlines and was certified in a timely manner by the IEUA. TDA has continued consulting with IEUA and recently completed a Program EIR for IEUA Facilities Masters Plans, which examined the long-term implementation of wastewater, recycled water and organic waste management programs. TDA is currently working or has recently worked with IEUA on the following: the RP-5 expansion, TDA is working with IEUA to obtain the RMPU regulatory permits, and is overseeing Native American monitoring for Baseline and Napa Laterals. TDA also recently completed the 2017 annual CDFW O & M Report. Site selection, due diligence, and CEQA documentation are part of the tasks that TDA has assisted with on this project. Additionally, and most recently, TDA, in conjunction with West Yost, has assisted the Chino Basin Watermaster, in conjunction with West Yost, with the Addendum to the Optimum Basin Management Program Local Storage Limit Solution Addendum that was approved by the IEUA Board in March of 2021.

Mission Springs Water District (MSWD)

Tom Dodson is the primary environmental consultant for MSWD. Over the past 15+ years Tom has assisted MSWD with several projects to comply with both the California Environmental Quality Act and National Environmental Policy Act for a variety of projects. TDA also assists MSWD with applying for funding through the Clean Water State Revolving Fund for various infrastructure/improvement projects. TDA has continued consulting with MSWD and recently completed the West Valley Water Reclamation Program EIR, which was approved by the MSWD Board in 2019 with

full support from their Board. Tom oversaw the evolution of this this Program EIR from inception to approval. The certification of this EIR will allow/has allowed MSWD to construct a new wastewater treatment facility, along with a conveyance system that would connect existing sewered areas to the new facility as well as areas that are served by individual septic systems, which have contributed to water quality degradation within the Coachella Valley groundwater basin Garnet Hill Subbasin MZ4.

Inland Valley Development Agency (IVDA)/San Bernardino International Airport Authority (SBIAA) (1992-Present)

Environmental manager for the IVDA and SBIAA in their role as the redevelopment and reuse agency for Norton Air Force Base located in San Bernardino, California. Assisted the Air Force in completing its first and only air conformity determination for reuse of a closing military base. The analysis was used in presentations to the federal Environmental Protection Agency (EPA) to revise the Conformity Regulations to exclude transfers of military bases from conformity findings. TDA has been involved in every facet of base closure, working closely with the Air Force Base Closure Agency (AFBCA) at Norton and in Washington D.C. to complete the Final EIS and issue the Record of Decision. This support effort includes endangered species management programs at the former Base and consultations with the State and Federal government under endangered species laws.

Negotiation of Stream Alteration Agreements and Section 404 Permits

Since 1988 Mr. Dodson has been involved in numerous projects that required acquisition of Stream Alteration Agreements from the State Department of Fish and Wildlife and Section 404 Permits from the U.S. Army Corps of Engineers. This includes several permits in Big Bear Valley, along the Santa Ana River and its tributaries, and southern California in general.

Various Water Agency Projects

TDA has worked on CEQA Projects to completion ranging from Categorical Exemptions to Initial Studies and in minimal cases, Environmental Impact Reports including, but not limited to the following water agencies, water masters, districts, and private water companies:

- Monte Vista Water Company
- Elsinore Valley Water District (working with West Yost to accomplish a Supplemental Environmental Document for their Salt and Nutrient Management Plan)
- Eastern Municipal Water District (working with West Yost to accomplish a Supplemental Environmental Document for their Salt and Nutrient Management Plan
- Chino Basin Watermaster
- San Antonio Water Company
- San Gabriel Valley Water Company
- Phelan Piñon Hills Community Service District
- Sheep Creek Water Company
- City of Ontario
- East Valley Water District
- East Orange County Water District
- Big Bear Community Service District
- Big Bear Area Regional Wastewater Agency
- Big Bear Lake Department of Water and Power

Kaitlyn Dodson-Hamilton

Title

Environmental Specialist

Education

B.A., *English, with Honors,* University of California Riverside, 2011

Experience

January 2015 to present

Contact

W: (909) 882-3612

C: (909) 645-5478

E: kaitlyn@tdaenv.com

Summary

Kaitlyn Dodson-Hamilton is an Environmental Specialist for Tom Dodson & Associates, an environmental consulting firm in San Bernardino, California. She has more than 10 of experience in research and mapping for California Environmental Quality Act (CEQA), National Environmental Protection Agency (NEPA), and regulatory purposes at Tom Dodson & Associates. Ms. Dodson-Hamilton has more than seven years of experience at TDA in environmental and resource management, with special expertise in CEQA compliance. Ms. Dodson-Hamilton personally prepares environmental documentation for a broad variety of CEQA and NEPA projects, as well as regulatory permits for the State Department of Fish and Game, U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers. She works in conjunction with Tom to work with clients, governmental agencies, and decision-makers to find solutions to complex problems. Mrs. Dodson-Hamilton has focused much of her career on CEQA compliance for water agencies, particularly those in the Inland Empire and throughout Southern California. She serves alongside Tom as an environmental consultant to San Bernardino International Airport Authority, Inland Valley Development Agency, Inland Empire Utilities Agency, Phelan Piñon Hills Community Services District, Mission Springs Water District, and several other agencies. Ms. Dodson-Hamilton attends meetings and hearings and prepares presentations for nearly all reports for which she is the author.

Relevant Experience

Inland Empire Utilities Agency (IEUA)

TDA is one of two primary consultants for IEUA. Over the past 7+ years Kaitlyn has assisted Tom with several projects to comply with both the California Environmental Quality Act and National Environmental Policy Act for a variety of projects. TDA also assists IEUA with applying for funding through the Clean Water State Revolving Fund for various infrastructure/improvement projects. TDA has continued consulting with IEUA and recently completed a Program EIR for IEUA Facilities Masters Plans, which examined the long-term implementation of wastewater, recycled water and organic waste management programs. Kaitlyn has assisted Tom with several projects to comply with both the CEQA and NEPA for a variety of IEUA projects. TDA also assists IEUA with applying for funding through the Clean Water State Revolving Fund for various infrastructure/improvement projects. Project in which Kaitlyn has co-authored include: FMP Program EIR, Lower Day Basin Project, Fontana Water Company Recycled Water Improvement Project, and Pomona Intertie Project; all of which have been successful in accomplishing full compliance with both CEQA and NEPA and other regulatory requirements, such as Corps of Engineers and endangered species permits. Additionally, and most recently, Kaitlyn, has assisted the IEUA with the Chino Basin Program EIR that was approved by the IEUA Board in May 2022.

Mission Springs Water District (MSWD)

Tom Dodson is the primary environmental consultant for MSWD. Over the past 7+ years Kaitlyn has assisted Tom with several projects to comply with both the California Environmental Quality Act and National Environmental Policy Act for a variety of projects. TDA also assists MSWD with applying for funding through the Clean Water State Revolving Fund for various infrastructure/improvement projects. TDA has continued consulting with MSWD and recently completed the West Valley Water Reclamation Program EIR, which was approved by the MSWD Board in 2019 with full support from their Board. Kaitlyn was the main author of this Program EIR with Tom overseeing the evolution of the Project. The certification of this EIR will allow/has allowed MSWD to construct a new wastewater treatment facility, along with a conveyance system that would connect existing sewered areas to the new facility as well as areas that are served by individual septic systems, which have contributed to water quality degradation within the Coachella Valley

groundwater basin Garnet Hill Subbasin MZ4). More recently, TDA worked with MSWD on a new 300-000 gallon reservoir project, for which an Initial Study was prepared and approved by the District Board in September of 2021.

Inland Valley Development Agency (IVDA)/San Bernardino International Airport Authority (SBIAA)

Tom Dodson is the Environmental Manager for the IVDA and SBIAA in their role as the redevelopment and reuse agency for Norton Air Force Base located in San Bernardino, California. As such, Kaitlyn has worked closely with both IVDA and SBIAA on several projects. Over the past 7+ years, Kaitlyn has, in conjunction with Tom, prepared environmental documents to comply with both the California Environmental Quality Act and National Environmental Policy Act for a variety of projects. These projects include: SBIAA Land Exchange Environmental Assessment, SBIAA Unical Addendum, IVDA (in conjunction with the City of Highland and the San Manuel Band of Mission Indians) 3rd Street / 5th Street Roadway Improvements Project, and most recently, Kaitlyn worked closely with SBIAA on the Eastgate Building I Environmental Impact Report, which was approved by the Board in October of 2018. Kaitlyn also works closely with SBIAA to compile their Hazardous Waste Manifests to ensure SBIAA pays the appropriate fees to the Department of Toxic Substances Control. Currently, Tom and Kaitlyn are working with the IVDA, City of Highland, City of San Bernardino, San Manuel Band of Mission Indians, and East Valley Water District to prepare the Airport Gateway Specific Plan, which would create a buffer between the airport and residential land uses to the north, and with a goal of providing greater economic development in this area.

City of Highland, Various CEQA/NEPA Documents

Over the past 6+ years, Kaitlyn has assisted Tom with the preparation of environmental documents to comply with both the California Environmental Quality Act and National Environmental Policy Act for a few City projects. The City retained TDA's services for the 3rd Street / 5th Street Corridor Improvements Project. The City, IVDA, and SMBMI proposed to improve the roadway and infrastructure conditions for 3rd Street/5th Street and several intersecting local roadway segments within the City of Highland. TDA compiled an Environmental Narrative for the three agencies to apply for funding through the Economic Development Agency and assisted with NEPA compliance for the Environmental Assessment. TDA also compiled an Initial Study- Mitigated Negative Declaration (IS/MND) for the City. The documentation in the Initial Study was compiled to meet CEQA and NEPA requirements. The IS/MND was adopted by the City Council. The EDA recently approved the project and granted funding for the project. Additionally, TDA compiled another IS/MND for a second roadway improvement project along Victoria Avenue between Highland Avenue and 3rd Street that include storm drain improvements, which was also approved by the City Council.

Various Water Agency Projects

TDA has worked on CEQA Projects to completion ranging from Categorical Exemptions to Initial Studies and in minimal cases, Environmental Impact Reports including, but not limited to the following water agencies, water masters, districts, and private water companies:

- Monte Vista Water Company
- Elsinore Valley Water District (working with West Yost to accomplish a Supplemental Environmental Document for their Salt and Nutrient Management Plan)
- Eastern Municipal Water District (working with West Yost to accomplish a Supplemental Environmental Document for their Salt and Nutrient Management Plan)
- Chino Basin Watermaster
- San Antonio Water Company
- San Gabriel Valley Water Company and Fontana Water Company
- Phelan Piñon Hills Community Service District and Sheep Creek Water Company
- City of Ontario
- East Valley Water District
- East Orange County Water District
- Big Bear Community Service District
- Big Bear Area Regional Wastewater Agency
- Big Bear Lake Department of Water and Power

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Samantha Adams, MESM

Samantha has 17 years of professional experiences in water resources management. Her technical expertise includes salt and nutrient management planning, groundwater management planning, Watermaster services, regulatory support and compliance reporting, development and implementation of field monitoring programs, and database management.

Samantha has extensive experience leading multi-stakeholder groups through collaborative decision-making processes that rely on complex technical information and regulatory compliance considerations. She has managed, developed and negotiated, and/or implemented salt and nutrient management compliance plans for the Eastern MWD, Elsinore Valley MWD, Chino Basin Watermaster, Inland Empire Utilities Agency, City of Beaumont, South Orange County Wastewater Authority, Santa Ana Watershed Project Authority, and Coachella Valley Water District.

EXPERIENCE

Maximum Benefit Demonstration for the Elsinore Groundwater Management Zone (2014 – ongoing), Elsinore Valley Municipal Water District (District), Lake Elsinore, CA: Project Manager and Lead Scientist. Led the development of a maximum benefit demonstration to raise the total dissolved solids (TDS) and nitrate concentration objectives for the Elsinore Groundwater Management Zone (GMZ) in the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan). The District was seeking new, maximum benefit based TDS and nitrate concentration objectives so it can have the flexibility to develop and invest in a water resources plan that optimizes the management and use of all its water supply assets to achieve a reliable water supply in an environmentally sound manner. The District's maximum benefit proposal is designed to facilitate the maximum reuse of recycled water, to protect the beneficial uses of groundwater in the Elsinore GMZ and downstream GMZs for future generations, and to be consistent with Executive Order 68-16, Water Code Section 13241, and State Board orders and policies that promote recycled water reuse. Samantha was responsible for: developing the technical basis of the demonstration; developing alternative salinity management alternatives for evaluation; managing a team of scientists that are using numerical groundwater modeling tools to develop TDS and nitrate concentration projections for the Elsinore GMZ; developing a long term compliance strategy to verify that the beneficial uses of the Elsinore GMZ will be protected under the maximum benefit program; leading negotiations with the Santa Ana Regional Board; and stakeholder outreach. The proposal was accepted by the Regional Board staff in February 2020 and the team completed the process to prepare an amendment to the Basin Plan to incorporate the new maximum benefit objectives and management plan. Samantha now serves as the Principal-in-Charge of the team leading the implementation phase.

STAFF TITLE: Scientist Manager I

YEARS OF EXPERIENCE: 17

EDUCATION

- Master of Environmental Science and Management (MESM), Water Resources Management, Donald Bren School of Environmental Science and Management, University of California, Santa Barbara, 2006
- BS, Environmental Science, University of Notre Dame, 2002

PROFESSIONAL AFFILIATIONS

- Groundwater Resources Association of California (GRA)
- National Groundwater Association

Administrative and Technical Services, Borrego Springs Watermaster, Borrego Springs, CA: Samantha serves as Executive Director for the Borrego Springs Watermaster. The Watermaster was created as an arm of the Court through a Stipulated Judgment in the adjudication of groundwater rights for the Borrego Springs Subbasin (Basin). The Basin was adjudicated to enable the sustainable management of its groundwater resources in a manner consistent with the Sustainable Groundwater Management Act (SGMA), including requiring a 75 percent reduction in groundwater use over 20 years. As Executive Director, Samantha is responsible for organizing, overseeing, and/or performing the administrative and management aspects of the Judgment, Rules and Regulations, and Groundwater Management Plan, including running Board, Technical Advisory Committee, and Environmental Working Group meetings; providing accounting and financial services (banking, reporting, audits); preparing the annual budget; document and website management; annual water rights accounting and reporting to Court; and all technical activities (implementation of field monitoring programs, data collection and database management, groundwater modeling, periodic recomputation of sustainable yield, and SGMA compliance reporting).

Water Rights Compliance and Basin Management Monitoring and Reporting Program (2010 – ongoing), San Juan Basin Authority (SJBA), Various, CA: Principal in Charge and previously served as the Project Manager (2013 – 2019) and Project Scientist (2010 – 2012) for the SJBA's water rights compliance and basin management monitoring and reporting programs from. The objectives of the program are to collect, analyze, and report on the data used to demonstrate compliance with the SJBA's water rights diversion permit, estimate groundwater storage and recommend annual pumping limits, evaluate the threat of seawater intrusion, and assess riparian vegetation health along San Juan Creek. As the project manager, Samantha directed the design and implementation of the field and cooperative data collection program, supported the preparation of the annual report of compliance to the State Board, oversaw CASGEM compliance, managed biology subconsultants, managed the implementation of a watershed wide surface and groundwater monitoring program in support of the Salt and Nutrient Management Plan for the San Juan Creek, participated in Technical Advisory Group meetings, supported the development of the annual budget, and gave monthly presentations to the Board of Directors. In 2016, she managed the development of the Adaptive Pumping Management Plan, a first of its kind report for the San Juan Basin, that sets annual sustainable pumping limits based on current basin storage and climate conditions. Samantha now serves as the technical advisor to the team that manages the SJBA programs.

Compliance Strategy for the Use of Recycled Water at the San Jacinto Wildlife Area, Eastern Municipal Water District (EMWD), Perris, CA: Project Scientist assisting the EMWD with the development and implementation of a compliance strategy for its recycled water use at the San Jacinto Wildlife Area (SJWA). The EMWD delivers about 3,000 acre feet per year of tertiary treated recycled water to the SJWA to maintain their wetland habitat. The total dissolved solids (TDS) and total inorganic nitrogen (TIN) concentrations of recycled water exceed the water quality objectives of the underlying management zone. As such, the Regional Board required mitigation of the salt loading if the discharge of recycled water to groundwater was greater than a de minimis impact. Samantha was part of the team that developed a technical work plan to characterize the potential for impacts using cone penetrometer tests to demonstrate whether a continuous layer of clays exists beneath the SJWA, preventing the infiltration of recycled water to the water table. Samantha managed the implementation of the project, which was completed and presented to the Regional Board in 2011. As a result of the study, the EMWD can continue to deliver recycled water for use at the SJWA.

Watermaster Engineering Services, Beaumont Basin Watermaster (2005 – 2012), Beaumont, CA: Project Scientist provided engineering and hydrogeologic support services to the Cities of Banning and Beaumont, the Beaumont Cherry Valley Water District, the South Mesa Water Company, the Yucaipa Valley Water District, and other groundwater pumpers in the Beaumont Basin adjudication, including development of the physical solution incorporated into the stipulated agreement in 2004 and subsequently served as the Watermaster Engineer from 2005 through 2012. As a Project Scientist, Samantha was responsible for the implementation of the Watermaster database, coordinating the production and groundwater level monitoring program, maintaining the Watermaster website, and preparation of the Watermaster Annual Report to the Court.

FY 2021/22 Basin Planning Priorities to Update the Santa Ana River Watershed SNMP, Basin Monitoring Program Task Force (administered by the Santa Ana Watershed Project Authority), Riverside County, CA: Principal Scientist for regulatory and technical support in assessing the Santa Ana River Basin Plan SNMP for compliance with the 2019 Recycled Water Policy. For this project, West Yost prepared an updated watershed wide groundwater monitoring program, a surface water monitoring program, and recommendations for updated technical methods to assess assimilative capacity through periodic computation of ambient water quality.

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Andy Malone, PG

Hydrogeologist

Andy is a Hydrogeologist with over 25 years of professional experience in water resources consulting and in geologic sciences. His technical expertise includes sedimentary geology, tectonics, basin characterization, hydrogeologic and hydrologic analyses, aquifer mechanics, geographic information systems (GIS), and database design and implementation. Andy develops investigative strategies for hydrogeologic studies, leads stakeholder technical committees, manages projects and staff, works to increase the technical expertise of the company, and mentors and guides junior staff as they develop into the next generation of expert water resources professionals.

At present, Andy is managing engineering services for the Chino Basin Watermaster, where he is leading sophisticated hydrogeologic investigations in pumping induced land subsidence, groundwater/surface water interactions, and the monitoring of groundwater dependent ecosystems; leading an effort with the Six Basins Watermaster to develop and implement an improved water resources management program in the Six Basins to maximize the beneficial use of the groundwater basin; leading an effort to develop a Groundwater Sustainability Plan for the Spadra Basin; leading all technical services for the newly established Borrego Springs Watermaster; and, developing a groundwater monitoring program in the Coachella Valley Groundwater Basin to support a Salt and Nutrient Management Plan.

Earlier in his career, Andy was the Lead Geologist in the development of a hydrogeologic conceptual model of the Chino Basin that was subsequently translated into a very well calibrated numerical groundwater flow model. Andy continues to work with the modeling team to refine the conceptual model based on new geologic and monitoring data and to use the model to inform numerous basin management initiatives, such as the management of land subsidence. Andy's professional experience also includes employment as a Field Geologist for the Indiana State Geological Survey and as a geology instructor at Saddleback College in Southern California.

STAFF TITLE: Principal Geologist II

YEARS OF EXPERIENCE: 25

PROFESSIONAL REGISTRATIONS

- Professional Geologist, California No. 8700

EDUCATION

- MS, Geological Sciences, Indiana University Bloomington
- BA, Geological Sciences, University of California, Santa Barbara
- BA, Environmental Studies, University of California, Santa Barbara

PROFESSIONAL AFFILIATIONS

- National Ground Water Association
- Groundwater Resources Association of California (GRA)
- South Coast Geological Society

EXPERIENCE

Prado Basin Habitat Sustainability Program, Chino Basin Watermaster, Riverside, San Bernardino and Orange Counties, CA: Project Manager. Andy is conducting ongoing investigations to determine whether the groundwater management plan in the Chino Basin is having adverse impacts on a groundwater dependent riparian habitat in the downgradient portion of the basin. The investigation is a monitoring and mitigation requirement of the EIR for the groundwater management plan. The intent of this investigation is to characterize the historical, current, and future extent and quality of riparian habitat, and if degradation of the riparian habitat is documented, to provide information on the cause(s) of that degradation. If the cause(s) of degradation are attributed to the implementation of the groundwater management plan, the data from the investigation will aid in the development of efficient and effective mitigation

measures. Andy and his team designed the monitoring program and investigation, and they are now implementing it. The investigation includes remote sensing and field surveys of the riparian habitat, the construction of monitoring wells and ongoing monitoring of water levels and quality, monitoring of surface water discharge and quality, monitoring of climatic trends, and analysis of other factors that can affect riparian habitat such as pests and wildfire. These data are analyzed and reported annually to a Watermaster subcommittee, which is led by Andy. The annual reports include recommendations for modifications to the monitoring program and a proposed budget for the following fiscal year.

Coachella Valley Salt and Nutrient Management Plan (SNMP) Update, Coachella Valley Water District, Coachella, CA: Project Manager and Principal Geologist. The State Water Board's Recycled Water Policy requires the stakeholders in the Coachella Valley to develop an SNMP that sustainably manages salt and nutrient loading in the Coachella Valley Groundwater Basin (Basin) to protect its beneficial uses. In 2015, the Coachella Valley stakeholders submitted an SNMP to the Regional Board (2015 SNMP); however, the Regional Board found the 2015 SNMP insufficient. Of concern to the Regional Board was the insufficiency of the proposed monitoring program to fill data gaps and adequately characterize the spatial and vertical distribution of water quality conditions; lack of an antidegradation analysis to support salt and nutrient loading from the use and recharge of Colorado River water; and the absence of proposed implementation measures to manage salt and nutrient loading on a sustainable basis. Of concern to the Coachella Valley stakeholders was the ability for continued use and recharge of Colorado River water, which is a critical source of supplemental water to support the sustainability of the Basin and the economy of the Coachella Valley. In 2020/21, Andy led a multi stakeholder effort, including the Regional Board staff, in the development of a workplan to update the 2015 CV SNMP (CV SNMP Development Workplan). The workplan includes a major redesign of the SNMP groundwater monitoring program and a technical process to set numeric TDS objectives for the Basin. The Regional Board approved the proposed groundwater monitoring program in February 2021 and approved the CV SNMP Development Workplan in October 2021. Currently, Andy is leading a multi-stakeholder effort to implement the CV-SNMP Development Workplan.

Lead Technical Consultant, Borrego Springs Watermaster, Borrego Springs, CA: Lead Technical Consultant for the Borrego Springs Watermaster. In this role, Andy leads a Technical Advisory Committee (TAC) and an Environmental Working Group (EWG). TAC responsibilities include making recommendations to the Board on all technical matters, including the periodic redetermination of Sustainable Yield and the implementation of a 75% ramp down in groundwater pumping through 2040 to achieve sustainability. EWG responsibilities include making recommendations to the Board on all environmental matters as it implements the Stipulated Judgment to comply with the Sustainable Groundwater Management Act. Major activities and areas of interest of the EWG include groundwater dependent ecosystems, management of fallowed lands and the potential for participating in biological mitigation projects, addressing improperly abandoned wells, and management of non native (invasive) species for water conservation purposes.

Wasteload Allocation for the Santa Ana River Watershed, Santa Ana Watershed Project Authority – Basin Monitoring Program Task Force, Orange County, CA: Project Manager. Andy led this study of the existing wasteload allocation for the Santa Ana River Watershed. The purpose of the study was to evaluate whether the existing wasteload allocation for Public Owned Treatment Works (POTW) discharge of total dissolved solids (TDS) and total inorganic nitrogen (TIN) was compliant with the water quality standards in the Water Quality Control Plan for the Santa Ana Basin (Basin Plan). To conduct this study, Andy and the modeling team updated and used the Wasteload Allocation Model (WLAM)—a numerical computer simulation model of surface water discharge, quality, and streambed recharge. The WLAM simulated updated plans for wastewater discharge and stormwater conservation and used a set of elegant procedures and explanatory data graphics to evaluate the existing wasteload allocation with respect to the surface water and groundwater standards in the Basin Plan. The Regional Board uses the results of the wasteload allocation studies to review and revise the Basin Plan and POTW discharge permits if necessary.

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Veva Weamer

Veva has 15 years of professional experience in environmental and geological science. Veva is a Supervising Scientist with a focus on the managing the implementation of various regulatory compliance programs for agencies in Southern California. Her areas of expertise include database management, data analysis, water quality monitoring and analysis, salt and nutrient analysis, Geographical Information Systems (GIS), and groundwater and surface water monitoring program implementation and evaluation. Veva graduated from California State University, Fullerton in 2005 with a Bachelors in Geological Sciences. In 2007, she completed her Master's in Environmental Studies degree from California State University, Fullerton with an emphasis in water resources management. Her master's research involved the quantification of groundwater movement and aquifer characterization of the Harper Lake Basin located in Mojave Desert, California, using GIS tools and bore log data. Veva was awarded the 2006 Prem K. Saint award for outstanding work in hydrogeology for her research.

STAFF TITLE: Principal Scientist I

YEARS OF EXPERIENCE: 15

EDUCATION

- MS, Environmental Studies, California State University, Fullerton, December 2007
- BS, Geological Sciences, California State University, Fullerton, June 2005

PROFESSIONAL AFFILIATIONS

- Groundwater Resources Association of California

EXPERIENCE

Prado Basin Habitat Sustainability Program, Prado Basin Habitat Sustainability Committee, Chino Basin Watermaster, Rancho Cucamonga, CA: Project Manager. Veva leads the Prado Basin Habitat Sustainability Program (PBHSP), which is implemented by the Prado Basin Habitat Sustainability Committee (PBHSC). The PBHSC is comprised of Chino Basin Stakeholders. The key element of the PBHSP is an adaptive monitoring program intended to characterize the historical, current, and future extent and quality of the riparian habitat in the Prado Basin Management Zone in the southern portion of the Chino Basin, and to provide information on the cause(s) of riparian habitat degradation if documented. Data from the monitoring program will aid in the development of efficient and effective mitigation measures if the cause(s) of degradation are conclusively attributed to Peace II Implementation. The monitoring program consists of integrated programs for the monitoring of riparian habitat and monitoring of factors that can potentially affect riparian habitat, which include groundwater, surface water, weather, and climate. Data from the monitoring program is analyzed, interpreted, and reported on annually. The annual reporting and analysis form the basis to adjust the monitoring program, if necessary, to achieve the objectives of the PBHSP. Veva is responsible for managing all components of the monitoring program for the PBHSP. Veva is also responsible for writing an annual report that discusses and interprets the monitoring data and any related groundwater-modeling results, describes recommended measures to mitigate significant adverse impacts to the riparian habitat (if applicable), and recommends activities for the subsequent year monitoring program. Veva presents the annual report contents to the PBHSC to facilitate Stakeholder input and suggested revisions for the recommendations for the monitoring program and mitigation measures, if necessary. Veva is also responsible for preparing the subsequent fiscal year budget for the PBHSP based on the recommendations for modifications to the monitoring program in the annual report.

Monitoring and Reporting for the Adaptive Management and Monitoring Program to Evaluate the Potential Effects of Reduction of Treated Wastewater Discharged by Western Riverside County Regional Wastewater Authority (WRCRWA), West Riverside County, CA: Project Manager. Veva led the adaptive monitoring program to evaluate trends in groundwater and vegetation near and downstream of the discharge location of WRCRWA treatment plant to determine whether the planned reduction in wastewater discharge will cause declining groundwater levels and/or reduction in the riparian vegetation health. West Yost helped setup and performed high-frequency groundwater elevation monitoring at nine dedicated monitoring wells and surface water level monitoring at the Oxbow Pond and coordinate the bi-annual vegetation monitoring. Annual reports are prepared summarizing the monitoring results, conclusions, and recommendations. Thus far the monitoring and reporting is for Phase One prior to the reduction in wastewater discharge.

Preparation of a Groundwater Sustainability Plan, Spadra Basin Groundwater Sustainability Agency (GSA), Walnut, CA: Project Manager. Veva led the development of the Groundwater Sustainability Plan for the Spadra Basin Groundwater Sustainability Agency, which was a collaborative effort of the Walnut Valley Water District and the City of Pomona. The Spadra Basin is a groundwater basin located in eastern Los Angeles County. The project included supporting the GSA in stakeholder engagement; preparation of a hydrogeologic database; monitoring well construction to fill data gaps; construction and calibration of a groundwater-flow model; development of sustainable management criteria for the basin; evaluation of sustainability of future "Baseline" conditions; description of new projects or management actions to achieve sustainability for four "Basin Optimization Scenarios"; conduct modeling evaluation of the Basin Optimization Scenarios; preparation of long-term cost analyses for Baseline and Basin Optimization Scenarios; identification of the preferred Basin Optimization Scenario; and preparation of the Groundwater Sustainability Plan through a public-review process. The final GSP for the Spadra Basin was completed and adopted in May 2022.

Updated Plan for Mitigation of Temporary Loss of Hydraulic Control in the Chino Basin, Chino Basin Watermaster and Inland Empire Utilities Agency (IEUA), Rancho Cucamonga, CA: Senior Scientist. Veva supported development of a 2022 update to the 2005 Mitigation Plan of Temporary Loss of Hydraulic Control in the Chino Basin (2022 Mitigation Plan), required by the Santa Ana Regional Board. The operation of the Chino Desalters is necessary to attain hydraulic control of the Chino-North Groundwater Management Zone, which is a requirement of the maximum-benefit commitments in the Watermaster's and IEUA's Salt and Nutrient Management Plan (SNMP) for the Chino Basin are related to hydraulic control and Chino Desalter pumping. West Yost used the Chino Valley Model and other modeling tools to assess the potential for a temporary loss of hydraulic control from various scenarios of pumping reductions at the Chino Desalter wells. The results were used to prepare new regulatory hydraulic control definitions related to Chino Desalter pumping and the updated Mitigation Plan for Temporary Loss of Hydraulic Control. The 2022 Mitigation Plan was submitted to the Santa Ana Regional Board in June 2022. Veva developed the various scenarios to simulate with the modeling tools, reviewed results with the Watermaster, IEUA, and the Chino Basin Desalter Authority, and helped prepare the 2022 Mitigation Plan that was submitted to the Santa Ana Regional Board.

FY 2021/22 Basin Planning Priorities to Update the Santa Ana River Watershed SNMP, Basin Monitoring Program Task Force (administered by the Santa Ana Watershed Project Authority), Riverside County, CA: Project Manager and Senior Scientist. Veva provided regulatory and technical support through a stakeholder process to assess the Santa Ana River Basin Plan SNMP for compliance with the 2019 Recycled Water Policy. For this project, West Yost prepared an updated watershed-wide groundwater monitoring program, a surface water monitoring program, and recommendations for updated technical methods to assess assimilative capacity through periodic computation of ambient water quality. Veva is the Project Manager leading the development and preparation of the updated surface water monitoring program for the Santa Ana River to assess compliance with the TDS and nitrogen surface water objectives in the Basin Plan.

CONFERENCE PRESENTATIONS/ PROCEEDINGS

- Weamer, V.M. (2020) Utilizing the Normalized Difference Vegetation Index (NDVI) to Monitoring Groundwater Dependent Ecosystems with Satellites and Groundwater Level Data. Presented at the Groundwater Resources Association Western Groundwater Congress Goes Virtual Hollywood. September 14-17, 2020.
- Weamer, V.M. (2021) Utilizing the Normalized Difference Vegetation Index (NDVI) to Monitor Groundwater Dependent Ecosystems (GDEs). Presented at the Groundwater Resources Association of California, The Future of Water Conference. February 23-24, 2021.

WEST YOST
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Carolina Sanchez, PE

Carolina has eight years of professional experience in the water resources industry. Her skills include groundwater monitoring, numerical analysis, water resources, and GIS. As a Senior Engineer, Carolina is involved in a variety of projects. Her tasks include: analysis of groundwater level and water quality data; data management; California Statewide Groundwater Elevation Monitoring (CASGEM) compliance; developing charts and contour maps to characterize groundwater flow systems and associated water quality; conducting hydrologic and hydraulic analyses of groundwater recharge using imported, recycled, and storm waters; modeling groundwater production trends; creating tables, charts, and maps to analyze and characterize surface water discharge and associated water quality; and reconnaissance-level design of surface water management facilities.

STAFF TITLE: Senior Engineer I

YEARS OF EXPERIENCE: 8

PROFESSIONAL REGISTRATIONS

- Professional Civil Engineer, California, No. 85598

EDUCATION

- MS, Civil and Environmental Engineering, Stanford University
- BS, Civil Engineering, Loyola Marymount University, Los Angeles

PROFESSIONAL AFFILIATIONS

- Groundwater Resources Association of California
- Technical Board, Thirst Project

EXPERIENCE

Development of a Strategic Plan for the Six Basins, Six Basins Watermaster, Lake Forest, CA: Project Engineer. Carolina supported the development of the Strategic Plan for the Six Basins Watermaster. The objective of the Strategic Plan is to develop a water-resources management program that sustains and enhances the water supplies available to the Six Basins parties in a cost-effective manner and in accordance with the Six Basins Judgment. This effort began in early 2012 and included the preparation of a comprehensive "state of the basin" report and the articulation of the issues, needs, and wants of the Watermaster Parties—individually and collectively as a group. This information was used to define Strategic Plan project alternatives. The evaluation of the alternatives required the use of surface water and groundwater computer-simulation models. Carolina developed a project economic forecasting tool to estimate the annual water supply cost for each party for the "no strategic" plan, or baseline case, and for alternative management plans being considered in Strategic Plan development. She was responsible for analyzing water production trends; hydrologic and hydraulic modeling of increased stormwater diversion and recharge at the San Antonio and Thompson Creek Spreading Grounds; and the preparation, of maps, charts, and tables to communicate the results of groundwater model simulations of the Strategic Plan alternatives. She also worked on the final report, documenting the development of the Strategic Plan, and a planning proposal for the implementation of the Strategic Plan. Currently, she is working on the implementation of the Strategic Plan, which includes developing planning scenarios for the Six Basins Parties, coordinating with groundwater modelers, and coordinating with the environmental consultants for the preparation of the Programmatic Environmental Impact Report.

San Juan Basin Groundwater and Desalination Optimization Program, San Juan Basin Authority, Orange County, CA: Project Engineer. Carolina supported the San Juan Basin Groundwater and Desalination Optimization Program. In this project, her team evaluated the physical and economic feasibility of projects to increase recharge in the basin with storm and recycled waters, implemented a seawater extraction barrier, and optimized production schemes to adaptively manage groundwater storage

in wet and dry climate cycles. Other key components of the feasibility study were to evaluate the regulatory challenges of implementing the recycled water recharge projects and issues associated with recharging water in an impaired basin. Carolina was involved in performing the surface water modeling to calculate new yield; coordinating with the groundwater flow modelers; analyzing MT3D groundwater quality modeling results; and calculating recycled water underground retention time. She was also involved in preparing preliminary designs and operating plans for a new in-stream rubber dam system to turn a stream into 2.5-mile-long recharge basin.

Recharge Master Plan Update (RMPU), Chino Basin Watermaster, Rancho Cucamonga, CA: Project Engineer. Carolina supports the implementation of the 2013 Amendment to the 2010 RMPU. The 2010 RMPU utilized state-of-the-art surface water models, developed to estimate stormwater recharge in spreading basins and in localized recharge facilities that will be constructed to comply with the 2010 Municipal Separated Storm Sewer System (MS4) permits. The investigation also determined the existing recharge capacity for imported and recycled waters and future recharge capacity requirements. Subsequent to the approval of the 2010 RMPU, the 2010 Urban Water Management Plans were released, and the groundwater production projections were substantially less than assumed in the 2010 RMPU. A Stakeholder Committee (Steering Committee) was formed to conduct further analysis of the projects recommended in the 2010 RMPU, to introduce and analyze new yield enhancement and production sustainability projects, and to develop a finance and implementation plan for the recommended projects. The 2013 Amendment was approved by the stakeholders and the Court. Carolina is responsible for the preliminary hydrologic and hydraulic design work to refine recharge projects and for reviewing interim submittals from design contractors.

In 2018, Carolina was the Project Engineer for the development of the 2018 RMPU. The work to develop the 2018 RMPU included working with Watermaster Staff to lead the Steering Committee meetings and workshops and presenting technical information to the Chino Basin pools and Board. Carolina was also responsible for characterizing projected availability and cost of imported water, identifying the need for additional recharge capacity in the Basin, and preparing the report. The 2018 RMPU was approved by the Watermaster Board in September 2018 to meet the October 2018 deadline of the Court submittal.

Shallow-Groundwater Characterization Study (2021). Victor Valley Wastewater Reclamation Authority, CA: Project Engineer and Manager. Carolina led a hydrogeologic study for the Victor Valley Wastewater Reclamation Authority (VVWRA). The VVWRA is experiencing high-groundwater conditions at its Victor Valley Regional Wastewater Treatment Plant (WWTP). Specifically, Ponds 1-6 located at the lowest elevations on site are continuously filled with shallow groundwater. West Yost prepared maps, hydrogeologic cross-sections, Piper diagrams, and tables of water chemistry results. These work products were analyzed to demonstrate that demonstrate that (1) the surface water in Pond 6 is shallow groundwater that originates primarily from effluent discharged to the upgradient percolation ponds and (2) the quality of water in Pond 6 does not exceed the effluent limitations in the VVWRA's Waste Discharge Requirements permits.

PUBLICATIONS

- Choy, J., Moran, T., McGhee, G., Szeptycki, L., Nelson, R., Rohde, M., Maynard, J., Sanchez, C., Van Siembrouck, P., Porath, M., Carlson, J. Water in the West: Understanding California's Groundwater website (2014) Accessed: December 18, 2020. https://waterinthewest.stanford.edu/groundwater/

CONFERENCE PRESENTATIONS/ PROCEEDINGS

- Sanchez, C., Malone, A., Abelson, J. (2020) Enhancing Groundwater Basin Management through MS4 Permit Compliance. Presented at the Groundwater Resources Association Western Conference.
- Sanchez, C. (2022) How to Comply With Non-Existent Objectives? The Need for and Development of a Salt and Nutrient Management Plan in the Upper Temescal Valley. Presented at the California WateReUse Conference.
- Sanchez, C., Rapp, G. (2022) Leveraging Existing Information to Assess the Potential Impacts of Managed Aquifer Recharge Projects. Presented at the 11th International Symposium On Manager Aquifer Recharge.

WEST YOST
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Lucy Hedley

STAFF TITLE: Associate Scientist I

YEARS OF EXPERIENCE: 5

EDUCATION

- Master of Environmental Science and Management (MESM), Bren School of Environmental Science & Management, University of California, Santa Barbara
- BS, Biology with a minor in economics and specialization in environmental studies, Davidson College

PROFESSIONAL AFFILIATIONS

- Groundwater Resources Association of California

Lucy has five years of professional experience in the water resources industry. Her technical expertise includes data management, water quality analysis, Geographical Information Systems (GIS) and geospatial analysis, and ground and surface water monitoring program implementation. As a Project Scientist and Manager, she has experience in estimating spatially distributed groundwater contaminant concentrations through kriging, analyzing Landsat NDVI data for vegetation monitoring, and managing large water quality databases, as well as experience in the collection of surface water and groundwater quality samples, measurement of groundwater levels, and installation of pressure transducers and data retrieval. While working on her master's degree, Lucy was awarded a Sustainable Water Markets Fellowship in 2017 from the Catena Foundation to study innovative ways to manage water and achieve multi benefit solutions. For her thesis project, she worked as part of a team for Legacy Works Group and Friends of the Teton River to develop a watershed management plan for the Teton Valley, ID, and to create a program to increase incidental groundwater recharge in the valley.

EXPERIENCE

Prado Basin Habitat Sustainability Program, Prado Basin Habitat Sustainability Committee (PBHSC), Chino Basin Watermaster, Rancho Cucamonga, CA: Scientist. Lucy serves as a project scientist for the Prado Basin Habitat Sustainability Program (PBHSP). The key element of the PBHSP is an adaptive monitoring program intended to characterize the historical, current, and future extent and quality of the riparian habitat in the Prado Basin Management Zone in the southern portion of the Chino Basin, and to provide information on the cause(s) of riparian habitat degradation, if documented. Data from the monitoring program will aid in the development of efficient and effective mitigation measures if the cause(s) of degradation are conclusively attributed to groundwater management practices in the Chino Basin. The program consists of monitoring of riparian habitat and the factors that can potentially affect riparian habitat health, which include groundwater levels/quality, surface water, weather, climate, invasive species, and fire. Each year, data from the monitoring program is analyzed, interpreted, and reported. The annual reporting and analysis form the basis to adapt the monitoring program, if necessary, to achieve the objectives of the PBHSP. Lucy is responsible for managing the field program data, collecting and analyzing other relevant data, including Landsat radar data and vegetation monitoring data. These data are used to prepare explanatory charts and maps of the health of the Prado Basin vegetation. Lucy contributes interpretation of the integrated data sets and any related groundwater-modeling results; and presents the annual report conclusions to the PBHSC to facilitate Stakeholder input to the PBHSP.

Chino Basin Optimum Basin Management Program State of the Basin Report, Chino Basin Watermaster, Rancho Cucamonga, CA: Project Manager. Lucy was the project manager for the preparation of the 2022 State of the Basin Report, in which she managed a team of scientists, engineers, and geologists to prepare the

six sections of the report. The report is a court-ordered document, prepared pursuant to the Chino Basin Optimum Basin Management Program (OBMP) and subsequent implementation plans and agreements. The State of the Basin Report demonstrates: the current physical state of the Chino Basin with regard to climate, basin production, groundwater recharge, groundwater levels, groundwater quality, and land subsidence. It is intended to demonstrate the Watermaster's, progress in implementing the OBMP since July 2000 when the Chino Basin Watermaster commenced implementation of the investigations, monitoring programs, and management strategies defined in the OBMP. The report features detailed exhibits that characterize and interpret key hydrogeologic conditions. Lucy is also responsible for preparing the data and analysis within the reports groundwater quality section, which includes analysis of potential contaminants of concern in the Basin, a geospatial analysis of multiple point-source contamination plumes, and exhibits characterizing the ambient TDS and nitrate concentrations in the Basin. In addition to processing and analyzing the data and compiling the exhibits for the groundwater quality section.

Salt and Nutrient Management Plan Monitoring Program (SNMP), San Juan Basin Authority, Various, CA: Project Manager Lucy is responsible for the implementation of the watershed wide groundwater and surface water monitoring program that supports the San Juan Creek SNMP. The work plan for this monitoring program was completed in 2016 and included over 30 surface and groundwater monitoring sites throughout the watershed. Lucy is responsible for the field implementation of the program, as well as the data analysis and project reporting. As part of the field implementation of the program, Lucy is responsible for working with field staff to coordinate the collection of samples in the field; reviewing the data in the HydroDaVESM database; and modifying the monitoring program to meet its objectives and to improve field implementation logistics for long term implementation. Lucy is also responsible for collecting, compiling, and checking recycled water, surface water, and groundwater data collected from other entities performing monitoring in the watershed. Lucy prepares annual reports on the analysis and interpretations of the data collected for the program.

Chino Basin Watermaster Groundwater and Surface Water Database, Chino Basin Watermaster, Rancho Cucamonga, CA: Lucy is responsible for the management and maintenance of the Chino Basin Watermaster's database. She manages a team of scientists that collect, compile, and upload all publicly available datasets online, and coordinates with public and private entities within the Chino Basin on a routine basis to keep the database up to date. Lucy is responsible for the review and QA/QC of all data collected and uploaded to the database. The Chino Basin Watermaster database is critical to support a variety of Watermaster functions, such as reporting for various regulatory requirements and analyses to understand changes in the basin as groundwater management strategies are implemented over time.

Upper Temescal Valley Salt and Nutrient Management Plan, Elsinore Valley Municipal Water District (EVMWD) and Eastern Municipal Water District (EMWD), Lake Elsinore, CA: Responsible for assisting in the implementation of the SNMP monitoring program by collecting biweekly and monthly water samples at seven surface water monitoring stations during the winter/spring and summer/fall. These samples are delivered to and analyzed by the EMWD laboratory. Lucy has also assisted with quarterly groundwater quality sampling. The data collected during these surface water and groundwater sampling events are being used to prepare an SNMP to support EVMWD and EMWD's recycled water discharge and reuse plans in the Upper Temescal Valley. The data collected as part of this monitoring program are used to estimate current ambient water quality and assimilative capacity, and project future TDS and nitrogen concentrations.

Chino Basin Recycled Water Groundwater Recharge Program, Chino Basin Watermaster, Rancho Cucamonga, CA: Lucy oversaw the collection of quarterly groundwater elevation data at 32 wells in the Chino Basin for the purpose of monitoring the impact of recycled water recharge on basin water levels. In addition to collecting manual groundwater elevation measurements in the field, Lucy maintained and downloaded pressure transducers and data loggers that measure piezometric head. These data are submitted to the Santa Ana Regional Water Quality Control Board on behalf of the Chino Basin Recycled Water Groundwater Recharge Program, pursuant to a recharge permit with co permittees—the Inland Empire Utilities Agency and Chino Basin Watermaster. The program is part of a comprehensive water supply program to enhance water supply reliability and improve groundwater quality in Chino Basin by increasing the recharge of stormwater, imported water, and recycled water.

PUBLICATIONS

- Burchenal, K., Campbell, M., Hedley, L., Honn, E., Reeder, T. (2018). Augmenting Summer Streamflow; Innovative Approach in the Teton River, Idaho. The Water Report. Issue #173. Envirotech Publications.

WEST YOST
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Eric W.H. Chiang, PhD

STAFF TITLE: Principal Scientist II

YEARS OF EXPERIENCE: 30

EDUCATION

- PhD, Civil Engineering, University of Kassel, Germany
- MS, Civil Engineering, University of Stuttgart, Germany
- BS, Civil Engineering. National Central University, Taiwan

PROFESSIONAL AFFILIATIONS

- Groundwater Resources Association of California
- National Ground Water Association
- International Association of Hydrological Sciences

Eric's experience has focused on research and application in the areas of numerical groundwater and surface water modeling, 3D Visualization, software development, data management, planning and decision analysis, and geographic information systems (GIS). Eric develops and applies several computer software packages, notably Processing MODFLOW, a graphical user interface for groundwater and surface water flow and transport modeling with MODFLOW, MODPATH, MT3D, GSFLOW, SEAWAT, and PEST. He applies Processing MODFLOW in many modeling projects to assist in planning, decision making, regulatory compliance, and to facilitate stakeholder involvement and understanding.

In addition, he develops and applies HydroDaVE – a cloud based groundwater and surface water data management system that enables users to remotely manage, visualize, analyze, and share groundwater, surface water, climatic data, and model results on a map based user interface. He incorporates innovative remote sensing or model based data in HydroDaVE, such as Normalized Difference Vegetation Index (NDVI) to quantify vegetation and Next Generation Weather Radar (NEXRAD) and Global Circulation Models (GCMs) to provide historical and future daily/hourly precipitation estimates. Eric has extensive experience in several modeling software programs including MODFLOW, GSFLOW, PRMS, HYDRUS, MT3DMS, RT3D, SEAWAT, PEST, UCODE, GSLIB, ArcGIS, SURFER, and GRAPHER, and he is well versed in the SQL Database and several programming languages such as C, C#, C++, Python, Fortran, Visual Basic, and R.

Eric was a Professor at the University of the Free State, South Africa where he authored and published 3D Groundwater Modeling with PMWIN, a textbook that covers Processing MODFLOW and computer codes for groundwater flow and contaminant transport simulation. In addition, Eric served as a University Instructor at the University of Bremen, Germany where he taught Applied Groundwater Modeling short courses from 1996 to 2004.

EXPERIENCE

2015 and 2020 Safe Yield Recalculation for the Chino Basin, Chino Basin Watermaster, Rancho Cucamonga, CA: Project Engineer. The safe yield of the Chino Basin is re calculated pursuant to the Peace Agreement and Watermaster rules and regulations. For the 2015 investigation to recalculate the safe yield of the Chino Basin, Eric obtained all historical precipitation and temperature data from surface stations and radar estimates, PRISM, and spatially disaggregated and bias corrected projections of precipitation and temperature from NASA for the available GCM projections. Eric compared historical and GCM projected precipitation information at various locations in the Upper Santa Ana Watershed to determine the reliability of using GCM based projections of precipitation to compute stormwater recharge and the deep infiltration of precipitation and applied water. This information was used in the estimation of safe yield in the Chino Basin. Eric served as the project engineer for the 2020 investigation to recalculate the safe yield of the Chino Basin. The 2020 safe yield estimate was

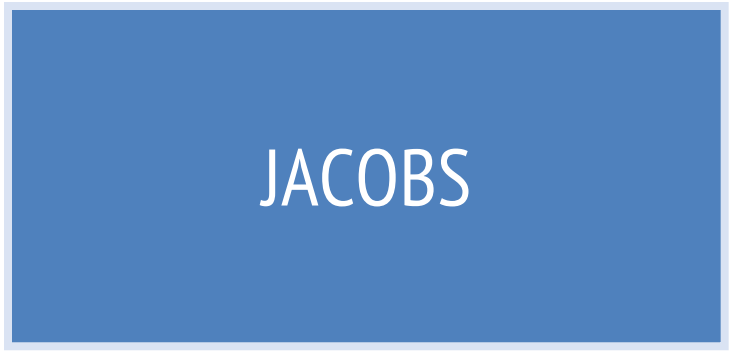
prepared consistent with the sustainable yield requirements in the SGMA and when it was also subjected to peer review. The 2020 Safe Yield Recalculation report was published on May 15, 2020.

Update of the Salt and Nutrient Management Plan (SNMP) for the Chino Basin, Chino Basin Watermaster, Rancho Cucamonga, CA: Lead Water Quality Modeler. The objective of the SNMP study was to demonstrate the long term impacts of recycled water reuse and recharge on the total dissolved solids (TDS) concentration of the Chino Basin during prolonged future droughts. This work included the development of a series of numerical models, including complex fate and transport water quality models (land surface, streams, vadose zone, and groundwater) that simulated the water flow and TDS and nitrate transport processes for the entire Chino Basin, including the historical, current, and future loading associated with land use management for agriculture and dairy operations. The specific models used included R4, Hydrus 2D, MODFLOW, and MT3D. Eric developed software to iteratively run the models to honor feedback loops in the system. This enables the projected changes in groundwater quality to be represented in projected water supply and recycled water quality, the return flows of which contribute to subsequent changes in groundwater quality and Santa Ana River quality (the feedback loop). This model is the most detailed and sophisticated TDS and nitrate simulation ever done for the Santa Ana Watershed.

Integrated Surface and Groundwater Model, Santa Margarita Water District (District), CA: Lead Modeler. The District retained West Yost to provide engineering and hydrogeologic services to support a preliminary design report and environmental documentation for the San Juan Watershed Project (Project) that included work to evaluate the amount of new stormwater recharge generated by the Project, to develop groundwater pumping plans to recover the new recharge, and other hydrogeologic tasks. Eric served as the lead modeler for developing an integrated surface water and groundwater model for the San Juan Watershed and San Juan Creek groundwater basin to support the advanced planning, design and implementation of the Project; ensured that the facilities and associated operating plans were reliably developed; provided accurate estimates of Project yield and unit cost of the new yield; assessed environmental responses; and developed the detailed information needed to obtain permits and allocate new yield of the Project. Using the Processing MODFLOW software as well as climate data, such as PRISM and CIMIS, collected and stored in the HydroDaVE System, the model was built with the USGS coupled surface water and groundwater flow model called GSFLOW. GSFLOW is based on USGS's groundwater flow model MODFLOW and precipitation runoff modeling system PRMS. A benefit of GSFLOW is that both headwater, valley settings and groundwater can be simulated simultaneously so that flows throughout a watershed can be simulated comprehensively.

One Dimensional Model Simulation of Aquifer System Deformation at the PX Site, Chino Basin Watermaster, Rancho Cucamonga, CA: Lead Modeler. A numerical, one dimensional, aquifer system compaction model was constructed and calibrated using the lithology data of the PX site located in the northwestern portion of the Chino Basin (Northwest MZ 1) – an area that has experienced gradual and persistent subsidence for decades. The objective of the model was to explore the future occurrence of subsidence in Northwest MZ 1 under various basin management scenarios of groundwater production and artificial recharge, and to identify potential subsidence mitigation strategies.

Maximum Benefit Demonstration for the Elsinore Groundwater Management Zone, Elsinore Valley Municipal Water District, Lake Elsinore, CA: Lead Groundwater Modeler. Eric provided modeling for developing a maximum benefit demonstration to raise the total dissolved solids (TDS) and nitrate concentration objectives for the Elsinore Groundwater Management Zone (GMZ) in the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan). The District is seeking new, maximum benefit based TDS and nitrate concentration objectives such that it can have the flexibility to develop and invest in a water resources plan that optimizes the management and use of all its water supply assets to achieve a reliable water supply in an environmentally sound manner. The District's maximum benefit proposal is designed to facilitate the maximum reuse of recycled water, to protect the beneficial uses of groundwater in the Elsinore GMZ and downstream GMZs for future generations, and to be consistent with Executive Order 68 16, Water Code section 13241, and State Board orders and policies that promote recycled water reuse. Eric is responsible for developing a numerical groundwater model to develop TDS and nitrate concentration projections for the Elsinore GMZ, based on the EVMWD's Integrated Resources Supply Plan. The groundwater model is being developed with the Processing MODFLOW software, authored by Eric.


JACOBS

CALIFORNIA & SOUTHWEST OPERATING DIVISIONS LEAD

| LISA PATTERSON

Lisa is a Senior Ecologist and an expert delivering environmental work with IEUA, Water Districts, Light and Class 1 Rail clients nationwide. She is a regulatory specialist and is responsible for preparing and obtaining regulatory permits, managing compliance of regulatory permits, and conducting a wide range of studies and evaluations for absence or presence of endangered species (plants and animals), habitat assessments, biological assessments, impact analyses, mitigation plans, implementation plans, construction monitoring, general biological surveys protected species studies. With over 30 years of experience, she conducts wetland delineations and has secured regulatory permits for various IEUA and Class 1 rail projects ranging from facility expansions, emergency repairs, maintenance activities, and structure replacements. Additionally, Lisa has worked on public-private infrastructure projects. Projects including: IEUA OBMP thru OBMP, Program Maintenance Projects, Cajon 3MT, Structures maintenance 2000-2020, BNSF-Caltrans Richmond Connector, and San Joaquin Corridor PEIR.

RELEVANT WORK EXPERIENCE

Inland Empire Utilities Agency and Chino Basin Watermaster OBMPU:
Role: Biological Surveying/Permitting, Biological Resources Analysis Preparation, and Permit Compliance
Responsibilities: Lisa compiled the Program Biological Resources Report (BRR)for the Optimum Basin Management Program Update (OBMPU). This effort included compiling biological data from the entire Chino Basin to draft a BRR that analyzed the potential impacts to biological resources within the whole of the Basin. Additionally, this effort required drafting extensive mitigation measures that would apply to future individual OBMPU Projects in some cases, and in others, would minimize impacts from the whole of the OBMPU. This effort utilized my extensive knowledge of biological resources and regulatory procedures within the Chino Basin area, and ultimately enabled me to compile a comprehensive Program BRR.

Inland Empire Utilities Agency Operation and Maintenance Long Term LSAA Agreement Compliance (Throughout the Chino Basin in Southern California) – Conduct Biological Surveys, Report Preparation, and Compliance assistance and Reporting: Years Worked on Project: 10 Years. I have worked with IEUA for the past 15 years assisting them with the development and long term permitting for routine maintenance in 18 ground water recharge facilities throughout the Chino Basin. Each year pre-maintenance general biological and focused burrowing owl surveys must be conducted. The maintenance activities must be documented, and at the end of each maintenance year a report must be prepared documenting the survey conducted, the results of the surveys, and the maintenance completed.

BNSF, Caltrans Division of Rail, Richmond Connector, CA
Role: Biological Surveying/Permitting and Permit Compliance
Responsibilities: Biological surveys and jurisdictional delineations were conducted in order to prepare the Natural Environmental Study (NES) for Caltrans to utilize in the CEQA documents. Regulatory Permits were obtained from the U.S. Army Corps of Engineers, Regional Water Quality Control Board, California Department of Fish and Wildlife, and Contra Costa County Flood Control. A mitigation plan was developed and will be implemented within the next year.

BNSF, South Territory
Role: Structures Permitting
Responsibilities: BNSF Structures moved their permitting approach to a territorial approach. Lisa has been permitting the entire south territory including California, Arizona, New Mexico, west Texas, and Colorado for regulatory permitting associated with structure maintenance and replacement since the program began. This project involves developing environmental documentation for facilities maintenance on BNSF properties. The regulatory permit includes, but are not limited to Section 404, 401, NPDES, Air Quality, Floodway, and Endangered Species permitting.

BNSF, Engineering Services
Role: Emergency and On-Call Environmental Compliance
Responsibilities: Providing environmental permitting and compliance support as an on call consultant for emergencies and pop-up coordination for BNSF since 1995. Emergency projects include derailment or safety issues such as homeless encampments and bird nests on signal masts or interfering with routine maintenance; and regulatory compliance including QA/QC for NPDES permitting. These services have involved various resources, various emergent situations, and a wide breadth of environmental coordination and permitting.

Total Years of Experience: 32

Education: B.S., Biology AB Thesis Graduate Studies, California State Polytechnic University, Pomona

Specialized Knowledge:

- ✓ Expertise in avian (bird) surveys and monitoring; fish surveys; habitat and wildlife inventory and mapping
- ✓ Extensive academic background includes ecology, local flora and fauna, biology of ecosystems, conservation of natural resources, politics and planning

Credentials:

- ✓ Certified Inspector, Sediment and Erosion Control
- ✓ Certified CRAM Practitioner
- ✓ USACE District(s): San Francisco, Albuquerque
- ✓ U.S. Fish and Wildlife Service Federal 10(a) Recovery Permit (TE-832945-3) to survey for coastal California gnat catcher (Polioptila Californica Californica)
- ✓ California Department of Fish and Game MOU – Conduct surveys for Southern Rubber Boa (Charina Bottae Umbratica)
- ✓ Qualified SWPPP Practitioner
- ✓ State Water Resources Control Board
- ✓ Wetland Policy and Delineation Training
- ✓ Conflict Management and Resolution Facilitator

Southwest Team Primary Support Staff

Local Support Staff

Kurt Sanderson | Site Evaluation/Project Management, Permitting, SWPPP Compliance, and Project Compliance

Local Geography: CA
USACE District(s): San Francisco, Sacramento, Los Angeles

18 years of experience

Education: B.S., Biology, Ohio University

Credentials: BNSF Contractor Certification; Union Pacific Railroad Contractor Certification; e-RAILSAFE (BNSF)

Specialized Knowledge:

- BNSF structures documentation and permitting experience
- NEPA/CEQA, Clean Water Act, Section 401, 402, and 404
- Endangered Species Act surveys, monitoring, and reporting

Why Kurt was chosen for this team: Kurt brings over 5 years working with BNSF on projects within threatened and endangered species field surveys, jurisdictional waters delineations, and CA state and federal permit preparation and monitoring for environmental compliance on large-scale projects. Kurt lead international development analysis and site evaluations for over 15 years focusing on environmental development, US threatened and endangered (T&E) species, and US jurisdictional waters programs, environmental contract and plans development, and environmental construction compliance.

Daniel Smith | Permitting, Focused Surveys, SWPPP Compliance, and Monitoring

Local Geography: CA
USACE District(s): San Francisco, Sacramento, Los Angeles and Albuquerque

13 years of experience

Education: B.A., California State University Fullerton
Credentials:

- Certified Inspector Erosion and Sediment Control
- BNSF Contractor Safety Orientation Certification
- OSHA 10-Hour
- Yellow-billed Cuckoo Survey Workshop and Training Sessions, *Southern Sierra Research Station*
- Willow Flycatcher Survey Training Workshop, *Southern Sierra Research Station*
- Desert Tortoise Survey Techniques Workshop, *Desert Tortoise Council*
- Union Pacific Railroad Contractor Orientation Certification

Specialized Knowledge:

- BNSF structures documentation and permitting experience
- Federal and California Endangered Species Act surveys, monitoring, and reporting
- NEPA/CEQA, Clean Water Act Section 401 and 404
- Agency and client coordination and consultation

Why Daniel was chosen for thus team: Daniel has 13 years of direct environmental consulting experience with BNSF Railway Company, supporting BNSF's Structures Division. He has conducted and/or assisted in conducting protocol USFWS and CDFW threatened and endangered species surveys and jurisdictional waters assessments. He has also prepared permit applications and monitored permit compliance, providing full project cycle management and reporting. Daniel has conducted jurisdictional waters delineations conforming to USACE and RWQCB standards on project sites throughout California.

COST PROPOSAL AND FEE RATE SCHEDULES
FOR THE CITY OF BEAUMONT
ADAPTIVE MANAGEMENT AND MITIGATION PLAN

Submitted to:

BEAUMONT
California

Submitted by:

Tom Dodson and Associates
P.O. Box 2307
San Bernardino, California 92406
(909) 882-3612

In Partnership with:

West Yost
23692 Birtcher Drive
Lake Forest, CA 92630
(949) 420-3030

and

Jacobs
(Lisa Patterson, Biological Resources/Regulatory Team)

Proposal Due Date and Time:

July 25, 2023
2:00 p.m.

Tom Dodson & Associates, in partnership with West Yost and Jacobs, has prepared a detailed proposal to develop an Adaptive Management and Mitigation Plan (AMMP) for the City of Beaumont (City). Our team carefully reviewed the RFP and have prepared an approach and scope of work that we believe will result in the development and approval of a robust AMMP that will serve as the framework for implementing the City's recycled water program. This document is our cost proposal to implement the "B. Approach" and "Attachment 1: Scope of Services" that are described in our full project proposal.

As presented in the full proposal, our recommended approach is to perform the tasks to complete the AMMP in three Phases as follows:

- Phase 1 – Characterize Historical and Current Conditions to Support Development of AMMP
- Phase 2 – Assess Feasibility of Reduced Discharge and Perform Initial Baseline Monitoring
- Phase 3 – Prepare Adaptive Monitoring and Mitigation Plan and Continue Baseline Monitoring

As described in our schedule (Section I), the three phases will take three to three and a half years to implement. The duration is largely dependent on the outcomes of the Phase 1 work.

Our project team has extensive experience in developing and implementing multi-year adaptive monitoring and management programs. Preparing cost estimates for multi-year, multi-phase work can be challenging because the scope of work in later phases is directly impacted by the conclusion of preceding phases. However, we recognize that it is necessary for the City to be able to plan and budget the multi-year effort. We have prepared a planning level budget for the City that includes:

1. A detailed line-item labor hours and cost estimate for the tasks 8 tasks defined in Phase 1 (Table C-1, enclosed)
2. A range of budget-level costs for the remaining tasks in Phases 2 and 3, based on our experience in performing similar work (Table C-2 and Table C-3 below)
3. Table C-4 summarizes the recommended budget to complete the project

The total labor hours estimated to complete Phase 1 is 1,165 hours and the total cost estimated to complete Phase 1 is $267,160. The range of costs to complete Phase 2 is $270,000 to $629,000. The range of costs to complete Phase 3 is $82,000 to $141,000. The labor hours and cost of work in Phases 2 and 3 will need to be determined as the project is implemented – the cost to perform Phase 2 would be determined as a deliverable of the Phase 1 work. The cost estimates and budget level recommendations were made in consideration of the fixed rate schedules for each project team, which are included in Attachment 1.

As shown in Table C-4, we recommend the City budget $997,160 for all phases of work in the first four years but initially issue a task order for consulting services only the cost of the Phase 1 work ($267,160). The recommended budget is based on the upper-end range of costs to provide maximum flexibility to the City as the project evolves.

Please note that the scope of work includes a few tasks that were not explicitly described in the RFP and may be deemed additional work by the City. These items are summarized as follows:

- PHASE 1
    - Historical Analysis of NDVI (Phase 1, Task 4) – Cost: $18,691. We believe that NDVI is an important dataset to invest in to develop a historical characterization of the extent and health of riparian habitat in the study area and that the use of this information will lead to a better understanding of the factors that have contributed to the habitat condition over time.
- PHASE 2
    - Implement first year of Baseline Monitoring program (Phase 2, Task 15) – Cost $20,000 to $40,000. Due to duration of time to set up AMMP, this task is recommended to be performed to support the understanding of Baseline conditions considered in the AMMP, and it could potentially speed up the time until the discharge can begin to be reduced.
    - Prepare scope of work and cost estimate to prepare the AMMP (Phase 2, Task 16) – Cost $10,000 to $12,000. Supports City in developing budget for the final phase of work based on outcomes of Phase 2.
- PHASE 3
    - Implement second year of Baseline Monitoring program (Phase 3, Task 19) – Cost $22,000 to $43,000. The purpose of continuing baseline monitoring prior to completion of the AMMP will allow the City to potentially speed up the time until the discharge can begin to be reduced.

Our team is open to negotiating the scope, schedule, and cost of the project to meet the City's needs. Prior to entering into contract, we would propose to work with the City to review the proposed scope of work and ensure we are in alignment on the project needs and objectives. We can identify key milestones as well as "off-ramps" that would lead to revisiting the scope if initial investigations and analysis warrant a change to the project or approach. Through this process, the scope, schedule, and cost are refined as necessary to establish a final budget that considers any necessary contingencies to address challenges that may arise. Our goal will always be to perform the minimum, most-efficient work necessary to develop a robust, scientifically credible work product that will serve the City's needs.

We are available to commence work immediately after execution of the contract and can complete the required work within the desired schedule and allotted budget subject to the assumptions stated in this proposal.
We thank you again for the opportunity to serve.

Sincerely,

Kaitlyn Dodson-Hamilton
Vice President, TDA

Enclosures:

Table C-1 - Work Breakdown Structure and Fee Estimate to Perform Phase 1 of the Adaptive Management and Mitigation Plan Development

Table C-2 - Budge-Level Range of Costs by Task to Perform Phase 2 of the Adaptive Management and Mitigation Plan Development

Table C-3 - Budge-Level Range of Costs by Task to Perform Phase 3 of the Adaptive Management and Mitigation Plan Development

Table C-4 - Recommended Budget to Develop the of the Adaptive Management and Mitigation Plan

Attachment 1 – Consultant Rate Sheets

Table C-1. Work Breakdown Structure and Fee Estimate to Perform Phase 1 of the Adaptive Management and Mitigation Plan Development

Description	Labor Hours and Cost																Other Direct Charges (ODCs)				Total Program Costs	
	TDA		West Yost									Jacobs		Total Labor					Total ODCs			
															Labor Cost							
	Environ-mental Specialist I	Environ-mental Specialist II	Scientist Manager I	Principal Geologist II	Principal Scientist I	Senior Engineer II I	Associate Geologist I	Geologist II	Grant Funding Specialist	Field Tech.	Admin. IV	Snr. Environ-mental Manager	Biologist	Person Hours	Sub-task	Phase/ Task	Travel	Equip-ment Rental	Sub-task	Phase/ Task	Sub-Task	Phase/ Task
Task 1 - Phase 1 Project Management and Meetings																$38,690				$300		$38,990
Kick-off meeting with City (1)	4.0	4.0			4.0		4.0					4.0		20.0	$4,224		$200		$200		$4,424	
Monthly check in calls (12)	4.0	18.0			12.0		6.0					12.0		52.0	$10,734						$10,734	
Presentation to City Council (1)	1.0	4.0			8.0							4.0	1.0	18.0	$4,139		$100		$100		$4,239	
Monthly project management activities (12)	6.0	48.0	6.0		24.0						6.0	12.0		102.0	$19,593						$19,593	
Task 2 - Establish Initial Goals, Objectives, and Project Performance Criteria																$13,636				$200		$13,836
Prepare for and meet with City to define goals, objectives, and criteria	4.0	4.0		2.0	6.0		3.0					4.0		23.0	$5,216		$200		$200		$5,416	
Document goals, objectives, and criteria in a draft TM	4.0	4.0		1.0	6.0		2.0				2.5	4.0		23.5	$5,072						$5,072	
Meet with City to review draft TM	1.0	2.0			1.0		1.0					2.0		7.0	$1,436						$1,436	
Prepare final TM	1.0	2.0			3.0		1.0				1.0	1.0		9.0	$1,912						$1,912	
Task 3 - Characterize Historical Discharge and Surface Water Flow Hydrology																$39,975				$200		$40,175
Coordinate with City to collect all available data on factors affect surface water flow (climate, water supply, etc.)				1.0	4.0	4.0	12.0	4.0						25.0	$6,144						$6,144	
Organize data into a project database					2.0	1.0	8.0	40.0						51.0	$12,006						$12,006	
Prepare explanatory graphics to characterize flow and factors that influence it				1.0	6.0	2.0	30.0	8.0						47.0	$11,042						$11,042	
Perform and document field reconnaissance to observe field surface water conditions					8.0	8.0				8.0				24.0	$5,928		$200		$200		$6,128	
Prepare summary findings about the factors that have influenced surface water flow over time	1.0	2.0		1.0	6.0	2.0	6.0					2.0		20.0	$4,855						$4,855	
Task 4 - Characterize Historical Riparian Habitat Health (NDVI)																$18,691				$0		$18,691
Review and document all NDVI from Landsat imagery for the study area from 1984 to 2023					4.0		20.0							24.0	$5,532						$5,532	
Define Areas for analysis of NDVI Time Series and compile time series data from 1984 to 2023				1.0	4.0		22.0							27.0	$6,280						$6,280	
Prepare explanatory graphics to characterize NDVI for various periods of interest				1.0	2.0		6.0							9.0	$2,206						$2,206	
Prepare summary findings about the factors that have influenced NDVI variability over time	1.0	2.0		1.0	8.0		4.0					2.0	2.0	20.0	$4,673						$4,673	
Task 5 - Characterize Historical and Existing Biological Resources																$27,404				$0		$27,404
Coordinate with City to collect prior biologic resources reports and define extent of field survey	1.0	1.0		1.0	2.0							10.0	4.0	19.0	$4,268						$4,268	
Research background biological data to establish area habitat conditions	1.0	1.0		1.0	2.0							12.0	4.0	21.0	$4,798						$4,798	
Perform field survey of biologic resources	1.0	1.0			2.0		4.0					16.0	16.0	40.0	$7,738						$7,738	
Prepare exhibits documenting historical extent of biologic resources	1.0	1.0			2.0		8.0					6.0	10.0	28.0	$5,300						$5,300	
Prepare exhibits documenting current extent of biologic resources	1.0	1.0			2.0		8.0					6.0	10.0	28.0	$5,300						$5,300	
Task 6 - Identify Potential impacts to Biologic Resources from Reduced Discharge to Coopers Creek																$32,218				$200		$32,418
Prepare draft list of factors that have influenced biologic resources over time and describe relationships	2.0	4.0		1.0	4.0		2.0					12.0	12.0	37.0	$7,210						$7,210	
Prepare list a potential impacts to biologic resources from reduced discharge	2.0	4.0		1.0	4.0		2.0					24.0	12.0	49.0	$10,390						$10,390	
Develop draft metrics for habitat sustainability	1.0	2.0		2.0	8.0		2.0					8.0	4.0	27.0	$6,359						$6,359	
Identify data gaps in current monitoring efforts that prevent assessment of habitat impacts				0.5	6.0		2.0					4.0	2.0	14.5	$3,630						$3,630	
Meet with City to review the information and receive comments	1.0	4.0			6.0		2.0					6.0	2.0	21.0	$4,629		$200		$200		$4,829	
Task 7 - Assess Available Tools for Analyzing Surface Water and Groundwater Impacts																$22,955				$0		$22,955
Coordinate with City to identify and collect available surface water and groundwater models				2.0	1.0	4.0								7.0	$2,021						$2,021	
Review, assess, and summarize SW Flow Ecology models and projections				8.0	2.0	16.0								26.0	$7,498						$7,498	
Review, assess, and summarize other available models and projections				8.0	2.0	16.0								26.0	$7,498						$7,498	
Scope out plan to use/improve develop models for Phase 2 analysis			2.0	8.0	2.0	8.0								20.0	$5,938						$5,938	
Task 8 - Prepare Cooper's Creek Habitat Characterization and Sustainability Report																$49,505				$200		$49,705
Prepare initial monitoring workplan				2.0	12.0	2.0	8.0	4.0			2.0	6.0	4.0	40.0	$9,715						$9,715	
Prepare draft report	1.0	2.0		4.0	32.0	4.0	30.0	10.0			6.0	16.0	10.0	115.0	$27,280						$27,280	
Meet with City to review report		6.0			6.0		6.0					6.0		24.0	$5,346		$200		$200		$5,546	
Finalize report based on City comments	1.0	2.0		1.0	8.0	1.0	6.0	4.0			2.0	4.0	2.0	31.0	$7,164						$7,164	
Other Additional Work to Support City in Applying for Change Petition an Obtaining AMMP Approval																$22,786				$200		$22,986
Regulatory support for change petition	4.0	4.0	2.0	2.0	20.0	4.0						8.0		44.0	$11,476		$200		$200		$11,676	
Outreach and communication		4.0	2.0	2.0	8.0							6.0		22.0	$5,666						$5,666	
Support grant opportunities		2.0			4.0				16.0			2.0		24.0	$5,644						$5,644	
Phase 1 Totals	**44**	**129**	**12**	**53**	**243**	**72**	**205**	**70**	**16**	**8**	**20**	**199**	**95**	**1,165**		**$265,860**	**$1,300**	**$0**		**$1,300**		**$267,160**

Table C-2 Budge-Level Range of Costs by Task to Perform Phase 2 of the Adaptive Management and Mitigation Plan Development

Task	Range of Costs	Recommended Budget
Task 9 Project Management and Meetings	$25,000 to $45,000	$45,000
Task 10 - Assess the Hydrologic and Operational Capacities from Operating the Discharge Under Current and Future Discharges	$50,000 to $200,000	$200,000
Task 11 - Identification of Conceptual Project Mitigations to Biologic Resources	$10,000 to $12,000	$12,000
Task 12 - Assess Engineering Feasibility of Operational Alternatives and Mitigation Actions	$50,000 to $75,000	$75,000
Task 13 - CEQA Checklist Evaluation of Project Alternatives	$50,000 to $150,000	$150,000
Task 14 - Prepare Cooper's Creek Discharge Hydrogeologic and Operational Feasibility Report	$20,000 to $30,000	$30,000
Task 15 – Implement first year of Baseline Monitoring Program	$20,000 to $40,000	$40,000
Task 16 – Prepare scope of work and cost estimate to prepare the AMMP	$10,000 to $12,000	$12,000
Other Additional Work to Support City in Applying for Change Petition an Obtaining AMMP Approval	$20,000 to $25,000	$25,000
Totals	Range: $255,000 to $589,000	$589,000

Table C-3 Budge-Level Range of Costs by Task to Perform Phase 3 of the Adaptive Management and Mitigation Plan Development

Task	Range of Costs	Recommended Budget
Task 17 Project Management and Meetings	$10,000 to $13,000	$13,000
Task 18 - Prepare the AMMP	$30,000 to $60,000	$60,000
Task 19 - Implement second year of Baseline Monitoring Program	$22,000 to $43,000	$43,000
Other Additional Work to Support City in Applying for Change Petition an Obtaining AMMP Approval	$20,000 to $25,000	$25,000
Totals	Range: $82,000 to $141,000	$141,000

Table C-4 Recommended Budget to Develop the of the Adaptive Management and Mitigation Plan

Phase/Task	Recommended Budget
Phase 1	$267,160
Phase 2	$589,000
Phase 3	$141,000
Totals	$997,160

TOM DODSON &
ASSOCIATES
AND
JACOBS

Fee Rate Schedule

Tom Dodson & Associates (TDA)

Labor: Time spent on behalf of a client will be charged as follows:

Environmental Specialist I (Tom Dodson)	$165 / hour
Environmental Specialist II (Kaitlyn Dodson-Hamilton)	$115 / hour
Environmental Specialist III	$85 / hour
Environmental Specialist IV	$60 / hour
Biologist III / Monitor	$65 / hour
Admin / WP / Graphics (Christine Camacho)	$55 / hour
Legal Expert Witness (Tom/Kaitlyn)	$240 / hour

Text

The above reflects hourly rates that shall remain in place with no changes proposed during the first two years of the Master Contract. Rates may increase by $10 per hour for each of the above roles under TDA's umbrella for the duration of the contract.

Other Direct Costs: All other direct costs (travel, supplies, printing, etc.) may be charged at actual cost. There will be no mark-up on ODCs. Mileage will be billed at the Internal Revenue Service (IRS) standard mileage rate for business travel. For 2023, this rate is $0.65 per mile. Subcontractors will be billed at cost.

Jacobs

Labor: Time spent on behalf of a client will be charged as follows:

Name	2023
Lisa Patterson, National Senior Environmental Manager	262.44
Daniel Smith, Biologist	107.30
Loc Truong, Environmental Project Manager	145.58
Madelynn Bartelloni, Environmental Planner	81.29

Other Direct Costs: All other direct costs including travel, printing, mileage, are charged at actual cost. Mileage will be billed at the current IRS mileage rates, which is currently $0.65 per mile. – The 2024 and 2025 rates are anticipated to be increased by 1% each year from the 2023-2025 rates.

WEST YOST

2023 - 2026 Billing Rate Schedule

(Effective July 1, 2023 through December 31, 2026)

POSITIONS	LABOR CHARGES (DOLLARS PER HOUR) 2023	2024	2025	2026
ENGINEERING				
Principal/Vice President	$338	$348	$359	$369
Engineer/Scientist/Geologist Manager II	$334	$344	$354	$365
Engineer/Scientist/Geologist Manager I	$319	$329	$338	$349
Principal Engineer/Scientist/Geologist II	$307	$316	$326	$335
Principal Engineer/Scientist/Geologist I	$288	$297	$306	$315
Senior Engineer/Scientist/Geologist II	$272	$280	$289	$297
Senior Engineer/Scientist/Geologist I	$259	$267	$275	$283
Associate Engineer/Scientist/Geologist II	$231	$238	$245	$252
Associate Engineer/Scientist/Geologist I	$215	$221	$228	$235
Engineer/Scientist/Geologist II	$201	$207	$213	$220
Engineer/Scientist/Geologist I	$173	$178	$184	$189
Engineering Aide	$101	$104	$107	$110
Field Monitoring Services	$125	$129	$133	$137
Administrative IV	$152	$157	$161	$166
Administrative III	$138	$142	$146	$151
Administrative II	$115	$118	$122	$126
Administrative I	$92	$95	$98	$101
ENGINEERING TECHNOLOGY				
Engineering Tech Manager II	$334	$344	$354	$365
Engineering Tech Manager I	$332	$342	$352	$363
Principal Tech Specialist II	$315	$324	$334	$344
Principal Tech Specialist I	$305	$314	$324	$333
Senior Tech Specialist II	$291	$300	$309	$318
Senior Tech Specialist I	$279	$287	$296	$305
Senior GIS Analyst	$252	$260	$267	$275
GIS Analyst	$239	$246	$254	$261
Technical Specialist IV	$254	$262	$269	$278
Technical Specialist III	$228	$235	$242	$249
Technical Specialist II	$203	$209	$215	$222
Technical Specialist I	$178	$183	$189	$195
Technical Analyst II	$152	$157	$161	$166
Technical Analyst I	$128	$132	$136	$140
Technical Analyst Intern	$103	$106	$109	$113
Cross-Connection Control Specialist IV	$180	$185	$191	$197
Cross-Connection Control Specialist III	$162	$167	$172	$177
Cross-Connection Control Specialist II	$144	$148	$153	$157
Cross-Connection Control Specialist I	$133	$137	$141	$145
CAD Manager	$201	$207	$213	$220
CAD Designer II	$176	$181	$187	$192
CAD Designer I	$156	$161	$166	$170

See page 2 for important additional information on rates

2023 - 2026 Billing Rate Schedule

(Effective July 1, 2023 through December 31, 2026)

POSITIONS	LABOR CHARGES (DOLLARS PER HOUR) 2023	2024	2025	2026
CONSTRUCTION MANAGEMENT				
Senior Construction Manager	$322	$332	$342	$352
Construction Manager IV	$283	$291	$300	$309
Construction Manager III	$224	$231	$238	$245
Construction Manager II	$211	$217	$224	$231
Construction Manager I	$197	$203	$209	$215
Resident Inspector (Prevailing Wage Groups 1)	$221	$228	$234	$241
Resident Inspector (Prevailing Wage Groups 2)	$213	$219	$226	$233
Resident Inspector (Prevailing Wage Groups 3)	$191	$197	$203	$209
Resident Inspector (Prevailing Wage Groups 4)	$172	$177	$182	$188
Apprentice Inspector	$156	$161	$166	$170
CM Administrative II	$112	$115	$119	$122
CM Administrative I	$83	$85	$88	$91
Field Services	$221	$228	$234	$241

- Hourly rates include Technology and Communication charges such as general and CAD computer, software, telephone, routine in-house copies/prints, postage, miscellaneous supplies, and other incidental project expenses.
- Outside Services such as vendor reproductions, prints, shipping, and major West Yost reproduction efforts, as well as Engineering Supplies, etc. will be billed at actual cost plus 15%.
- The Federal Mileage Rate will be used for mileage charges and will be based on the Federal Mileage Rate applicable to when the mileage costs were incurred. Travel other than mileage will be billed at cost.
- Subconsultants will be billed at actual cost plus 10%.
- Expert witness, research, technical review, analysis, preparation and meetings billed at 150% of standard hourly rates. Expert witness testimony and depositions billed at 200% of standard hourly rates.
- A Finance Charge of 1.5% per month (an Annual Rate of 18%) on the unpaid balance will be added to invoice amounts if not paid within 45 days from the date of the invoice.

2023 - 2026 Billing Rate Schedule

(Effective July 1, 2023 through December 31, 2026)

EQUIPMENT CHARGES	BILLING RATES
2" Purge Pump & Control Box	$300 / day
Aquacalc / Pygmy or AA Flow Meter	$28 / day
Emergency SCADA System	$35 / day
Field Vehicles (Groundwater)	$1 / mile
Gas Detector	$80 / day
Generator	$60 / day
Hydrant Pressure Gauge	$10 / day
Hydrant Pressure Recorder, Impulse (Transient)	$55 / day
Hydrant Pressure Recorder, Standard	$40 / day
Low Flow Pump Back Pack	$135 / day
Low Flow Pump Controller	$200 / day
Powers Water Level Meter	$32 / day
Precision Water Level Meter 300ft	$30 / day
Precision Water Level Meter 500ft	$40 / day
Precision Water Level Meter 700ft	$45 / day
QED Sample Pro Bladder Pump	$65 / day
Stainless Steel Wire per foot	$ 0.03 / day
Storage Tank	$20 / day
Sump Pump	$24 / day
Transducer Components (per installation)	$23 / day
Trimble GPS – Geo 7x	$220 / day
Tube Length Counter	$22 / day
Turbidity Meter	$30 / day
Vehicle (Construction Management)	$10 / hour
Water Flow Probe Meter	$20 / day
Water Quality Meter	$50 / day
Water Quality Multimeter	$185 / day
Well Sounder	$30 / day