

ITEM #5A

Approval of Minutes of the December 07, 2021 meeting



MEETING OF THE BOARD OF DIRECTORS DEL PASO MANOR WATER DISTRICT

December 7, 2021 6:30 PM
1817 Maryal Drive, Suite 300, Sacramento 95864

DRAFT MINUTES

1. CALL TO ORDER:

The meeting was called to order at 6:30 p.m. by President Saunders.

2. ROLL CALL:

Roll call was taken by Chair Saunders and the following Directors were present: Dolk, Macias, Matteoli, Pratt, and Chair Saunders. Also in attendance were General Manager Gardner and General Counsel Pacheco.

3. ADOPTION OF AGENDA: Members may pull an item from the agenda.

There was a motion by Director Dolk to adopt the agenda. The motion was seconded by Director Pratt.

Upon call for public comment, no member from the public wished to speak. The motion passed on a 5-0 roll call vote.

4. PUBLIC COMMENTS: The Board of Directors welcomes participation at these meetings. Matters under the jurisdiction of the Board that are not posted on the agenda may be addressed by the public. California law prohibits the Board from acting on any matter which is not on the posted agenda, unless the members determines that it is an emergency or other situation specified in Government Code Section 54954.2. Public comments are limited to five(5) minutes per individual. Please make your comments directly to the DPMWD Chair. Comments will be accepted via teleconference.

Upon call for public comment no member from the public wished to speak.

5. CONSENT CALENDAR: All items under Consent Calendar will be considered together by one action of the Board, any Member or members of the public may request that an item be removed and considered separately.

When considering the consent calendar, Director Pratt requested to pull item 5A from the consent calendar to be discussed separately. Director(s) Dolk and

Matteoli requested item 5B be pulled from the consent calendar to be discussed separately. Since two of the three consent items were pulled, items 5A-5C will be taken up separately.

5A. Approval of Minutes of the November 18, 2021 meeting.

Director Pratt made the following clerical corrections to the minutes of November 18, 2021: Item 1 – “*to retain Kronick Firm with Mona Ebrahimi*”. The spelling of her last name is “Ebrahimi”. Item 1 – “*authorize the General Manger Gardner*”. Please correct the word “Manager”. Item 4 – “*consider retaining the Kronick firm, with Mona Ebrahimi*”. Please correct her last name to “Ebrahimi”.

Director Pratt made a motion to approve the minutes of the November 18, 2021 meeting as amended. Director Macias seconded the motion.

Upon call for public comment, no member from the public wished to speak.

The motion was approved as amended on a 5-0 roll call vote.

5B. Approval of Warrants and Payroll

Director Dolk asked about what transpired with the Flowline contractors at 3700-02 Atwater Road in the amount of \$9,932. General Manager Gardner responded that there were a number of significant main breaks. This is where we had to dig up the side of the house. Director Dolk also noted that we had cc for credit cards, and there are some vendors with a dollar amount but down below for the Umpqua Bank, the District credit card for \$8,850.33, it was his understanding that it would be approved based upon our previous special meeting that we would still identify the dollar amount that would be included in that total by vendor. General Manager Gardner stated going forward, he will attach a copy of the card with the card number blacked out. Director Dolk said it would be great if we could have a total for the checks and electronic fund transaction to get an ideal of how much is going out the door every month. Director Macias asked about Hydro Science and whether we are finished with them. General Manager Gardner stated that Hydro Science will be in attendance at the meeting on Friday and the Board will have the opportunity to ask questions. General Manager Gardner is no longer reluctant to pay them, but he rather that the Board hear from them prior to making the decision to pay them or not. President Saunders suggested that the Hydro Science warrant be pulled from this item and included in a future item. General Manager Gardner suggested the District Engineer does a peer review before the bill is paid. Director Pratt asked for clarification about a previous vote the Board made to set aside funds to pay bills that haven't come in yet. On the spaces that are blank, like the one at the top “ACWA JPIA” there will be bills but they haven't been received yet and once received, they will be paid out of the \$15,000 set aside, is that correct because she wasn't sure what the empty boxes meant. General

Manager Gardner stated that the Board will be given a copy of what was done in the following month.

Director Matteoli made a motion to approve the warrants and payroll with the exception of the Hydro Science warrant in the amount of \$7,923.75 which will be bought to the Board for payment at a later date. Director Pratt seconded the motion.

Chair Saunders called for public comment. No member of the public requested to speak. The motion passed on a 5-0 roll call vote.

- 5C. A Resolution of the Board of Directors of the Del Paso Manor Water District and on behalf of Commissions and Committees created by the Board of Directors pursuant to Government Code section 54952(b) authorizing teleconference meetings in compliance with Assembly Bill 361 to continue to allow members of the public to safely participate in local government meetings.”

After Chair Saunders presented this item to the Board, there was no discussion. Director Dolk made the motion to Adopt Resolution pursuant to GC Section 54952(b) and Assembly Bill 361. Director Macias seconded the motion.

Chair Saunders called for public comment. No member of the public requested to speak. The motion passed on a 5-0 roll call vote.

6. PUBLIC HEARING: None

7. NEW BUSINESS:

- 7A. Consideration to adopt a Resolution approving and Individual At-Will Employment Agreement with Alan Gardner for the position of General Manager and Authorize the President of the Board of Directors to execute the agreement on behalf of the Del Paso Manor Water District.

Director Pratt presented this item to the Board stating there are three items, an employment agreement which is related to the resolution; a contract prepared by Hoit Bremner (for comparison purposes); and a contract used when Ms. Sedwick was the General Manager (for comparison). She pointed out a clerical error on the employment agreement under section “E”. It should read, “On October 6, 2021, the Board voted unanimously to employ Alan Gardner as General Manager, effective October 25, 2021, and he was presented with a contract. The remaining text in section should be struck out.

Director Pratt went on to explain that the critical document (the employment contract was missing and General Manager Gardner worked feverishly putting in the work that needed to be done. The contract had to be rewritten due to proprietary constraints. On October 6, 2021, the contract prepared by the former legal counsel did not contain language that had gone back and forth between himself and the former counsel's office and it was not what was verbally agreed upon. We all agreed that Exhibit A would be amended. Director Pratt pointed out that the page of recitals General Manager Gardner felt the contract needed to have item "H" which basically says that you can't hold someone accountable if you don't give them the tools to do their job and that language shows up in a couple of different places in the agreement.

This agreement has been reviewed by legal counsel to form and content. General Counsel Pacheco reminded the board that before a motion and a second is made, and before public for comment is taken, the total compensation and fringe benefits of the employment agreement must be announced.

Director Macias spoke about his concern that the original agreement included a two month severance pay and the new agreement has twelve month severance. He would like to know where the twelve months came from. Director Pratt explained legal counsel clarified that standard practice is 9-18 months. She reviewed the Government Code Section 53260 in the paragraph and it does provide severance for up to eighteen months which is why it was changed to twelve months. Director Macias feels it is a big difference and it should be discussed as a board. More discussion ensued and there was a consensus that twelve months is appropriate. Director Macias also asked about the license requirement in the job description.

Chair Saunders announced the total compensation and fringe benefits of the employment agreement.

Chair Saunders called for public comment. Diane Graves spoke on this item.

Director Dolk made a motion to Adopt Resolution for Employment Agreement with Alan Gardner as General Manager and authorize the President of the Board of Directors to execute the agreement on behalf of the Del Paso Manor Water District. The motion was seconded by Director Pratt. The motion passed on a 5-0 roll call vote.

- 7B. Discussion and direction regarding a Request for Proposals (RFQ) for a District Engineer.

General Manager Gardner presented this item to the Board of Directors. He explained that there are a lot of maintenance, repairs, etc. and if there is a critical need the District Engineer will be on-call. He also would like for the District Engineer to do a peer review with Hydro Science and help plan what would be a good path after the first six months. He identified five firms that have all worked with the District in the past. He plans on sending the request to all five firms tomorrow, if approved by the Board.

Director Macias asked about the maximum value of services and General Manager Gardner responded. Director Matteoli stated that is a high priority. Director Pratt stated that this has been needed for some time. Director Macias said that the turnaround seems quick especially since it is during the holidays. General Manager Gardner said he would let the firms know that there will be a quick turnaround.

Director Matteoli made a motion to authorize staff to publish the attached RFQ for engineering services. The motion was seconded by Director Dolk.

Chair Saunders called for public comment. No member of the public requested to speak. The motion passed on a 5-0 roll call vote.

8. DIRECTORS COMMENTS: Verbal information, non-action comments.

Director Dolk asked for a status update on the COVID19 Relief Fund the Department of Finance was sponsoring. General Manager Gardner responded that Victoria has applied for it. Director Dolk also stated the District is five months into this fiscal year and we haven't seen any budget to actuals from the CPA of the District. He would like to know where we stand. General Manager Gardner stated that we will need a budget amendment because of what is going on. Director Dolk inquired about the Bond revived in 2018 and wanted to know if the District can pay down excess funds towards the principle, or can we use those funds for further infrastructure needs. General Manager Gardner responded that we can use the funds in that account for items that were approved on page 64 of the original plan or items which the board between then and now has approved.

Director Macias would like to see a policy on handling past due accounts in the next meeting or two. General Manager Gardner responded stating that as long as a customer is paying towards the bill he will not shut the water off because it is an essential function. In the past he has worked out payment plans. He also agreed to update the policy and make it more standard.

Director Pratt thanked Director Macias for bringing up the overdue payments issue. She concurred that there needs to be a direct and transparent policy.

Chair Saunders stated that the Board is making incremental improvements regarding transparency. We have policies in place and we are listening to the feedback that we receive from the public such as those like Diane Graves and Roy Wilson.

9. GENERAL MANAGERS COMMENTS: Verbal report

General Manager Gardner announced that on Friday, there will be a special meeting of the Board of Directors and Hydro Science will be available as required by the Grand Jury. His recommendation is that the District Engineer should review the work Hydro Science did.

Next week we will be six weeks out from when the Grand Jury Report is due and he would like to discuss it in a close session meeting and reporting out after the closed session meeting.

10. ADJOURNMENT: Next Regular Board of Directors meeting is scheduled for January 4th, 2022

There was a motion to adjourn by Director Pratt and seconded by Director Dolk. The motion to adjourn was passed on consensus. The meeting was adjourned at 8:04 p.m.

ITEM #5B

Approval of Minutes of the December 10, 2021 meeting.



MEETING OF THE BOARD OF DIRECTORS DEL PASO MANOR WATER DISTRICT

December 10, 2021 6:30 PM
1817 Maryal Drive, Suite 300, Sacramento 95864

DRAFT MINUTES

1. CALL TO ORDER:

The meeting was called to order at 6:32 p.m. by President Saunders.

2. ROLL CALL:

Roll call was taken by Chair Saunders and the following Directors were present: Dolk, Macias, Matteoli, Pratt, and Chair Saunders. Also in attendance was General Manager Gardner, Bill Slenter, HydroScience, and Ligaya Kohagura, HydroScience.

3. ADOPTION OF AGENDA: Members may pull an item from the agenda.

There was a motion by Director Pratt to adopt the agenda. The motion was seconded by Director Matteoli.

Upon call for public comment, no member from the public wished to speak. The motion passed on a 5-0 roll call vote.

4. PUBLIC COMMENTS: The Board of Directors welcomes participation at these meetings. Matters under the jurisdiction of the Board that are not posted on the agenda may be addressed by the public. California law prohibits the Board from acting on any matter which is not on the posted agenda, unless the members determines that it is an emergency or other situation specified in Government Code Section 54954.2. Public comments are limited to five (5) minutes per individual. Please make your comments directly to the DPMWD Chair. Comments will be accepted via teleconference.

Upon call for public comment, no member from the public wished to speak.

5. CONSENT CALENDAR: All items under Consent Calendar will be considered together by one action of the Board, any Member or members of the public may request that an item be removed and considered separately.

5A. Approval of Warrants and Payroll

There was no Board discussion. Director Dolk made a motion to approve the warrant. Director Pratt seconded the motion.

Upon call for public comment, no member from the public wished to speak. The motion passed on a 5-0 roll call vote.

6. PUBLIC HEARING: None

7. NEW BUSINESS:

7A. Review of May 2021 HydroScience Strategic Water Solutions Technical Memorandum.

Pursuant to the November 5, 2021 Grand Jury Report, discussion of the findings and recommendations of the May 2021 HydroScience Strategic Water Solutions Technical Memorandum, originally authorized by the DPMWD as Proposed Update to its 2009 Water District Master Plan and request for public comment.

General Manager Gardner introduced this item to the Board providing background information. When this originally started the District was looking for a full update to its 2009 Master Plan. The price came in around \$140,000 they withdrew the RFQ. They issued a modified RFQ. The winning bid was HydroScience. It was in their September 22nd submission. They met and talked about almost everything that we would be interested in. That was accepted and in November a contract was signed. Unfortunately the then leadership of the District chose to make oral modifications that were not confirmed in writing and HydroScience was told not to do anything that would result to talking about fluoride or a meter. That took all surface water off of the table and they had that in as something they would look at. Additionally, they were told no pipes and our pipes are from 1945 from our mains. The Board chose not to let HydroScience to comment on that. HydroScience did the best they could because they also did not receive some of the data or reports that was supposed to come to them. He asked them for two modifications. We need a discussion in the 218 on replacing mains that are in the backyards. We also need a discussion of surface water and what came up today is we need a discussion of some money to determine the size and the position of the plume that is under Well 8. Today I met with Mr. York with Rhinolog and he agreed to try to work with us to determine the extent of the plume. If we could do that there is remediation money and we might get Well 8 back. I needed them to make three amendments without doing a lot of additional work. One was to add two exhibits,

the surface water report from 2015 and the presentation of pipes that was made in May of 2017 which would be put in this document and add them on the page which would list the capital projects at the bottom listed as low priority and also list doing research on the plume. Also add a statement at the bottom the order may change depending on needs or catastrophic changes in the district. This would be reviewed by the District Engineer when appointed. He believes that this report could be made into something that will satisfy our need for 218 and give us enough of a base to make the presentations necessary in the 218. We still need to work out money and things like that. He invited staff from HydroScience to answer any questions the Board may have. What he has suggested is a way to proceed and make use of the work that HydroScience did.

Director Matteoli spoke stating that he agrees that we can use the information they have and they should be able to move forward and prioritize the projects. General Manager Gardner gave an overview of the status of the Wells.

Director Dolk asked questions about if the requirements of Windflow and AT&T be met. Director Pratt asked how the Dan York agreement will get memorialized and in what format will it be in. General Manager Gardner responded.

Director Dolk stated that we need to move on the fire hydrants, and asked if the District can quantify which pipes have the most leaks and General Manager Gardner responded. More discussion ensued regarding the pipes and the age of the pipes.

This item is not an action item. There is a consensus among the Board that the General Manager's recommendation is the way to move forward.

8. DIRECTORS COMMENTS: Verbal information, non-action comments.

9. GENERAL MANAGERS COMMENTS: Verbal report

None.

10. ADJOURNMENT: Next Regular Board of Directors meeting is scheduled for January 4th, 2022

Director Pratt made a motion to adjourn. Director Macias seconded the motion. The meeting was adjourned at 7:30 p.m. on consensus.

ITEM #5C

Approval of Warrants and Payroll

Del Paso Manor Water District
Vendors - JANUARY 2021

VENDORS NAME	DESCRIPTION	CIP	AMOUNT	CHECK #
ACWA JPIA	Health			EFT
ACWA JPIA	K. Ingle Settlement (<i>approved by BOD at 12/07/2021 regular meeting</i>)		\$20,000.00	10202
ADP	Payroll			EFT
ADP Taxes	Payroll Taxes			EFT
Alan Gardner	Moving Expenses (<i>paid per final contract</i>)		\$10,000.00	10205
Appletree Answers	Answering service			CC
AT&T	Internet; Phone/Fax			CC
AT&T	Phone			CC
AT&T	Phone			CC
AT&T Mobility	Cell Phones; iPads			CC
Bud's Tri-County Tree Services, Inc.	Tree Service - 3932 Kings Way		\$1,400.00	10206
BSK	Labs		\$135.00	10207
CalPers	Employee Contribution - Classic			
CalPers	Employee Contribution - Pepra			EFT
CalPers	Health		\$10,825.57	EFT
CalPers	Unfunded Liability - Classic		\$5,386.00	EFT
CalPers	Unfunded Liability - Pepra		\$0.17	EFT
CTA Engineering & Surveying	Well 7 Survey Deposit		\$5,000.00	10222
DEX.YP	Yellow Pages		\$15.50	CC
Emigh Hardware	Material/Supplies			
First Foundation Bank	Bond Payment (06/02/2021 - 12/02/2021) (<i>Pay Per Prior Approval</i>)		\$73,515.00	10203
GM Construction & Developers, Inc.	Leak Repair - 1840 Maryal Drive		\$2,181.42	10211
HydroScience Engineers, Inc.	Services Through 05/30/2021		\$7,923.75	10124
Inland Business Systems	Photocopy Machine			CC
Kronick, Moskovitz, Tiedemann & Girard	Services Rendered Through November 2021		\$4,230.74	10214
Legacy Cleaning Services	Maryl office		\$160.00	CC
MailRite	Billing Mailhouse (Nov.Dec. 2021 Flat Rate)		\$1,380.44	10219
Office Depot	Office Supplies		\$425.41	10215
Operational Technical Services (OTS)	Interim General Manager (<i>Service From 09/13/2021 - 09/17/2021</i>)		\$1,425.00	10209
PG&E	Gas		\$8.32	CC
Regional Government Services (RGS)	Staff Recruitment		\$807.30	10217
Robert Merritt	CPA - Services Through November 2021		\$675.00	10208
Sacramento Local Agency Formation Commission (LAFCO)	Special District Assessment 2021-2022		\$206.00	10218
Sierra Chemical Company	Chemicals		\$160.05	10216
Smud	Account# 6190159		\$4,718.91	CC
Smud	Account# 7000000179		\$1,472.11	10213
State Water Resource Control Board (SWRCB)	Drinking Water Program Fees (07/01/2021 - 06/30/2022)		\$12,216.52	10223
Streamline	Website		\$200.00	CC
Terrapin Technology Group	Software / Computers (General Manager)		\$1,265.15	10220
Uinta Holdings, LLC	February 2022 Rent		\$2,450.00	10224
Umpqua Bank	District Credit Card			
USA BlueBook	Well Parts		\$20.90	10210
USA BlueBook	Well Parts		\$89.22	10210
USA BlueBook	Well Parts		\$1,262.79	10210
VOYA	December Emp. Contribution		\$400.00	10225
Wex Bank	Gas		\$417.45	10221
White Brenner, LLP	Services Rendered Through November 2021		\$5,303.90	10212
White Brenner, LLP	Services Rendered Through October 2021		\$7,522.00	10212

MONTHLY TOTAL-----> \$7,923.75 \$183,199.62

**Del Paso Manor Water District
BOD Compensation Expense Summary
DECEMBER 2021**

DECEMBER 2021 MEETINGS		DOLK	MACIAS	MATTEOLI	PRATT	SAUNDERS
	Board Meetings					
12/7/2021	DPMWD - Regular Board Meeting	1	1	1	1	1
12/10/2021	DPMWD - Special Board Meeting	1	1	1	1	1
12/20/2021	DPMWD - Special Board Meeting	1	1	1	1	1
11/30/2021	DPMWD - Special Board Meeting	1	1	1	1	1
	ADHOC Committee Meetings					
	Finance Standing Committee Meeting					
	Succession Planning Committee (Macias)					
	Other Meetings					
	American Water Works Association (AWWA)					
	Association of California Water Agencies (ACWA)					
	Attorney Meeting					
	California Rural Water Authority (CRWA)					
	California Special District's Association (CSDA)					
	DPMWD - AB1234 Ethics Training					
	Regional Water Authority (RWA)					
	Sacramento Groundwater Authority (SGA)					
	Sacramento Suburban Water District (SSWD)					
	Sexual Harassment Prevention Training (AB1825)					
	Water Forum					
December Monthly Meeting Totals						
	TOTAL MEETINGS	4	4	4	4	4
	TOTAL COMPENSATED MEETINGS	4	4	4	4	4
	TOTAL COMPENSATION	\$400	\$400	\$400	\$400	\$400

ITEM #5D

A Resolution of the Board of Directors of the Del Paso Manor Water District and on behalf of Commissions and Committees created by the Board of Directors pursuant to Government Code section 54952(b) authorizing the Board's continued use of teleconference meetings in compliance with Assembly Bill 361 to continue to allow members of the public to safely participate in local government meetings.

RESOLUTION NO. 22-0104

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE DEL PASO MANOR WATER DISTRICT RE-RATIFYING THE PROCLAMATION OF A STATE OF EMERGENCY BY GOVERNOR'S ORDER DATED MARCH 4, 2020 AND AUTHORIZING REMOTE TELECONFERENCE MEETINGS OF THE LEGISLATIVE BODIES OF DEL PASO MANOR WATER DISTRICT PURSUANT TO BROWN ACT PROVISIONS.

RECITALS

WHEREAS, the Del Paso Manor Water District ("DPMWD") is committed to preserving and nurturing public access and participation in meetings of the Board of Directors; and

WHEREAS, all meetings of DPMWD legislative bodies are open and public, as required by the Ralph M. Brown Act, Government Code section 54950 et seq., so that any member of the public may attend, participate, and watch DPMWD's legislative bodies conduct their business; and

WHEREAS, Government Code section 54953(e), makes provision for remote teleconferencing participation in meetings by members of a legislative body, without compliance with the requirements of Government Code section 54953(b)(3), subject to the existence of certain conditions; and

WHEREAS, Government Code section 54953(e)(1) provides a legislative body may meet via teleconference if the Governor has proclaimed a state of emergency pursuant to Government Code section 8625 proclaiming the existence of conditions of disaster or of extreme peril to the safety of persons and property within the state caused by conditions as described in Government Code section 8558 and either (i) state or local officials have imposed or recommended measures to promote social distancing, (ii) the legislative body meets to determine by majority vote that, as a result of the emergency, meeting in person would present imminent risks to the health or safety of attendees, or (iii) the legislative body has voted as such and is meeting pursuant to that vote; and

WHEREAS, a legislative body's decision to meet pursuant to Section 54953(e) must be reevaluated and renewed at least every thirty (30) days and, in that time, the body must reconsider the circumstances of the state of emergency and find either (i) a state of emergency remains active and continues to directly impact the ability of the members to meet safely in person or (ii) state or local officials continue to impose or recommend measures to promote social distancing; and

WHEREAS, on March 4, 2020, Governor Gavin Newsom proclaimed a state of emergency pertaining to the threat to human health and safety posed by the COVID-19 virus pandemic and that proclamation remains in effect to this day statewide; and

WHEREAS, the virus has short- and long-term effects – fever and chills, cough, shortness of breath and difficulty breathing, fatigue, headache, nausea, vomiting, gastrointestinal issues, loss of taste and smell, death – and its prolific spread is severely impacting the health care system, inhibiting access to care for COVID-19 symptoms and other ailments; and

WHEREAS, while being vaccinated significantly decreases the likelihood of contracting or dying from the virus, vaccinated and unvaccinated people alike can carry, transmit, and be affected by the virus; and

WHEREAS, the COVID-19 virus, and its variants, is spread through the air when a person who is carrying the virus, whether he or she is showing symptoms or not, is in close proximity to another person; and

WHEREAS, while the COVID-19 virus remains present in the community, allowing members of the DPMWD's legislative bodies and members of the public to meet in person continues to present an imminent risk to attendee health and safety beyond the control of DPMWD services, personnel, equipment, and facilities; and

WHEREAS, pursuant to Government Code section 8635 et seq., the Board has the authority during a state of emergency to take all actions necessary to perform its functions in the preservation of law and order, preservation of the furnishing of local services, and protection of life and property, which includes the authority to direct meetings of all DPMWD legislative bodies to be held via teleconference pursuant to this Resolution; and

WHEREAS, the Board adopted Resolution No. 2021-07-12 on December 7, 2021, finding that the requisite conditions exist for DPMWD legislative bodies to hold meetings via teleconference pursuant to Government Code section 54953(e) and without compliance with Section 54953(b)(3); and

WHEREAS, the Board has reconsidered the circumstances of the state of emergency issued by the Governor, does hereby find emergency conditions persist in DPMWD's service area that directly impact the ability of meeting attendees members to meet safely in person, and desires for DPMWD legislative bodies to continue to meet pursuant to Government Code section 54953(e); and

WHEREAS, the Board does hereby find that DPMWD legislative bodies shall conduct their meetings pursuant to Government Code section 54953(e) by offering all meeting attendees access and an opportunity to comment via a teleconference and/or video conference option; and

WHEREAS, DPMWD has taken and is taking measures to ensure public access and opportunity to offer public comment, including by providing teleconference and/or video conferencing access to members of the public for all meetings of DPMWD legislative bodies.

NOW, THEREFORE, THE BOARD OF DIRECTORS OF DEL PASO MANOR WATER DISTRICT DOES HEREBY RESOLVE AS FOLLOWS:

Section 1. Recitals. The Recitals set forth above are true and correct and are incorporated into this Resolution by this reference.

Section 2. Proclamation of Emergency. The Board hereby proclaims that a state of emergency continues to exist throughout the DPMWD operating area.

Section 3. Ratification of Governor's Proclamation of a State of Emergency. The Board hereby ratifies the Governor of the State of California's Proclamation of State of Emergency, effective as of its issuance date of March 4, 2020, and applicable statewide.

Section 4. Remote Teleconference Meetings. The staff and legislative bodies of Del Paso Manor Water District are hereby authorized and directed to take all actions necessary to carry out the intent and purpose of this Resolution including, conducting open and public meetings in accordance with Government Code section 54953(e) and other applicable provisions of the Brown Act.

Section 5. Effective Date of Resolution. This Resolution shall take effect immediately upon its adoption and shall be effective until the earlier of (i) 30 days from its effective date, (ii) such time the Board of Directors adopts a subsequent resolution in accordance with Government Code section 54953(e)(3) to extend the time during which the legislative bodies of Del Paso Manor water District may continue to teleconference without compliance with paragraph (3) of subdivision (b) of section 54953, or (iii) the Board acts to rescind this Resolution.

I certify that the foregoing Resolution was adopted by the Board of Directors of the Del Paso Water District at a regular meeting held on the 4th day of January 2022, by the following vote:

AYES:

NOES:

ABSTAIN:

ABSENT:

Ryan Saunders, President
Board of Directors

ATTEST:

Alan Gardner, General Manager / Secretary

ITEM #8A

A resolution of the board of directors of the Del paso manor water district amending employee vacation policy to remove Vacation cap for certain employees.

RESOLUTION NO. 22-0104

**A RESOLUTION OF THE BOARD OF DIRECTORS OF THE
DEL PASO MANOR WATER DISTRICT
AMENDING EMPLOYEE VACATION POLICY TO REMOVE
VACATION CAP FOR CERTAIN EMPLOYEES**

WHEREAS, the Del Paso Manor Water District ("District") currently employs four staff members to carry out the administrative needs of the District; and

WHEREAS, the District's Paid Leave Policy limits the vacation that can be accrued for those employees hired after June 1, 2019 to a maximum of 150% of the annual vacation accrual rate available to those employees; and

WHEREAS, the small number of employees combined with the consequences of the COVID-19 pandemic have made the 150% vacation accrual limitation untenable, causing inefficiencies in staff coverage at certain times and undermining staff's ability to use their accrued vacation when necessary; and

WHEREAS, the District General Manager has concluded that the remaining provisions of the Paid Leave Policy, including the existing 50 day cap, sufficiently allocate vacation benefits to employees and that the District possess the reserves necessary to accommodate the future vacation days that will be accumulated by those same employees; and

WHEREAS, the District's Board of Directors considered the implications of removing the 150% vacation accrual limitation at their November 18, 2021 Special Meeting; and

WHEREAS, the District desires to increase employee flexibility and promote greater staff efficiency.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE DEL PASO MANOR WATER DISTRICT that the Board of Directors does hereby authorize the General Manager to amend the District Paid Leave Policy to remove the 150 percent vacation accrual cap for those employees hired after June 1, 2019, to be effective immediately.

I certify that the foregoing Resolution was adopted by the Board of Directors of the Del Paso Water District at a regular meeting held on the 4th day of January 2022, by the following vote:

AYES:

NOES:

ABSTAIN:

ABSENT:

Ryan Saunders, President
Board of Directors

ATTEST:

Alan Gardner, General Manager / Secretary

ITEM #8B

Discussion of Budget to Actuals

Del Paso Manor Water District
Expense Budget To Actual Comparison
July 1, 2021 to December 31, 2021

Notes

	Year to Date July 1, 2021 to December 31, 2021	Budget	Percent of Budget
Employee Related			
Management Salaries	28,853	120,000	24.04%
Staff Salaries	93,140	195,787	47.57%
Director Fees	6,900	20,000	34.50%
Payroll Taxes	10,464	25,688	40.73%
PERS Retirement	40,261	80,000	50.33%
Health	30,293	94,632	32.01%
Retiree Health Benefits & OPEB	33,507	108,000	31.03%
Total Employee Related	243,418	644,107	37.79%
Administration			
Insurance	28,308	18,850	150.18%
Office Expense	36,482	65,320	55.85%
Audit Fees	-	11,500	0.00%
Legal Fees	23,050	40,000	57.63%
Litigation Settlement	20,000	Not budgeted	N/A
Miscellaneous	1,117	1,000	111.70%
Professional Administration Fees	33,131	32,200	102.89%
Bank Charges	949	300	316.33%
Professional Dues	46,616	41,950	111.12%
Professional Meetings	1,618	1,000	161.80%
Cert/Continuing Education	-	2,000	0.00%
Total Administration	191,271	214,120	89.33%
Operations			
Power	40,280	82,400	48.88%
Repairs & Maintenance	67,673	125,100	54.10%
Lab Fees	667	18,000	3.71%
Backflow Program	967	Not Budgeted	N/A
City Water	-	5,900	0.00%
Total Operating	109,587	231,400	47.36%
Total Employee Related, Administration and Operating Expenses	544,276	1,089,627	49.95%
C.I.P.			
New Pipeline	-	10,000	0.00%
Miscellaneous	4,085	10,000	40.85%
New Well/Well Additions/Generators	-	68,000	0.00%
Well Maintenance	-	25,000	0.00%
Interest Expense & Principal Debt Payment	73,525	335,300	21.93%
Total C.I.P.	77,610	448,300	17.31%
Total water sales through December 2021	717,281		
Planned system maintenance charges through December 2021	294,906		

Note 1 Payroll amounts are only through December 15, 2021, as the December 31, 2021 payroll activity was not available when this report was created.

Amounts above are not audited

July to

	<u>December 2021</u>	<u>Budget</u>	<u>Percentage of Budget</u>
Employee Related			
5102.10 · Management salaries	28,853.00	120,000.00	24.04%
5102.15 · Field salaries	64,921.00	135,611.00	47.87%
5102.20 · Office manager salary	28,219.00	60,176.00	46.89%
5102.05 · Director fees	6,900.00	20,000.00	34.50%
5102.30 · Payroll soc sec	8,119.00	20,819.00	39.00%
5102.35 · Payroll medc	2,345.00	4,869.00	48.16%
6451.00 · PERS/retirement	40,261.00	80,000.00	50.33%
6501.00 · Employee healthcare (CalPers)	30,293.00	94,632.00	32.01%
6502.00 · Retiree health benefits	33,507.00	63,000.00	53.19%
6441.00 · OPEB	0.00	45,000.00	0.00%
Administration			
5251.00 · Insurance			
 5251.05 · Liability	22,523.00	13,000.00	173.25%
 5251.10 · Property	3,047.00	2,350.00	129.66%
 5251.15 · Workers Compensation	2,739.00	3,500.00	78.26%
6151.00 · Office expense			
 6151.05 · District office lease	15,080.00	26,000.00	58.00%
 6151.10 · Phone service	1,810.00	4,300.00	42.09%
 6151.15 · Internet provider	2,477.00	2,600.00	95.27%
 6151.20 · Sewer & garbage (Lusk)	571.00	1,000.00	57.10%
 6151.21 · Miscellaneous (office other)	2,143.00	Not budgeted	N/A
 6151.25 · Postage	3,659.00	9,000.00	40.66%
 6151.30 · Printing	152.00	2,500.00	6.08%
 6151.35 · Computers & supplies	2,300.00	1,500.00	153.33%
 6151.40 · Office supplies	2,579.00	4,000.00	64.48%
 6151.45 · Answering service	2,695.00	7,000.00	38.50%
 6151.55 · Payroll preparation	627.00	1,500.00	41.80%
 6151.60 · GASB 75 valuation	1,350.00	4,000.00	33.75%
 6151.70 · Janitorial	1,040.00	1,920.00	54.17%
6251.00 · Audit	0.00	11,500.00	0.00%
6301.00 · Legal	23,050.00	40,000.00	57.63%
6615.00 · Litigation settlement	20,000.00	Not budgeted	N/A
6401.00 · Misc	1,117.00	1,000.00	111.70%
6601.00 · Professional Admin fees			
 6601.05 · SWRCB annual fees	0.00	9,700.00	0.00%
 6601.10 · NDPES permit	0.00	1,500.00	0.00%
 6601.15 · Cal Pers actuarial reports	700.00	700.00	100.00%
 6601.25 · Air Quality permits	0.00	2,300.00	0.00%
 6601.35 · CPA fees	4,995.00	18,000.00	27.75%
 6601.40 · General manager consultant fees	16,696.00	Not budgeted	N/A
 6601.45 · Regulatory costs	383.00	Not budgeted	N/A
 6601.00 · Professional admin fees - other	10,357.00	Not budgeted	N/A

6171.00 · Bank fees	949.00	300.00	316.33%
6561.00 · Professional dues			
6561.05 · AQUA	9,735.00	7,200.00	135.21%
6561.10 · AWWA	513.00	450.00	114.00%
6561.15 · CSDA	6,980.00	6,100.00	114.43%
6561.20 · CRWA	680.00	800.00	85.00%
6561.2 · RWA	7,303.00	9,700.00	75.29%
6561.30 · SGA	20,847.00	17,200.00	121.20%
6561.35 · SAWWA	0.00	500.00	0.00%
6561.00 · Professional dues - other	559.00	Not budgeted	N/A
6551.00 · Professional meetings	1,618.00	1,000.00	161.80%
6610.00 Certification/continuing education	0.00	2,000.00	0.00%
Operations			
5151.00 · Power			
5151.05 · PG&E	57.00	2,400.00	2.38%
5151.10 · SMUD	40,223.00	80,000.00	50.28%
5201.00 · R & M			
5201.05 · Leak repairs	41,971.00	60,000.00	69.95%
5201.10 · Field Equipment	237.00	800.00	29.63%
5201.15 · Field supplies	11,028.00	500.00	2205.60%
5201.20 · Fuel for vehicles	2,011.00	3,200.00	62.84%
5201.25 · Vehicle repair and maintenance	328.00	3,000.00	10.93%
5201.30 · Temporary Help	0.00	2,000.00	0.00%
5201.35 · Chlorine	4,658.00	6,500.00	71.66%
5201.45 · Well repair & maintenance	5,050.00	35,000.00	14.43%
5201.55 · Field staff cellular service	2,389.00	3,300.00	72.39%
5201.60 · Tesco Services Contract (Well #8)	0.00	3,800.00	0.00%
5201.65 · Auqua Sierra Service Contract	0.00	7,000.00	0.00%
5301.00 · Lab fees (H2O testing)	667.00	18,000.00	3.71%
5451.00 · City water	0.00	5,900.00	0.00%
5452.00 · Backflow program	967.00	Not budgeted	N/A

ITEM #8C

Discussion/Approval of Proposal For District Engineer.



DEL PASO MANOR WATER DISTRICT BOARD SPECIAL MEETING STAFF REPORT

MEETING DATE: January 4, 2022

AGENDA ITEM 8.C: Discussion/Approval of Proposal For District Engineer.

Two firms submitted proposals, HydroScience and Forsgren.

Both presentations demonstrate quality talent and reasonable pricing.

HydroScience has recent experience with the District with its Technical Memorandum which is in the process of being finalized. Its primary contact person led the Forsgren team that did Well 6B and the updated pipes along Eastern.

Forsgren has a long history of working with the District in planning for the Phase 2, 3 and 4 Master Plan updates and studies for the 2017 Capital and O&M rate case.

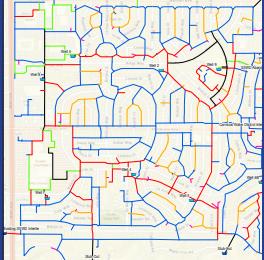
If HydroScience were selected it would have access to the prior Forsgren studies owned by the District.

Forsgren has one advantage that HydroScience can't match. A year ago Forsgren hired Rich Bolton. Bolton has 30 years experience in the field and as field manager for the District. As Forsgren noted in their Proposal, he knows where the three left-handed valves are as well as a detailed memory that is highly valuable to the tasks of daily and longer term work. This is particularly true since the Board in place in 2019 threw out about 800 lbs of District records, which equates to about 200,000 pages. Many things we might have known about our infrastructure no longer exist. This makes Bolton's knowledge particularly valuable.

RECOMMENDATION

The determining factor for staff was Bolton. For that reason, we recommend the Board choose Forsgren as District Engineer.

**STAFF RESPONSIBLE FOR REPORT: Alan Gardner, General Manager
01/04/2022**



Proposal for
District Engineer

December 22, 2021

HydroScience A logo for HydroScience, consisting of the company name in a bold, blue, sans-serif font next to a stylized blue water droplet icon.

December 22, 2021

HydroScience Engineers, Inc.
10569 Old Placerville Road
Sacramento, CA 95827
916.364.1490

Alan Gardner, General Manager
Del Paso Manor Water District
1817 Maryal Drive, Suite 300
Sacramento, CA 95864

Subject: Proposal for DPMWD District Engineer

Dear Mr. Gardner:

HydroScience Engineers (HydroScience) welcomes the opportunity to continue our work with the Del Paso Manor Water District (District) to assist in improving the District's water supply and distribution system and further its mission of maintaining a reliable and safe water supply to its customers.

The enclosed proposal details our proposed team, their experience, the related experience of our firm, our understanding of District needs, and our approach to addressing those needs. Our proposed Project Manager and District Engineer will be Ligaya Kohagura, PE. Ligaya served as Project Manager on the recent 2021 Amendment to the 2009 Water Master Plan and previously managed the Well 6B Design and Small Water Main Replacements. She leads planning efforts and manages the design of a wide range of potable water system projects and is active in the Sacramento Area Water Works Association (SAWWA). Ligaya has a strong understanding of the District's system and the unique challenges and issues associated with this system and neighboring local water utilities. Ligaya will be supported by a comprehensive civil, mechanical/process, electrical, instrumentation & control, and structural engineering team as well as GIS and hydraulic modelers who are well suited and ready to implement District work requests. We will additionally draw upon our network of talented local specialty subconsultants as-needed to address a broad range of District needs.

Most key members of our team are local to the District and can travel to the District office and work sites in less than 15 minutes. Many of these key individuals supported Ligaya on the Water Master Plan Update project as well as similar water system rehabilitation and new facility design projects (pipes, wells, tanks, pumps, and appurtenances) and routinely work together as a cohesive team. The District will benefit from our committed team of local, responsive, multidisciplinary engineers and support staff who bring momentum and enthusiasm to every effort.

Given our team's depth and breadth of experience and its proximity to the District, HydroScience believes we can provide exceptional value to the District in this role. Should you have any questions, please contact me at (916) 273-6035 or at bslenter@hydroscience.com.

This proposal is valid for 90 days.

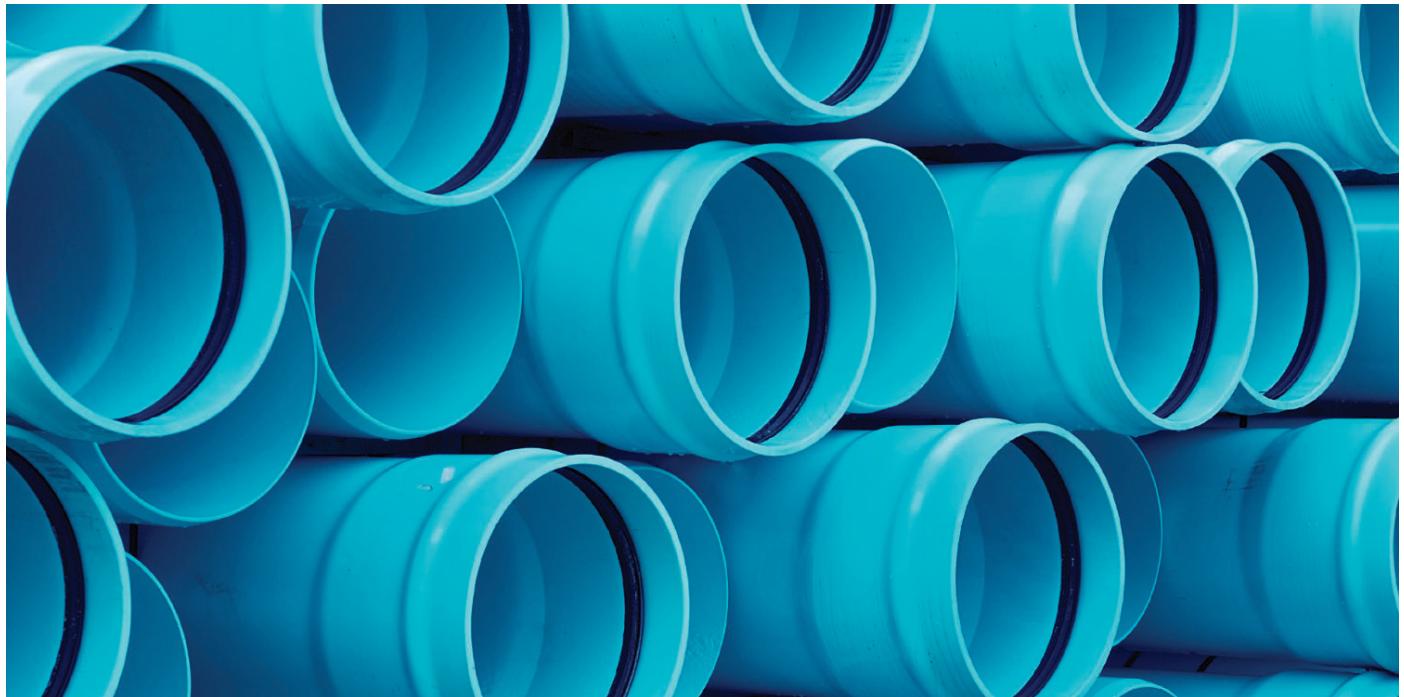
Sincerely yours,
HYDROSCIENCE ENGINEERS, INC.



Bill Slenter, PE
Principal

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SCOPE UNDERSTANDING

This section presents HydroScience's understanding of Del Paso Manor Water District (District) needs and our approach to addressing those needs in the District Engineer role via on-call work requests. Our understanding is based on a review of the RFP, our knowledge of the District's water system, and our experience completing the Draft 2021 Amendment to the 2009 Water Master Plan (2021 WMP Update). The team we have proposed for the District Engineer role includes the same key team members who worked together to prepare the 2021 WMP Update earlier this year.

Background

The District's 1.3 square mile service area and 1,800 connections are provided potable water service sourced from eight drinking water wells, two of which are on standby due to levels of contamination. Water for consumption and fire flow is distributed through a well-looped but aging distribution system of largely backyard water mains over 50 years old. The northeastern area of the District has experienced the most failures and is constructed of steel pipe suspected to be sourced from inferior materials. A good portion of the remaining residential area is served by asbestos cement (AC) pipe. The backyard location of most mains prevents a straightforward meter retrofit project, and thus, recommended improvements include installation of new mains in roadways as part of any metering project. The inability to cost-effectively meter residential services presents a potential hurdle to introducing surface water supplies from neighboring agencies. Existing main diameters are also insufficient for conveying peak fire flows and restrict contemplated future surface water connections since most mains are 6-inches in diameter or below.

The 2021 WMP Update, recently prepared by HydroScience, supplements the 2009 WMP and included the following near-term recommendations to meet the District's water supply, conveyance, and reliability goals:

- The current well system firm capacity with the largest well (Well 9) on standby meets the updated Maximum Day Demand (MDD) but does not meet this demand plus the peak fire flow of 3,500 gpm required by the largest commercial customer, AT&T.

- The solution to the above issue is activation of additional water supply combined with spot improvements (enlargements) of selected segments of distribution piping. Additional supply can be achieved with new well(s), rehabilitation/re-boring of existing well(s), and/or utilization of interties to wheel surface water supply into the system.
- Additional fire hydrants should be installed in various locations of the distribution system to address excessive spacing between hydrants in certain areas.
- Other well improvements, such as installation of a backup generator, are needed to improve redundancy and reliability.
- Intertie improvements are needed to provide supplemental and emergency water to the system.

Additionally, the 2021 WMP Update pointed to key recommendations in the 2009 WMP including main replacements and relocation to public rights of way. HydroScience will be finalizing the 2021 WMP Update to address District comments including PCE plume evaluation, implementation of surface water supply, and future replacement of backyard mains coinciding with implementation of residential metering.

HydroScience is well-suited to apply our current knowledge of the District's system and our practical and creative mindset to work in partnership with the District to meet these urgent objectives in a highly responsive, collaborative way.

- The District currently faces several challenges to implementing the recommended near-term system improvements: 1) the extent of needed urgent system improvements, 2) limited ratepayer base and 3) escalating costs of construction. Furthermore, the District is in the process of responding to Grand Jury recommendations calling for urgent resolution of system issues. The District is currently addressing the most immediate and affordable system improvements. The District recently hired a new General Manager who is tackling urgent system needs with an emphasis on prioritization, expediency, and cost-effectiveness. The District is seeking consulting services to provide District Engineering services in close partnership with the General Manager to support ongoing system planning, troubleshooting, and the design/construction of improvements.

Capabilities

HydroScience is well-suited to apply our current knowledge of the District's system and our practical and creative mindset to work in partnership with the District to meet these urgent objectives in a highly responsive, collaborative way. Key HydroScience benefits include:

- Our proposed Project Manager / District Engineer, Ligaya Kohagura, recently led the effort to prepare the 2021 WMP Update. Prior to joining HydroScience, Ligaya managed the design and construction of the District's Well No. 6B, as well as several small water main improvement projects. From this experience, she brings significant system and District knowledge to bear.
- Ligaya served for several years on the Sacramento Area Water Works Association (SAWWA) board and as Past President. She is very familiar with the District's and Sacramento water utilities' unique challenges and the issues associated with conjunctive use, fluoridation, metering, and water conservation.
- Ligaya will be supported by a broadly experienced team of HydroScience support staff, including experts on DDW regulatory support, water quality, hydraulic modeling, GIS, pipeline design, well rehabilitation and design, electrical, instrumentation and controls, trenchless and open-cut construction, and structural engineering. We bring a full suite of engineers and experts needed to implement contemplated planning, design, construction oversight and support, and O&M support needed to serve effectively in the District Engineer role.
- The support team includes two senior engineers carrying California-certified water system operator licenses. Mary Hoang, Grade D5/T4 has expertise in water utility management, water quality, drinking water regulations, distribution, treatment, and water resources. Sim Blake, Grade T4, has expertise in water treatment, storage, and distribution facilities which includes wells and wellhead treatment. Mary and Sim are available to provide key expertise to the District in addressing treatment and distribution issues including O&M and regulatory problem-solving.
- All of HydroScience's proposed key staff are local to Northern California, many based in our Sacramento office, which is less than 15 minutes from the District's office. Our proximity will facilitate a high degree of responsiveness, more time spent at District offices and in the field providing on-the-ground support, and a deeper understanding of local and state requirements driving key decisions.

Our proximity will facilitate a high degree of responsiveness, more time spent at District offices and in the field providing on-the-ground support, and a deeper understanding of local and state requirements driving key decisions.

HydroScience has been providing engineering services for water projects to northern California government agencies since 1997. Since our inception, we have

provided various types of engineering services to our clients including: planning, design, hydraulic modeling, and construction management/inspection.

We have been working for many of these clients for over a decade. The foundation of our business is to focus on doing exceptional work at a fair price for our clients. This has resulted in significant repeat work for many of our clients, including the following:

- El Dorado Irrigation District: 26 projects
- San Jose Water: 42 projects
- City of Foster City: 21 projects
- City of Sunnyvale: 21 projects

A unique feature of HydroScience is how we combine our engineering expertise with operations input and the maintenance needs of our clients. We have proven time and again that our team can work together to plan and design projects not just from an engineering perspective but with an eye for operating and maintaining the project years from now. Ultimately, we strive to design projects to be long lasting, easy and efficient to operate and maintain, and to be advertised and constructed with few surprises, and with minimal change orders.

HydroScience provides a broad range of internal expertise and capabilities which includes planning, design, and construction support and encompasses civil, mechanical, process, electrical, instrumentation and controls, and structural engineering (provided by subconsultant VE Solutions) for water wells, pipes, services, control stations, tanks, and booster pumps. We are experienced in a wide range of new facility and rehabilitation construction approaches. We work closely with construction contractors and have a keen understanding of how to maximize constructability and cost-effectiveness. We work closely with O&M staff to implement practical solutions with operability and maintainability in mind.

As indicated in the RFP, the District Engineer role may require incorporating or helping the District to obtain specialty services from one or more subconsultants. HydroScience has strong ongoing relationships and established master service agreements with many local, responsive, high-quality subconsultants and can very quickly bring them on board to address District needs. Table 1 summarizes HydroScience capabilities and the types of specialty subconsultant services we can additionally offer to incorporate or help the District to procure.

On-Call Services Approach

As District Engineer, HydroScience anticipates providing general ongoing consultation to the General Manager on an on-call basis, attending Board Meetings and assisting with technical presentations, and responding to on-call task order requests for planning, evaluation,

design, and construction support efforts. This section describes our approach to responding to on-call task order requests from the District. HydroScience will respond to task order requests by taking the following steps to define, staff, execute, check, and support project efforts in a reliable, responsive, and predictable manner:

Identify Needs, Objectives, and Constraints. Meet with management and O&M staff. Review background materials. Visit the project site, carefully inspect existing conditions, evaluate site constraints for contemplated improvements, discuss proposed approaches with District staff, and listen closely to their input and concerns. Establish project needs. Identify key objectives and critical constraints such as budget and schedule limitations, facility shutdown restrictions, permitting requirements, District policies, and ratepayer concerns.

Table 1: Summary of Capabilities

HydroScience Team Capabilities	Additional Subconsultant Services
<ul style="list-style-type: none"> • Civil Engineering • Mechanical / Process Engineering • Electrical, Instrumentation & Controls Engineering • Structural Engineering (VE Solutions) • Hydraulic Modeling • GIS Mapping • Engineering Services During Construction • Construction Management and Inspection • Planning • Detailed Design • Document Certification • Standard Detail Development • Cost Estimating • Water Quality Analysis • Well Evaluation • Regulatory and Permitting Support • Agency and Easement Coordination • RFP Development • Board Meeting Attendance • Engineering Support to Public Outreach • Consumer Confidence Report Preparation 	<ul style="list-style-type: none"> • Supplemental and Specialty Inspection • Materials Testing • Geotechnical Engineering • Topographical Surveying • Advanced Hydrogeology • Environmental Consulting • Potholing • Pipeline Testing <p>Note: HydroScience will leverage our strong ongoing relationships with high-quality local subconsultants to fill the above roles as District needs arise. We will provide firm and staff qualification details, rates, scopes, and fees for specialty subconsultant firms required to complete District work requests.</p>

Collaborative Scoping. Develop a proposed scope based on needs evaluation, District input, system knowledge, and relevant recent experience. Incorporate key constraints and project objectives. Phase the project in a strategic manner, incorporating key planning or design development milestones as checkpoints for District reviews, workshops, and gathering of input. Provide sufficient scope detail to present a clear roadmap for project completion. Clearly identify assumptions and work by others. Review with the District and incorporate input.

Staff and Oversee the Project. Assign staff and, when required, subconsultants best qualified to execute each project. Commit sufficient key and support staff bandwidth to meet schedule objectives. Monitor and adjust staffing levels promptly as required to meet schedule.

Execute the Project. Implement the project in accordance with the scope and work plan. Ligaya Kohagura, as Project Manager, will closely coordinate with the General Manager throughout each effort. Key decision makers and stakeholders will be identified and coordinated with by our local Sacramento-based staff.

Manage Quality. Perform internal QA/QC checks of all deliverables by a qualified senior staff member who is independent from the project team. Check for errors, omissions, code compliance, prior District comment implementation, bidder clarity, inter-disciplinary coordination, constructability, cost-effectiveness, operability, and maintainability. Document all comments and responses and update deliverables with corrections prior to submittal to the District.

Maintain Budget and Schedule. Continuously monitor budget utilization in our real-time accounting system, and monitor schedule using a task breakdown structure in Microsoft Project. Make timely adjustments to project execution strategies to mitigate any deviations before they impact the project. Communicate status frequently to the District.

PROJECT TEAM



Ligaya Kohagura, PE
Project Manager/
District Engineer
Civil Engineer, CA,
No. 56463
Location: Sacramento

Manager for the Well 6B Design and Small Water Main Replacements. Ligaya will bring her familiarity with the

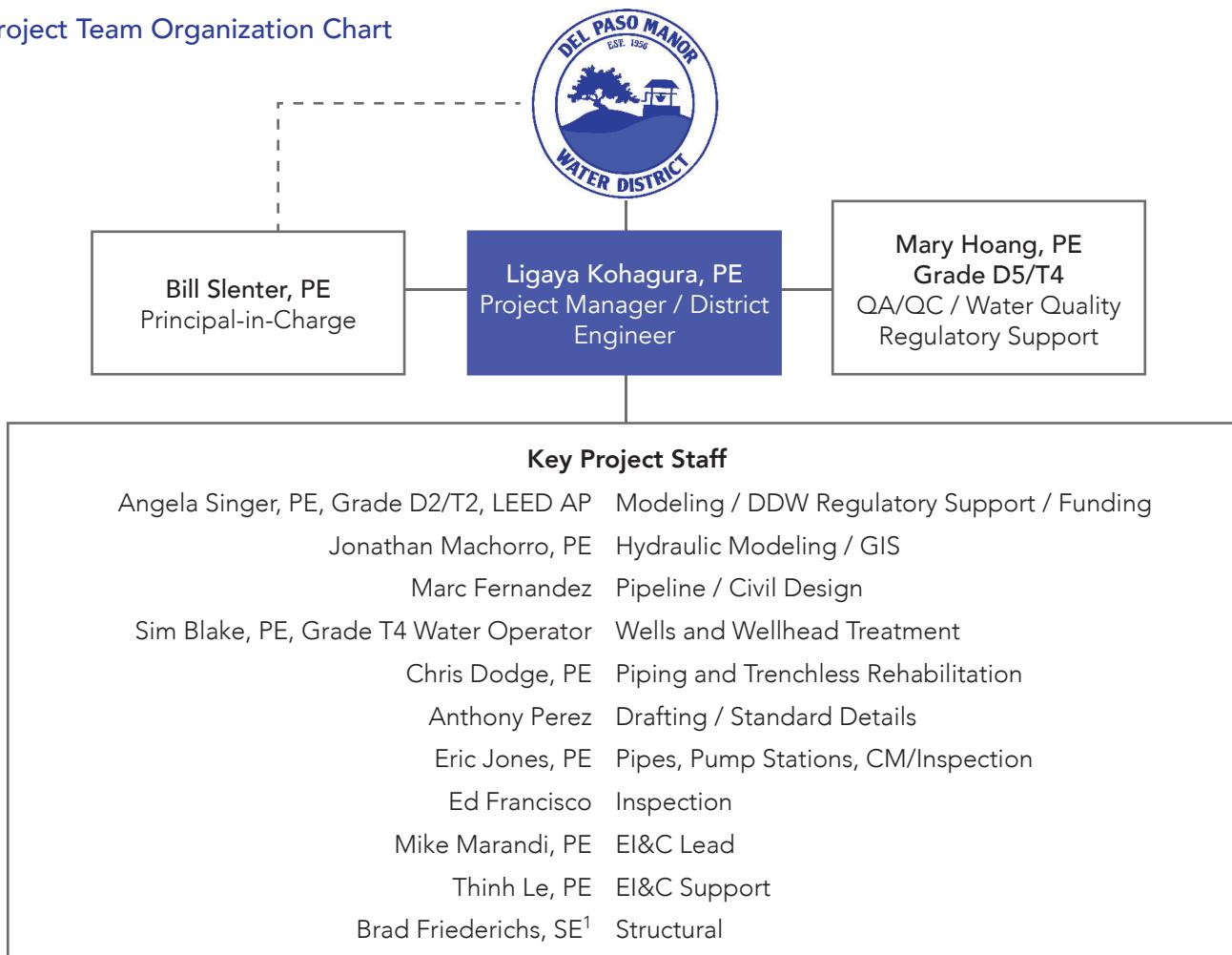
HydroScience is proposing a focused and experienced team of planning and design engineers led by Senior Project Manager Ligaya Kohagura. Ligaya has 29 years of experience with water and wastewater planning and design projects, and has successfully managed many projects of equal or greater complexity and magnitude. She is currently serving as the District's Project Manager for the 2021 WMP Update and previously served as Project

District and its neighboring stakeholders to facilitate collaborative discussions that lead to efficient results and project success. Ligaya's recent experience also includes serving as Project Manager for the Lytton Rancheria Water Treatment and Storage Facilities and for Folsom's Zone 3 and Zone 4 Potable Water Storage Tanks.

Ligaya will be supported by an experienced team of engineers with water infrastructure experience. This team, shown in the organization chart below, has worked together on the projects described in the Experience section. Key individuals will not be substituted with other personnel without the Districts prior approval

The following pages include brief biographies for each team member. More detailed resumes are in the appendix.

Project Team Organization Chart



Summary of Team Qualifications



Bill Slenter, PE
Principal-in-Charge
Civil Engineer, CA
No. 57640
Location: Sacramento

A Principal with HydroScience and manager of our Sacramento office, Bill has 29 years of experience on a wide range of water and wastewater utility and design projects. He has overseen several water planning projects including the District's 2021 WMP Update. He was Principal-in-Charge for Manteca's TCP Mitigation Project (wellhead treatment), Lytton Rancheria Water Treatment and Storage Facility, SSWD¹ Condition Assessment Main Replacement Area (MRA) 03B, and is providing QA/QC for Hayward's Water Line Improvements.



**Mary Hoang, PE,
Grade T5/D4**
QA/QC / Water Quality and
Regulatory Support
Civil Engineer, CA
No. 58997
Grade D5 Water Distribution
Operator; Grade T4 Water
Treatment Plant Operator
Location: San Jose

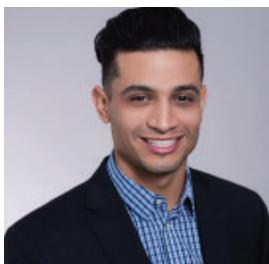
Mary Hoang has 30 years of experience in civil engineering. Her areas of expertise are water utility management, water quality, drinking water regulations, water distribution, water treatment, recycled water, and water resources. Mary has worked for both public and private water utilities, and her experience spans from engineering capital and development projects to operations and maintenance of potable water systems. She has an extensive background in water quality and has chaired many committees on this subject. Relevant experience includes: San Jose's Operations & Maintenance Manager, NPDES Compliance and Reporting and Project Manager for Sunnyvale's Water Quality Monitoring Plan and Ongoing Regulatory Compliance Support Services. She served as QA/QC / Water Quality Support for the 2021 WMP Update.



**Angela Singer, PE,
Grade T2, LEED AP**
Modeling / DDW Regulatory
Support / Funding
Civil Engineer, CA No. 70316
Grade T2 Water Treatment
Plant Operator
Location: Berkeley

Angela has 16 years of experience serving as project manager, and project engineer, on a variety of water, wastewater, and recycled water projects including feasibility studies, permitting, and the modeling of water systems. She has prepared NPDES Low Threat Permits, Reasonable Potential Analysis, Water Quality Monitoring Plans, Consumer Confidence Reports, CEQA documentation, and additional quality and permitting documentation for a variety of clients throughout Northern California. She has been instrumental in preparing and obtaining permitting documentation for several significant Bay Area projects. She provided key technical support to the 2021 WMP Update.

1. Sacramento Suburban Water District



Jonathan Machorro, PE
Hydraulic Modeling / GIS
Civil Engineer, CA
No. 83843
Location: Berkeley

Jonathan has eight years of experience as Project Engineer on a variety of water, wastewater, and recycled water planning and design projects. In particular, Jonathan has extensive experience with ArcGIS as well as hydraulic modeling of both closed pipe and open channel networks. Jonathan has worked on numerous planning projects throughout Northern California, including San Jose Municipal Water System Master Plan, Folsom Heights Facility Plan Report, Foster City Water Distribution System Master Plan Study, and the Grandpark Water Master Plan. He is currently providing on-call hydraulic modeling services for the Cities of Sunnyvale and Santa Clara. Additionally he is served as Hydraulic Modeling / GIS Lead for the District's 2021 WMP Update.



Marc Fernandez
Pipeline / Civil Design
Location: Sacramento

Marc is a Project Manager and Project Engineer with 15 years of experience. His focus is on planning, design, permitting, agency coordination, and field support for pipelines, pump stations, and related water/wastewater infrastructure. Marc has experience in pipeline/wet utilities design, plans and profiles in Civil 3D, project coordination with local, county, and state agencies and related permitting, construction oversight and owner's representation, development plan reviews, capital improvement plan development, grant funding assistance, client staff augmentation, and roadway design including grading, street improvement, drainage, and related permitting. Marc was the pipeline engineer for the Manteca TCP Mitigation project.



Sim Blake, PE, Grade T4
Water Operator
Wells and Wellhead Treatment
Civil Engineer, CA
No. 53955
Grade T4 Water Treatment Operator
Location: Sacramento

Sim is a Principal with HydroScience and is a licensed Grade T4 Operator. He has 30 years of experience planning, design, and construction management of water treatment, storage, and distribution facilities. He has managed or led numerous project evaluations, studies, and designs for wells, conventional and advanced ground and surface water treatment plants, water tanks, pump stations, and numerous pipeline projects. He served as project manager on the City of Livingston's TCP 1, 2, 3 Removal Project and Kishi Water Production and Treatment Facilities , and is assisted with DDW permitting on the Manteca TCP Mitigation project.



Chris Dodge, PE
Piping and Trenchless
Civil Engineer, CA No. 43650
Location: Berkeley

Chris is a senior Project Manager with 37 years of experience designing, managing, and constructing water and wastewater projects. His areas of expertise include distribution and transmission pipeline replacement within public streets and easements, alignment alternatives analysis, and open trench and trenchless construction management. He's serving as Project Manager for SSWD's Condition Assessment Main Replacement Area (MRA) 03B and DSRSD's² Camp Parks Water Main Improvements. He was formally EBMUD's³ Infrastructure Renewal Program's Manager.



Eric Jones, PE
Pipes, Pump Stations, CM/
Inspection
Civil Engineer, CA No. 68550
Location: Sacramento

A Senior Project Manager, Eric has over 21 years of experience in water planning, design, and construction. He has experience in all aspects of water infrastructure projects, including pipeline design, treatment plants, pump stations, feasibility studies and hydraulic modeling. Eric worked with the City of Folsom on a number of projects, including serving as Project Engineer for the Willow Hill Pipeline Rehabilitation project, and as Construction Manager for the Willow Hill and Hinkle Creek pipeline projects. He also served as Project Engineer for Elk Grove Water District's Well 13 Rehabilitation and Treatment.



Ed Francisco
Inspection
Cross Connection Control
Specialist Certification
No. 2429
Location: Berkeley

Ed has more than 30 years of experience serving as project manager, project engineer, construction manager, and construction inspector on various water reclamation, water treatment plant design, and retrofit design projects. Ed is also a certified cross connection control specialist, certified backflow tester, and has managed the construction and supported project implementation efforts for over 300 site retrofits. Recent related project experience includes the Spanish Flat and Berryessa Pines Water System Improvements for Spanish Flat Water District and Berryessa Pines Water System, and the Kishi Water Production and Treatment Facilities for the City of Livingston.



Mike Marandi
EI&C Lead
Electrical Engineer, CA
No. E14505
Location: Sacramento

Mike has 40 years of experience in the engineering and design of electrical, instrumentation and SCADA systems. He is highly experienced in SCADA, PLC, and DCS systems, power distribution, electrical system protection and safety features, and lighting, and the majority of his projects have been for municipal water/wastewater facilities. His knowledge extends from planning to conceptualization of system architecture utilized in engineering and control systems integration. A few of Mike's recent projects include Lytton Rancheria's Water Treatment and Storage Facility, Manteca's TCP Mitigation Project, and Elk Grove Water District's Well 13 Rehabilitation and Treatment.

2. Dublin San Ramon Services District
3. East Bay Municipal Utility District



Thinh Le, PE
El&C Support
Electrical Engineer, CA
No. E18362
Location: Sacramento

Thinh Le has 17 years of experience in electrical engineering for various water and wastewater projects across California and Vietnam. He has worked in both electrical and instrumentation roles on design and construction management projects and has a strong working knowledge of electrical project development from analysis, site layout, single line design, lighting, emergency and standby power, motor controls, and utility coordination. Thinh has had key roles in the Cordova Hills Special Planning Area for Rancho Cordova, Sunnyvale's Wolfe- Evelyn Water Plant Reconstruction, and Lytton Rancheria's Water Treatment and Storage Facility.



Anthony Perez
Drafting / Standard Details
Autodesk Certified Professional
Location: Sacramento

Anthony Perez is an Autodesk Certified Professional drafter with 14 years of experience. He has extensive knowledge of steel pipe fabrication for the waterworks industry and is an experienced drafter with knowledge of AutoCAD, Civil 3D, and both two and three dimensional process pipe design. Recently he has provided drafting for the following projects: Hayward's Water Line Improvements, DSRSD's Camp Parks Water Main Improvements, Folsom's FPA and FSAG Pipeline and Pump Station, and Gilroy's First Street Water Line.



Brad Friederichs, SE
Structural
Structural Engineer, CA
No. S2780
Location: Sacramento

Brad has 38 years of experience as a structural engineer for wastewater, water treatment, commercial, industrial, agricultural, retail and residential structures. His expertise is in cast-in-place concrete, prestressed concrete, steel, wood and masonry construction. His specialty is in producing completely detailed, contractor friendly, value-oriented construction documents resulting in projects that bid well with few change orders. His recent experience includes structural engineering for Sunnyvale's Wolfe- Evelyn Water Plant Reconstruction, Manteca's TCP Project, and Lincoln Oaks Storage Tank, Pump Station, and Transmission Pipeline for California American Water Company.

Recent Related Team Experience

The following table summarizes our key team member's roles in recent related project work. All of these projects include elements that are similar to anticipated District projects.

Key Team Members												
Projects	Roles											
EMID/Foster City Water Distribution System Master Plan			PM	PE	HM			QA				
San Jose Water (SJW) Master Plan			PM	PE	HM							
Mountain View Water and Sewer Master Plan			PR	PM	HM				TX			
DPMWD Well 6B Design and Small Water Main Replacements		PM										
DPMWD Update 2009 Master Plan	PR	PM	QA	TX	HM							
Manteca TCP Mitigation Project	PM	QA				PE	TX	DR		LE	EE	SE
Elk Grove Water Department Well 13 Rehab and Treatment						PR		PE		LE		
Gilroy First Street Water Line	TX	PM	PR	RS				DR		LE		
Bickford Ranch Water Storage Tank, Pump Station, and Transmission Pipeline		PM		HM		PE	TX	DR		LE	EE	SE
LAVWMA Export Pump Station, Storage, and Pipeline	PM				GS			PE			EE	
SSWD Condition Assessment Main Replacement	PR	QA			HM		PM					
SJWD WTP On-Site Residuals Management	PR	QA				PE		DR	PM			
Sunnyvale Water Line Replacements			PR	PM								
DSRSD Camp Parks Water Main		QA			HM		PM	DR				
Santa Rosa Fire Related Repairs	QA			RS			DR	PM		QA	LE	
Sunnyvale On-Call Water Quality and Regulatory Support			PR	PM								
Sunnyvale Wolf Evelyn Water Plant Reconstruction			PR	RS						LE	EE	SE
Davis Community Park Irrigation & Well Conversion	PR	PM				TX				LE		SE
Morgan Hill East Dunne Water Main		PM	PR	RS			DR					
Folsom Willow Hill Water Pipeline Rehab	PR	PE					DR	PM				SE
Folsom Heights Water Booster Pump Station		PM								LE		
Cordova Hills Special Planning Area Water Tank and Pump Station and Sewer Pump Station		PE					TX	DR		LE	EE	SE
Soquel Creek Water District Granite Way Well			PM			PR	DR			LE		
San Bruno Crestwood Pump Station Rehabilitation	PR				PE		PM		LE			

Role Key

PR Principal-in-Charge | PM Project Manager | PE Project Engineer | LE Lead Electrical | EE Electrical Engineer |
 QA QA/QC Review | TX Technical Expert | DR Drafting | HM Hydraulic Modeling | RS Permitting/Regulatory Support |
 WQ Water Quality Support | GS GIS

EXPERIENCE

Our team brings a wide range of related experience to the District, as detailed on the following pages. Key highlights include:

Gravity and Pressure Network Hydraulic Modeling. We have a master planning and hydraulic modeling team with the capability to conduct hydraulic analysis of both gravity and pressure network systems. This team has prepared numerous water distribution and wastewater collection system models for the purpose of planning and understanding the impacts of future developments and identifying capital improvement projects. Hydraulic models are essential tools for evaluating the necessity and criticality of various system improvements from new construction to pipeline replacement and rehabilitation. Hydraulic modeling can also be used to analyze and verify alignments and sizing of proposed improvements.

Well Rehabilitation and Construction. HydroScience has completed several recent well rehabilitation and construction projects, including a new groundwater well for County Service Area 11 in San Mateo County, the Kishi Well and Arsenic Treatment Plant for the City of Livingston, and the Isleton 5th Street Well for California American Water in Sacramento County. Our proposed District Manager, Ligaya Kohagura, is managing the District's 2021 WMP Update and managed the design and construction of the District's 1100 gpm Well No. 6B project, as well as several small water main improvements.

Condition Assessment of Water Facilities. HydroScience has performed condition assessments as part of master planning efforts for the City of Foster City/EMID, the City of Sunnyvale, the City of Williams, the City of Sutter Creek, and the City of Gridley. We have also performed facility assessments in support of the design of rehabilitations and improvements to existing water facilities.

Water Main Planning and Design. As a firm focused exclusively on water, wastewater, and recycled water infrastructure, HydroScience has a wealth of experience with water main planning and design projects. Several of these projects have involved replacing asbestos pipe and moving mains from residential backyards into more accessible locations. Recent projects involving water pipeline replacement and relocation include the Lincoln Oaks Water Transmission Pipeline for California American Water, Water Main Replacement Piping for City of Sunnyvale, East Dunne Water Main Improvements for the City of Morgan Hill, and the First Street Water Line Replacement for the City of Gilroy. Ligaya managed both the East Dunne Water Main and First Street Water Utility Improvement projects.

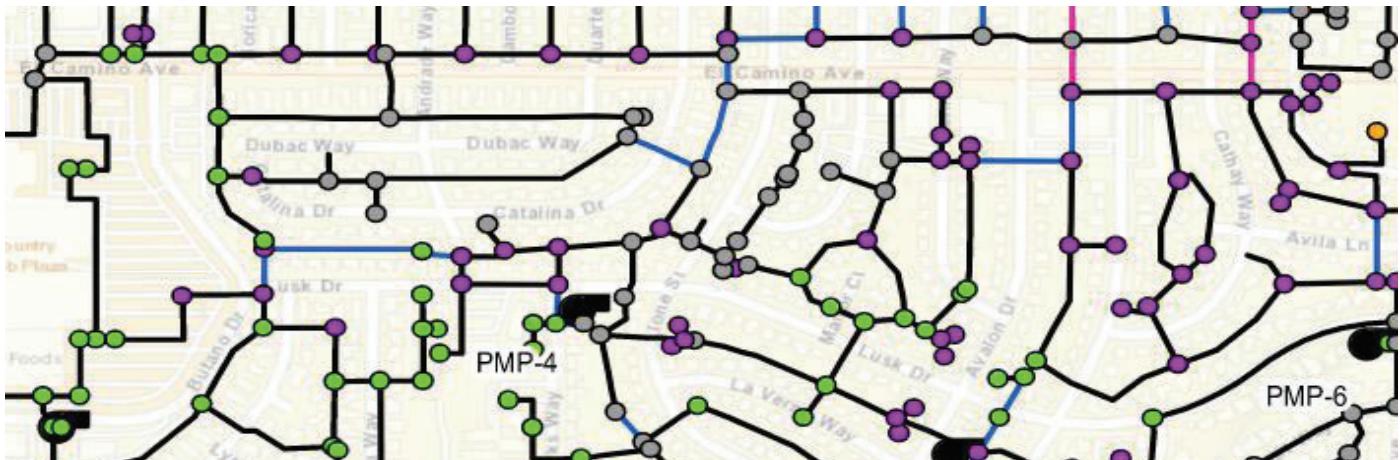
In addition to the above, HydroScience prepares GIS mapping, storage and pumping facility design, water appurtenance design, and provides related construction phase engineering support services. Our core services are summarized below.

HYDROSCIENCE CORE SERVICES

PLANNING / PERMITTING	DESIGN	CONSTRUCTION SERVICES
<ul style="list-style-type: none"> • Feasibility studies • Facilities planning • Master planning • Financial planning • Condition assessments • Permitting • Hydraulic modeling • Pilot testing / special studies • Water quality monitoring planning • Regulatory planning 	<ul style="list-style-type: none"> • Civil, electrical, and instrumentation design • Preliminary and detailed design • Design-build • Design-build-operate • Value engineering • RFP development • Design review • On-call design support 	<ul style="list-style-type: none"> • Constructability review • Bid analysis • Cost estimating • Scheduling • Construction management • Construction inspection • Community relations support

Del Paso Manor Water District Water Master Plan Update

Del Paso Manor Water District, California



Key Team Members

Bill Slenter, Principal-in-Charge

Ligaya Kohagura, Project Manager

Mary Hoang, QA/QC, Water Quality Support

Angela Singer, Technical Support

Jonathan Machorro, Hydraulic Modeler/GIS

Time Period

Dec 2020 – Dec 2021

HydroScience prepared a targeted water master plan update for the Del Paso Manor Water District (DPMWD) addressing priority water supply, conveyance, and system reliability recommendations for the District's drinking water wells and pipelines. The District is located in unincorporated Sacramento County and encompasses a 1.3 square mile service area and 1,800 connections and provides potable water service sourced from eight drinking water wells, two of which are on standby due to levels of contamination. Water for consumption and fire flow is distributed through a well-looped but aging distribution system of largely backyard water mains over 50 years old. Some wells are also aging and some have experienced water quality issues leading to being placed on standby. There is no above-grade water storage or booster pumping in this system. The ratepayer base is limited and presents challenges to implementing a large number of priority projects.

The water master plan update supplemented a full master plan prepared by others in 2009 and included the following:

- Updated water demand analysis reflecting recent water conservation trends and revised projections
- Updated supply analysis accounting for recent changes to well operational status
- Hydraulic modeling of the distribution system under these revised demands and current fire flow criteria at hydrants throughout the system
- Identification of fire flow and pipeline conveyance capacity shortfalls requiring implementation of priority improvement projects, and modeling of those improvements
- Planning level cost estimates and a capital improvement plan focusing on near-term priorities
- Identification of longer-term projects to address backyard mains, evaluation of contamination plumes, conversion of residential services to metered services, and potential introduction of surface water supplies to the system

One challenge faced during the project was completing a meaningful analysis from a limited dataset on existing system configuration and recent flows. HydroScience collaborated closely with the District's general manager and utilized creative planning and modeling approaches combined with engineering judgment and neighboring community data to develop a defensible analysis.

HydroScience presented findings and gathered feedback in several meetings of the DWMWD board of directors. The final version of this master plan update will serve as a prioritized roadmap for rate adjustments and system capital improvements to achieve reliability and service level goals.

San José Municipal Water System Master Plan

City of San José, California



San José Municipal Water System (SJMWS) is a water retailer for potable and non-potable water for four hydraulically isolated service areas located within the Santa Clara County: North San José/Alviso (NSJ/Alviso), Evergreen, Edenvale, and Coyote Valley. Water supplies include purchased potable water from wholesalers Santa Clara Valley Water District (SCVWD) and San Francisco Public Utilities Commission (SFPUC), as well as groundwater from fourteen SJMWS-owned and operated wells. Recycled water purchased from South Bay Water Recycling is used for irrigation and industrial purposes. Each service area has a unique source or combination of water sources. The service areas are scattered throughout the City of San José and separated by two other water retailers; San Jose Water Company (SJWC) and Great Oaks Water Company. These service areas comprise about 12% of the City's population. SJMWS currently provides potable water service to approximately 27,000 metered connections.

Key Team Members

Mary Hoang, Project Manager
Angela Singer, Project Engineer
Jonathan Machorro, Hydraulic Modeling

Time Period
Nov 2015 – June 2019

HydroScience worked with the City of San Jose to prepare the San Jose Municipal Water Master Plan (WMP) that will serve as a comprehensive WMP for the 25-year planning horizon. We conducted an evaluation of the existing distribution system and analyzed recent and historic water use data in conjunction with planned developments to prepare future demand projections. Prior projections had severely overestimated water needs so one of the challenges was rectifying the demand analysis and helping the City to understand the variance in projections. We worked closely with the City to itemize and detail the basis for the reduced projections to establish confidence in the new numbers. These projects were applied to the City's hydraulic model using GIS to facilitate demand allocation and to understand system capacity under projected future conditions. As part of this effort, HydroScience worked with Operations staff to conduct an assessment of City facilities and identify and catalog known deficiencies.

HydroScience also conducted a comprehensive storage analysis in accordance with AWWA guidelines to assure adequate future storage and supply under normal and emergency operating conditions. We implemented a matrix analysis to prioritize known and identified deficiencies. Based on the system evaluation, storage analysis, and known deficiencies, a long-term implementation strategy to address the future needs was developed. This served as the basis for developing the Capital Improvement Plan (CIP) for every five years over the 25-year planning horizon. A complete draft WMP was completed in 2018. However, due to City internal review process, the City has yet to finalize the WMP.

As part of the Master Planning effort, HydroScience worked with the City to develop updated Major Water Facilities Fees and other City water system development fees designed to equitably recover the costs of existing and future infrastructure and assets benefiting new development as well as those related to implementation of Capital Improvement Projects identified in the Water Master Plan.

Water and Sewer Master Plans

City of Mountain View, California



Key Team Members

Angela Singer, Deputy Project Manager

Mary Hoang, Principal-in-Charge, Water Quality, Operations

Chris Dodge, QA/QC

Eric Jones, Treatment Plant, Pump Station Evaluation

Jonathan Machorro, Water Hydraulic Modeling

Time Period

Aug 2020 – Ongoing

HydroScience is developing the City's Water and Sewer Master Plan. The overarching project objective is to develop Capital Improvement Projects to address supply and capacity deficiencies in the water and sewer systems, including conducting site visits and operator interviews to document all major facilities and to identify any noted physical wear and deficiencies.

As part of the master planning effort, HydroScience is developing and calibrating the City's hydraulic models using InfoWater and InfoWorks ICM, both Innovyze software. The work involves using the existing hydraulic models, City GIS, system plat maps, and record drawings to update the model infrastructure and conduct a quality assurance and quality control review. An essential element of the work includes a comprehensive water demand assessment to evaluate historical water usage and sewer flows according to user type and land use to establish a baseline for existing demands/flows and project for future conditions. This data is used to populate the hydraulic models and form the basis for calibration and system analysis. Both models are calibrated against real time data collected in the field.

For the water system, HydroScience developed and implemented a Calibration Plan in conjunction with City staff to document the impacts to the water system from hydrant flows (simulated fire flow). Using the fire flow and pressure data collected, the water model was calibrated to reflect actual system demand, operation, and response. The calibrated hydraulic model is being used to assess system capacity under existing and future scenarios including peak demand, fire flow conditions, and emergency scenarios. One of the challenges in working with the water use data is to assess the impacts of the COVID-19 pandemic as well as recent and historic drought on water demands. We conducted a detailed analysis of five years worth of historic meter data to tease out both the occurrences and take them into consideration in developing unit factors.

The results of both the water and sewer system analyses will translate into comprehensive and phased Capital Improvement Programs to address the respective system deficiencies.

Manteca TCP Mitigation

City of Manteca, California



HydroScience provided engineering design services consisting of design report preparation, development of detailed plans and specifications, and construction phase engineering support as part of this design/build project to install Granular Activated Carbon (GAC) treatment systems on four existing groundwater well sites in the City of Manteca. The GAC treatment systems address concentrations of the synthetic organic chemical 1,2,3-trichloropropane (TCP) in City groundwater. The City chose progressive design-build procurement with an open-book guaranteed maximum price (GMP) to implement this project. HydroScience worked with a general engineering contractor and the City to implement the project through a highly collaborative process that optimized cost, constructability, reliability, flexibility, and long-term operations and maintenance.

Project challenges addressed by HydroScience include:

- Addressing facility layout challenges including limited space, coordination with existing well operations, minimizing visual impacts to surrounding neighbors, providing for large truck access for periodic media change-outs, and facilitating efficient and safe long-term O&M
- Coordinating multiple parallel project timelines including the design of the four project sites with an early release package for one of the sites, development of CEQA documentation, public outreach, permits, and equipment procurement
- Conducting workshops with City staff to refine the design in a collaborative fashion in accordance with City standards and preferences
- Incorporating new GAC instrumentation with existing PLC and SCADA systems
- Designing a fiber optic and raw water piping joint trench between a well site and a remote GAC treatment facility
- Managing the impacts of new treatment systems on existing well pump performance
- Designing nitrate monitoring analyzer instrumentation for outdoor installation while managing heat and moisture

Site-specific features, challenges, and innovations at each of the four project sites are as follows:

Key Team Members

Bill Slenter, Project Manager
 Ligaya Kohagura, QA/QC
 Marc Fernandez, Pipeline Engineer
 Sim Blake, DDW Compliance
 Mike Marandi, Electrical
 Thinh Le, Lead EI&C
 Anthony Perez, Drafting

Time Period

March 2019 - Dec 2020



Central Arsenic Treatment Facility (CATF). Manteca's existing CATF provided centralized treatment of arsenic for three City wells which convey up to 3,700 gpm of raw water through transmission pipelines to the site. This project added GAC treatment to remove TCP at the centralized facility. The initial phase included 3,200 gpm of GAC treatment capacity with space to expand to 4,200 gpm. Since not all of the three wells are currently exceeding TCP limits, the pipe manifold design includes flexibility to route any combination of wells through either TCP then arsenic treatment or through arsenic treatment alone, followed by blending of treated streams prior to distribution.

A detailed hydraulic analysis was completed to evaluate the impact of adding GAC treatment on existing well pumps in consideration of new piping losses and clean and dirty GAC bed conditions. Another analysis was run to size the backwash tank outlet to regulate discharges to City sewers to avoid overwhelming the downstream lift station. The existing arsenic treatment facility included a 22,000 gallon bolted steel backwash tank. The GAC design added an independent backwash waste inlet to the existing tank to allow shared use of the tank while maintaining air-gapped separation of systems.

Average nitrate concentrations from one of the wells exceeds 10 mg/L. The GAC system design includes a continuous nitrate analyzer to detect nitrate sloughing from the GAC media and filter-to-waste plumbing to allow operators to discharge treated water to the backwash tank until concentrations come into compliance.

The project included decommissioning of chlorine injection systems at each of the well sites, and the installation of a new injection system at CATF located downstream of GAC treatment and upstream of arsenic treatment, to avoid loss of chlorine residual due to exposure to GAC.

Modifications to CATF include extension of the truck access driveway to the GAC treatment area to allow for media change-outs. Decorative fencing and landscaping was extended around the expanded site.



Well 24/Atherton Tank Site. The existing Well 24 and an arsenic treatment system is located on a small site bordered by a freeway and an apartment complex. This project added a 1,200 gpm GAC treatment system and bolted steel backwash tank. There was insufficient room at the well site for this system, and the City determined that they could blend water from this well with other sources at a nearby storage tank and booster pump facility to address arsenic without treatment. Therefore, the project included a 4,000 linear foot raw water pipeline to convey well water from the well site to the tank site, where GAC treatment was constructed. A fiber optic cable was included in the trench for PLC communication. GAC-treated water is blended with other supplies, chlorinated, and placed in an existing 2-MG tank for storage and subsequent pumping into the distribution system.

This site also includes nitrate monitoring and filter-to-waste features to address nitrate sloughing potential. A hydraulic analysis of impacts to the existing well pump was performed.



Well 23. The existing Well 23 site is located in a residential neighborhood at the corner of a large City park that also serves as a stormwater retention basin during major rainfall events. A 2,200 gpm GAC treatment system and bolted steel backwash tank was added immediately adjacent to the well building. Due to visual impact concerns, the design placed the GAC treatment vessels on a foundation set about 5 ft below existing grade and surrounded by a concrete retaining wall screened by landscaping and a decorative iron fence. HydroScience prepared two layout options and rendered these in 3D to facilitate informed decision-making, optimization of the layout, and enhanced public outreach and CEQA processes. HydroScience developed and presented the project to the public at a workshop organized by City staff.

The proximity of this foundation to a stormwater retention basin introduces the potential for hydrostatic uplift on the bottom of the foundation. The foundation design mitigates this by incorporating grade-beams and extending the foundation beyond the retaining wall. Soil backfilled on top of the foundation edges resists the uplift. This avoids a costlier pile-anchored solution.

The feasibility study prepared by others included a large driveway into the site for access by the pneumatic trailer that would be used to change out media. HydroScience presented an alternative to the City that would significantly shrink the project footprint, reduce visual impact, and reduce cost, which the City accepted. Our design called for the truck to park on the roadway at the curb and extend flex hoses into the facility, which is immediate behind the sidewalk. The iron fence includes openings for hoses, and a drain is provided adjacent to the truck pulloff area to drain excess water prior to departure. The layout was coordinated with the GAC vendor who will conduct the media change-outs under contract with the City.

The design of the GAC vessel area includes air-gapped connections to the storm drain and sewer to avoid the potential for contamination of the vessel area during events where stormwater levels are high.

This site also includes nitrate monitoring and filter-to-waste features to address nitrate sloughing potential. A hydraulic analysis of impacts to the existing well pump was performed.



Well 27. The existing Well 27 site is located in an open field which is being developed into a large apartment complex that will surround the well site. A 2,700 gpm GAC treatment system and bolted steel backwash tank was added to treat flows from this well upstream of a surface water blending connection. The City could not place the GAC treatment system adjacent to the well, so they purchased an adjacent parcel where the treatment system was installed. HydroScience coordinated with the apartment developer and the City to route raw and treated water piping through a City easement from the well site to the new treatment site. HydroScience prepared multiple piping and treatment system layout alternatives for the City prior to selection of the preferred alternative. HydroScience included provisions for nitrate monitoring and performed a hydraulic analysis of impacts to the existing well pump.

Elk Grove Water District Well 13 Rehabilitation and Treatment

Elk Grove Water District, California



Key Team Members

Sim Blake, Principal-in-Charge and Project Manager
Eric Jones, Project Engineer
Mike Marandi, I&C

Time Period

July 2016 – Aug 2017

The Elk Grove Water District selected HydroScience to provide feasibility, predesign and design services for the rehabilitation of an inactive water production well and manganese treatment plant. The plant was specifically designed to remove manganese, however, it was subsequently decommissioned after arsenic levels were exceeded subsequent to the lowering of the Federal MCL. Specific services for the project included the following:

- Preparation and oversight of a zone sampling and water quality profiling for the well for the purpose of contaminant avoidance and minimization.
- Technical evaluation of an existing 1,000 gpm manganese removal facility and a 35% predesign, and PDR preparation. It was determined that the existing Filtronics process plant could be converted to a conventional manganese greensand system, and retrofit to removing arsenic using coagulation/filtration at minimal cost, should there not be an opportunity for arsenic avoidance.
- Final design for a complete facility retrofit for the entire electrical and SCADA system, mechanical and piping modifications, new control valves and control system, and new chemical storage and feed equipment for the facility.
- The facility was constructed to allow modifications to upgrade the process to include future arsenic removal.
- Phase 2 improvements consisted of adding ferric chloride, sulfuric acid, and sodium bisulfite feeds to remove arsenic by enhanced coagulation. Existing piping runs and injection points incorporated in the Phase 1 project were used to minimize upgrade costs. The modified plant went in to service August 2017.

Well 6B Design and Small Water Main Replacements

Del Paso Manor Water District, California



Prior to joining HydroScience, Ligaya managed a project to replace the District's existing Well 6 with a new 1100 gpm well. The District contracted work to analyze alternatives for the replacement of the older existing Well 6. This well had an estimated pumping capacity of 1100 gpm, a depth of approximately 490 feet, and was powered by a natural gas engine.

Changes in rules regarding the emissions from a natural gas engine had caused the Sacramento Metropolitan Air Quality Management District to impose restrictions on the total number of hours of operation. Due to these restrictions, Well 6 was no longer a dependable water source for the District.

A water quality analysis and a down-hole video log were performed to assess of the condition of Well No. 6. This work indicated that Well 6 may be suitable for rehabilitation. However, it also indicated that drilling a new well may be, over time, a more economical alternative. After developing design criteria and reviewing results of alternatives analysis that compared the costs and benefits of the available options, the Board of Directors elected to drill a new well (Well 6B) in replacement of Well 6.

Ligaya lead the team that initiated design and drilling of Well 6B on the same well site that included the District's existing office building, corporation yard, and adjacent to a creek considered "waters of the U.S." The well development design included drilling a 10-inch pilot hole down to 510 feet below ground surface. Soil samples were collected and geophysical logs were performed. Using the E-logs and lithology from the pilot hole, zone sampling was performed to determine areas to screen and, more importantly, to perform water quality analysis for Iron, Manganese and Chromium VI.

The project included permitting, design, and construction activities for development of the new well, which is 320 feet deep and 16-inches in diameter. Following well development, the team also designed the new pump house and equipment that includes a vertical turbine pump (sized to operate from 100 gpm to 1100 gpm), sodium hypochlorite system, and a natural-gas powered standby generator.

Key Team Members

Ligaya Kohagura, Project Manager

Time Period

Well 6B: 2012 to Feb 2015
Small Mains: Nov 2013 to Summer 2014

Bickford Ranch Pump Station, Tank, and Transmission Pipeline

Westland Capital Partners, Sacramento, California



Key Team Members

Ligaya Kohagura, Project Manager

Angela Singer, Hydraulic Modeling and Master Plan Update Lead

Sim Blake, Technical Expert

Marc Fernandez, Project Engineer

Thinh Le, Electrical

Mike Marandi, Electrical
VE Solutions, Structural

Time Period

Dec 2016 – In Construction

The Bickford Ranch Specific Plan (Bickford Ranch) is a 1,928 acre development located in Placer County, California, east of Sierra College Boulevard and south of the Lincoln Newcastle Highway (Highway 193). HydroScience is providing design services including coordination with developers, developer's engineers, Placer County Water Agency, and Placer County.

The design includes a new 1.4 MG welded steel storage tank and booster pump station (Pump Station No. 1). This pump station is designed to meet all water demands (from initial low flows to future higher peak flows) within Bickford Ranch. Peak and fire flows will be provided by five 200 HP vertical turbine pumps in cans, each with capacity of 1,400 gpm. Initial and lower flow demands will be provided by two 20 HP vertical turbine pumps in cans, each with capacity of 180 gpm. The pumps, above ground motors, and control panels will be located in a split face concrete block building with one room for the pumps and a separate room for the electrical panels. HydroScience also designed the standby generator and 10,000 gallon hydropneumatic tank to provide reliable water supply to Bickford Ranch.

Since Pump Station No. 1 is adjacent to existing and future residential, multi-million dollar homes, the building's architectural design is based on PCWA and Bickford Ranch development design standards. HydroScience's design includes significant site grading work and design of the site access road extension from Sierra College Boulevard.

Additionally, HydroScience designed the 18-inch ductile iron pipe transmission main, which is 2,700 linear feet long and will deliver flows from Pump Station No. 1 to the Bickford Ranch water distribution system. At the request of PCWA, HydroScience also designed 1,800 linear feet of 60-inch welded steel pipe that is part of the transmission main to deliver flows to the City of Lincoln Metering Station No. 2 from the Ophir WTP. Both the 18-inch and 60-inch pipes will be installed in a common trench and include crossing of Sierra College Boulevard via open-cut methods.

Some of the challenges included updates to master plans that impacted approved design conditions, limited geotechnical information (for tank site), extended review durations by stakeholders, and other project delays beyond HydroScience's control. We responded to each challenge by focusing on the intent of each change and striving to meet the project's revised schedule. With limited information, we used the best information available to make engineering judgment calls and confirmed with the utility owners and other project stakeholders to confirm approach. Fundamentally, we focused on our client's project needs while meeting the utility owners' requirements.

First Street Water Line Replacement

City of Gilroy, California



HydroScience prepared the design and provided engineering services during construction for the First Street Water Line Replacement Project. The project included the replacement of approximately 1.5 miles of 16-inch diameter piping with 24-inch diameter ductile iron piping along Caltrans Highway 152 from Monterey Street to Santa Teresa Boulevard. The existing pipeline was capped, slurry filled, and abandoned-in-place. The new pipeline was installed parallel to the existing abandoned pipeline.

The following summarizes HydroScience approach used during the design phase:

- Kicked off project with City to confirm project goals and key concerns.
- Reviewed available data and performed site investigations to better understand existing site conditions. Worked closely with subconsultants to perform project survey and geotechnical investigations. Also worked with utility providers to request existing base maps and information on other existing utilities within project impact area.
- Prepared preliminary design plans to summarize information obtained and recommend potential alignments and connections for the new water pipeline.
- Evaluated permitting and environmental documentation requirements.
- Continued to refine design based on City standards, feedback from City on preliminary design, and information needed to obtain Caltrans encroachment permit.
- Closely worked with City to prepare Caltrans encroachment permit documents.
- Closely worked with City to address Caltrans additional project requirements, including newly established design requirements. Supported City to request exemption from some of the new design requirements because of the nature of the project (e.g., water transmission main pipeline).

Key Team Members

Mary Hoang,
Principal-in-Charge
Ligaya Kohagura, Project Manager
Angela Singer, Permitting/
Regulatory

Time Period

Jan 2014 – Dec 2019

We addressed the following design challenges:

- Alignment and all water improvements were within Caltrans right-of-way. Existing utilities included high-pressure gas transmission mains. Caltrans encroachment permit required:
1) Extensive potholing to locate all gas mains, 2) Exception request from encasement requirement for high-pressure utilities, and 3) Detailed traffic control plans
- City decided to remove storm drains from project prior to re-bid
- Alignment impacted three major intersections and several minor intersections, including travel corridor for County Emergency Medical Services and a heavily traveled corridor with several utility crossings
- Commercial properties were located along both sides of the entire alignment. Design approach limited water service interruptions, restricted work hours, and contained specific traffic control requirements to maintain access
- Water main served as an arterial line and fed other branches of the City's distribution system.

Because of recent experiences with high-pressure utilities, Caltrans required additional information and design changes after the project was initially released for bid advertisement. To address Caltrans requirements and concerns, the City postponed the bid advertisement. HydroScience revised the bid design documents to satisfy both the City's and Caltrans requirements. After successfully securing some design exemptions and satisfying Caltrans Encroachment Permit requirements, the City and HydroScience secured the approvals needed to resume bidding. Throughout the design, permitting, bidding, and construction phases, HydroScience remained the City's trusted advisor on this project.



Condition Assessment Main Replacement Area (MRA) 03B

Sacramento Suburban Water District (SSWD), California



Sacramento Suburban Water District (SSWD) developed a 2019 Distribution Main Asset Management Plan to rank and select pipeline candidates for replacement within its potable water distribution system. The pipelines within Main Replacement Area 03B (MRA 03B), located in the North Highlands area of Sacramento County, totaling approximately 5 miles in length, were identified to be at the highest risk, based on Risk of Failure (ROF) rankings through an indirect (desktop) condition assessment, factoring leak history, pipe type, age, and siting, plus consequences of failure.

HydroScience Engineers, Inc. was contracted to provide support to SSWD for further studies to validate the ROF ranking of pipelines within this area to refine the selection of specific pipelines for replacement or rehabilitation. To do so, a combination of direct condition assessment methods and a hydraulic capacity assessment were employed.

The direct inspections included extractions of the existing pipe from various locations within MRA 03B in order to visually observe the pipe, joints, gaskets, and in-situ trench conditions. Observations were reported based upon visual inspections and engineering judgement in evaluating the condition of the existing 73-year-old 8-inch diameter asbestos cement pipes, joints, and gaskets. The pipeline condition assessments included utilization of Echologics LLC technologies to determine the condition of approximately 2 miles of the pipes by recording acoustical sound waves, then calculating the remaining structural wall thickness. Laboratory tests, such as compression and pull testing, plus a chemical analysis was conducted on samples of the rubber gaskets to determine material properties, estimate remaining useful life, and check for any environmental risks of the decaying gaskets in contact with potable water. A project challenge was to validate the results of the in-situ tests to actual pipe strengths. To resolve this, laboratory testing, consisting of dye penetrants, and crush testing was conducted on extracted pipe spools to determine the pipe material properties and physical strengths. The laboratory results collaborated well with the conclusions of the acoustical testing.

Key Team Members

Bill Slenter,
Principal-in-Charge
Chris Dodge, Project
Manager
Ligaya Kohagura, QA/QC
Jonathan Machorro,
Hydraulic Modeling

Time Period

Aug 2020 – March 2021

List of References

Elba Mijango, *City of Manteca*
(209) 456-8426

Megan Thomas, *City of Sacramento*
(916) 588-0691

Julie Oates, *City of Gilroy*
(408) 846-0413

Allan Gardner, *DPMWD*
(916) 761-3186

Ken Ingle, *DPMWD (former Field Supervisor)*
(916) 542-5593

RATE SCHEDULE

HYDROSCIENCE ENGINEERS, INC.

Billing Rate Schedule - DPMWD District Engineer
Effective January 1, 2022 through December 31, 2022

Labor Classification	Proposed Key Staff	Hourly Rate
Principal	Bill Slenter, Mary Hoang, Sim Blake	\$255
Engineer IX		\$245
Engineer VIII	Ligaya Kohagura, Mike Marandi	\$235
Engineer VII	Angela Singer, Chris Dodge	\$225
Engineer VI	Eric Jones, Thinh Le	\$215
Engineer V	Ed Francisco	\$205
Engineer IV	Jonathan Machorro	\$195
Engineer III	Marc Fernandez	\$185
Engineer II		\$175
Engineer I		\$160
Engineering Aide		\$95
Construction Professional VI		\$175
Construction Professional V		\$165
Construction Professional IV		\$155
Construction Professional III		\$145
Construction Professional II		\$135
Construction Professional I		\$125
Cross Connection Control Specialist		\$115
CAD Manager	Anthony Perez	\$135
CAD Designer		\$115
Marketing Professional		\$105
Administrative II		\$95
Administrative		\$80
Structural Engineer (VE Solutions)	Brad Friederichs	\$165
Structural Drafter/Designer (VE Solutions)	VE Solutions Drafting	\$110

Hourly billing rates include postage and telephone charges that are normal to the work authorized. Other direct costs for travel, reproduction, mail service, outside services, etc. will be invoiced at 105 percent of the actual cost. Rates are subject to a 3% annual escalation.

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CONFLICTS OF INTEREST

HydroScience recently prepared the draft 2021 WMP Update. We will be updating this document to address recent District comments prior to resubmitting it in final form. The document will need to be reviewed by the District or its designee prior to acceptance. Normally this review role would fall on the District Engineer, but if HydroScience is selected for that role, the District would obtain the services of an outside party to perform that review. This is fully understood and acceptable to HydroScience.

Outside of that issue, HydroScience has no known or apparent conflicts of interest, either actual or apparent, or circumstances that, with the passage of time, could give rise to a conflict of interest. We have no interest, economic or otherwise, in Del Paso Manor Water District's operations. Further, none of our employees or clients have an interest in the outcome of this contract.

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ADDITIONAL COMMENTS

The preceding pages detail HydroScience's team and proposed approach to addressing the potential services identified by the District in the RFP for the District Engineer role. Should the District wish to engage the District Engineer in additional services beyond those listed, HydroScience is well-positioned to assist the District with a wide range of needs. We are a local client-focused firm that focuses exclusively on water-related engineering projects. We have a broad and diverse bench of in-house engineering talent, supplemented by strong relationships with a wide range of local specialty subconsultants. We commit to the District that our team will work hard and creatively to help the District address any needed task.

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APPENDIX: RESUMES

Included Resumes

Ligaya Kohagura	Project Manager / District Engineer
Bill Slenter	Principal-in-Charge
Mary Hoang	QA/QC / Water Quality Regulatory Support
Angela Singer	Modeling / DDW Regulatory Support / Funding
Jonathan Machorro	Hydraulic Modeling / GIS
Marc Fernandez	Pipeline / Civil Design
Sim Blake	Wells and Wellhead Treatment
Chris Dodge	Piping and Trenchless Rehabilitation
Eric Jones	Pipes, Pump Stations, CM/Inspection
Ed Francisco	Inspection
Mike Marandi	EI&C Lead
Thinh Le	EI&C Support
Anthony Perez	Drafting / Standard Details
Brad Friederichs	Structural

Ligaya Kohagura, PE

District Engineer / Project Manager



Ligaya Kohagura has 29 years of experience in the management and development of long-range and mid-range plans for water and wastewater utilities; and the planning, design, and construction services for water and wastewater facilities including clearwell and storage tanks, pumping stations, pipelines, and treatment plants. Previously, Ligaya managed the hydraulic modeling and flow monitoring programs for both the Sacramento Area Sewer District and the Sacramento Regional County Sanitation District.

SELECT PROJECT EXPERIENCE

Water Master Plan Update

Del Paso Manor Water District, Sacramento County, California

Project Manager. HydroScience prepared a targeted water master plan update for the Del Paso Manor Water District addressing priority water supply, conveyance, and system reliability recommendations for the District's drinking water wells and pipelines. The update supplemented a full master plan prepared by others in 2009 and included the following elements:

- Updated water demand analysis reflecting recent water conservation trends and revised projections
- Updated supply analysis accounting for recent changes to well operational status
- Hydraulic modeling of the distribution system under these revised demands and current fire flow criteria at hydrants throughout the system
- Identification of fire flow and pipeline conveyance capacity shortfalls requiring implementation of priority improvement projects, and modeling of those improvements
- Planning level cost estimates and a capital improvement plan focusing on near-term priorities
- Identification of longer-term projects to address backyard mains, evaluation of contamination plumes, conversion of residential services to metered services, and potential introduction of surface water supplies to the system

HydroScience collaborated closely with the District's general manager and presented findings and gathered feedback in several meetings of the DWMWD board of directors.

The final version of this master plan update will serve as a prioritized roadmap for rate adjustments and system capital improvements to achieve reliability and service level goals.

Well 6B Design

Del Paso Manor Water District, Sacramento County, California

Project Manager for the project to replace the District's existing Well 6 with a new 1100 gpm well. Lead team to analyze alternatives for the replacement of the older existing well. The new well was drilled with a 10-inch pilot hole down to 510 feet below ground surface. Soil samples were collected and geophysical logs were performed. Using the E-logs and lithology from the pilot hole, zone sampling was performed to determine areas to screen and more importantly perform water quality analysis for Iron, Manganese and Chromium VI. Following the well development phase, continued as project manager for the design and construction of a new well-house facility including an 1100 gpm vertical turbine pump with VFD, sodium hypochlorite feed equipment, and a natural gas standby generator. During the construction phase, continued as project manager to coordinate the construction inspection and construction management activities.

Small Water Main Projects

Del Paso Manor Water District, Sacramento County, California

Project Manager for several small water main improvements that included engineering services during design and construction. Projects included installation of 8-inch, 10-inch, and 12-inch mains along Eastern Avenue, Marconi Avenue, Annette Drive, and Avalon

EDUCATION

M.S., Civil Engineering,
University of California,
Berkeley

B.S., Civil Engineering,
University of Hawaii at Manoa,
Honolulu

REGISTRATION

Civil Engineer, California,
Registration No. 56463

AFFILIATIONS

2017 President, Sacramento Area Waterworks Association

Past Board Member,
Sacramento Area Waterworks Association

PRESENTATIONS

"SASD's Approach to Sewer System Capacity Planning."
CWEA Spring Conference,
2012

"Best Bang for Your Buck:
Applying Flow Monitoring
to Enhance Dynamic
Hydraulic Modeling." Water Environmental Federation Technical Conference, 2011

"Under-Capacity Failure Mode Strategy: Assuring Sewer Capacity in a Cost Effective Way." Utility Infrastructure Management Conference, 2011

Ligaya Kohagura, PE



Drive. Lead the team to obtain surveying services, development of contract documents (plan and specifications), and assist the District with construction management services.

Manteca TCP Mitigation Projects

City of Manteca, California

QA/QC. HydroScience provided engineering design services consisting of design report preparation, development of detailed plans and specifications, and construction phase engineering support as part of this design/build project to install Granular Activated Carbon (GAC) treatment vessels on four existing groundwater well sites in the City of Manteca. The GAC treatment systems addressed concentrations of the synthetic organic chemical 1,2,3-trichloropropane (TCP) in City groundwater. HydroScience teamed with a general engineering contractor to implement this turn-key project on a Guaranteed Maximum Price (GMP) contractual basis. This project included the design of 4,000 feet of raw water pipeline, CEQA documentation, and incorporating new GAC instrumentation with existing well pump performance. The project also included an earthen stormwater retention basin.

First Street Water Utility Improvements

City of Gilroy, California

Project Manager. HydroScience actively worked with the City of Gilroy to design and implement the First Street Water Utility Improvements project, which replaced approximately 1.5 miles of existing 16-inch diameter piping with 24-inch diameter piping within Caltrans Highway 152. The project alignment impacted three major intersections and a number of minor intersections. Project challenges included limiting water service interruption, working in parallel to several PG&E gas transmission mains, developing a detailed traffic control plan, optimizing work hour restrictions, and addressing special Caltrans requirements included in the approved encroachment permits.

Bickford Ranch Off-Site Water Infrastructure

Bickford Ranch, Placer County, California

Assistant Project Manager, Project Engineer, and Lead Designer. HydroScience prepared a potable water hydraulic model to serve this 1,928 acre development in Placer County. The design includes development of a new green-field tank and pump site adjacent to the Catta Verdera neighborhood in Lincoln, CA. New water facilities include one 1.4 MG tank to mitigate impacts of peak hour deliveries from Placer County Water Agency (PCWA) and provide operational storage, a 7.5 mgd booster pump station with canned vertical turbine pumps, 10,000 gallon hydropneumatic tank for pressure control, CMU pump station building, 4,000 LF of 18-inch transmission main pipeline, and 4,000 LF extension of PCWA's 60-inch Ophir transmission pipeline. HydroScience also designed the development's 18-inch

off-site sewer trunk. Portions of the sewer alignment parallels Hwy 193 and is within Caltrans right-of-way. As part of the Caltrans Encroachment Permit process, Placer County is obtaining a cooperative agreement with Caltrans because of this complex project.

Condition Assessment Main Replacement Area (MRA) 03B

Sacramento Suburban Water District (SSWD), California

QA/QC. HydroScience has been contracted to provide support to SSWD to validate the ROF ranking of pipelines within this area, and to refine the selection of specific pipelines for replacement or rehabilitation. To do so, a combination of direct condition assessment methods and a hydraulic capacity assessment was employed.

The direct inspections included extractions of the existing pipe and joint samples from various locations within MRA 03B in order to visually observe the pipe, joints, gaskets, and in-situ trench conditions. Observations were reported based upon visual inspections and engineering judgement in evaluating the condition of the existing 73-year old 8-inch diameter asbestos cement (AC) pipe joints and AC pipe gaskets against its assumed new condition. The condition assessments also included utilization of Echologics LLC technologies to Determine the current condition of approximately 2 miles of the water mains by measuring the remaining structural wall thickness of the asbestos cement pipes and to investigate the water mains for any potential leaks.

SJWD WTP On-Site Residuals Management

San Juan Water District, California

Project Manager. HydroScience evaluated the District's WTP on-site residuals handling practices with respect to current and future regulations. Evaluations included quantifying the solids produced and determining the solids drying area required under current and buildup conditions. Based on the preliminary evaluations, HydroScience proposed improvements to the solids drying area to better retain solids and capture rain runoff. The recommended improvements include provisions to return runoff into the WTP process stream. HydroScience prepared a Technical Memorandum that summarized the evaluation results and preliminary design parameters for a solids retention bed (for additional drying) and for a sump and pump to collect surface runoff from the solids retention bed.

Bill Slenter, PE

Principal-in-Charge



EDUCATION

B.S., Civil Engineering, San Francisco State University

REGISTRATION

Civil Engineer, California, Registration No. 57640

AFFILIATIONS

California Water Environment Association (CWEA)

Central Valley Clean Water Association – Outreach Committee Chairperson

Former Chairperson, CWEA San Francisco Bay Section Communications Committee

CWEA Sacramento Area Section



Bill Slenter is a civil engineer with 29 years of experience. His areas of expertise include permitting, funding, planning, design, and construction support of wastewater, water, and recycled water systems. A principal with HydroScience, he has served as principal, project manager and project engineer on a wide range of water-related projects.

SELECT PROJECT EXPERIENCE

Water Master Plan Update

Del Paso Manor Water District, Sacramento County, California

Principal-in-Charge. HydroScience prepared a targeted water master plan update for the Del Paso Manor Water District addressing priority water supply, conveyance, and system reliability recommendations for the District's drinking water wells and pipelines. The update supplemented a full master plan prepared by others in 2009 and included the following elements:

- Updated water demand analysis reflecting recent water conservation trends and revised projections
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- Identification of longer-term projects to address backyard mains, evaluation of contamination plumes, conversion of residential services to metered services, and potential introduction of surface water supplies to the system

HydroScience collaborated closely with the District's general manager and presented findings and gathered feedback in several meetings of the DWMWD board of directors. The final version of this master plan update will serve as a prioritized roadmap for rate adjustments and system capital improvements to achieve reliability and service level goals.

Manteca TCP Mitigation Projects

City of Manteca, California

Project Manager. HydroScience provided engineering design services consisting of design report preparation, development of detailed plans and specifications, and construction phase engineering support as part of this design/build project to install Granular Activated Carbon (GAC) treatment vessels on four existing groundwater well sites in the City of Manteca. The GAC treatment systems addressed concentrations of the synthetic organic chemical 1,2,3-trichloropropane (TCP) in City groundwater. HydroScience teamed with a general engineering contractor to implement this turn-key project on a Guaranteed Maximum Price (GMP) contractual basis. This project included the design of 4,000 feet of raw water pipeline, CEQA documentation, and incorporating new GAC instrumentation with existing well pump performance. The project also included an earthen stormwater retention basin.

Condition Assessment Main Replacement Area (MRA) 03B

Sacramento Suburban Water District (SSWD), California

Principal-in-Charge. HydroScience has been contracted to provide support to SSWD to validate the ROF ranking of pipelines within this area, and to refine the selection of specific pipelines for replacement or rehabilitation. To do so, a combination of direct condition assessment methods and a hydraulic capacity assessment was employed.

The direct inspections included extractions of the existing pipe and joint samples from various locations within MRA 03B in order to visually observe the pipe, joints, gaskets, and in-situ trench conditions. Observations were reported based upon visual inspections and engineering judgement in evaluating the

Bill Slenter, PE



condition of the existing 73-year old 8-inch diameter asbestos cement (AC) pipe joints and AC pipe gaskets against its assumed new condition. The condition assessments also included utilization of Echologics LLC technologies to determine the current condition of approximately 2 miles of the water mains by measuring the remaining structural wall thickness of the asbestos cement pipes and to investigate the water mains for any potential leaks.

Facility Master Agreement, San José-Santa Clara Regional Wastewater Facility

City of San José, California

Principal-in-Charge. HydroScience is providing on-call planning, evaluation, detailed design, and construction support services under a multi-year Master Services Agreement (MSA) with the City of San José. The Regional Wastewater Facility (RWF) is a 167 MGD secondary and tertiary wastewater treatment plant. HydroScience is working directly with the RWF's engineering, operations, and maintenance staff to implement studies and designs on an on-call basis throughout the facility. HydroScience has completed condition assessments and evaluations for the outfall bridge, major pond gates, and HVAC systems. HydroScience also completed designs of nitrification clarifier exterior lighting to improve safety during night-time operations, and designed the replacement of the existing process water (3W) pumps which deliver up to 14,000 gpm to unit processes throughout the plant.

Water Treatment and Storage Facility

Lyton Rancheria, Sonoma County, California

Principal-in-Charge and QA/QC. HydroScience is providing design engineering and engineering support of construction for new groundwater wells, groundwater treatment, treated water storage, and booster pumping facility to serve the Lyton Rancheria Project, a tribal residential development located near Windsor, CA. HydroScience's role is design engineer-of-record as part of a design/build project team. The facility will produce an average day flow of approximately 120K gpd at buildout. New wells will deliver raw water to a water treatment system to reduce concentrations of arsenic and manganese in the groundwater to below primary maximum contaminant levels. The treatment process will include pH adjustment, oxidation, coagulation/filtration, post-filtration adsorption, and backwash thickening. Dosing of sodium hypochlorite followed by storage in on-site welded steel storage tanks will follow. A booster pump station consisting of banks of low and high flow pumps followed by a hydropneumatic tank will deliver water to the distribution system for residential demands and fire flows. The treatment and pumping equipment will be housed in a new CMU building, which will also contain an operations office, lab, power distribution, and control systems. The design phase has been

completed and HydroScience will provide construction phase support including review of RFIs and submittals, field visits, and commissioning support.

Community Park Irrigation and Well No. 11 Conversion

City of Davis, California

Principal-in-Charge. The City of Davis provides and maintains parks and open spaces that enhance the quality of life for Davis residents and visitors. For a sustainable landscape at the City's Community Park, the Public Works Department has collaborated to reduce water consumption in the City Parks and Greenbelts. As part of our current master agreement with the City, HydroScience was asked to provide Preliminary Engineering, Design, and Construction services for this project, which focused on the following objectives:

- Disconnecting existing Well #11 and the Community Park irrigation system from the City's potable water system.
- Converting existing Well #11 to an irrigation only supply well.
- Connecting the Community Park irrigation system to the supply from Well #11.

Willow Hill Pipeline Rehabilitation

City of Folsom, California

Principal-in-Charge for HydroScience. This project included assessment, preliminary design, final design, construction engineering, construction management, and inspection services for rehabilitation of a 20,585 LF existing raw water main (30- to 48-inches diameter RCP) and potential conversion of that main to future potable water pressure service. The project included both rehabilitation and realignment segments. The preliminary design included preparation of technical memoranda (TMs) for predesign criteria development and hydraulics, condition assessment, rehabilitation technology/methods and rehabilitation/alignment assessments. Final design included realignment using HDPE and fusible PVC pipe as well as HDPE sliplining. Construction management and inspection services included daily field presence at the worksite, written and photographic documentation, pay request and change order processing, issue resolution, inspection, and City coordination.

Mary Hoang, PE, Grade D5/T4

QAQC / Water Quality and Regulatory Support



EDUCATION

M.A., Public Administration,
California State University,
San Jose

B.S., Civil Engineering,
California State University,
San Jose

REGISTRATION

Civil Engineer, California,
Registration No. 58997

Grade D5 Water Distribution
Operator, No. 8666, California

Grade T4 Water Treatment
Plant Operator, No. 24027,
California

AFFILIATIONS

Santa Clara Valley Water
Retailers Committee (Water
Quality Subcommittee Chair,
1997–2007)

Association of California
Water Agencies (Former LCR
Workgroup Chair)

San Jose State University
Engineering Industry Advisory
Council

San Jose State University
Department Advisory Council
Former Chair

WateReuse Association

Mary Hoang has over 30 years of experience in civil engineering. Her areas of expertise are water utility management, water quality, drinking water regulations, water distribution, recycled water, and water resources. Mary has worked for both public and private water utilities, and her experience spans from engineering capital and development projects to operations and maintenance of both potable and recycled water systems. Her unique background in engineering and operations and maintenance gives her the ability to develop reliable, practical solutions with operability and maintenance in mind.

SELECT PROJECT EXPERIENCE

Water Master Plan Update

Del Paso Manor Water District, Sacramento
County, California

QA/QC / Water Quality Support. HydroScience prepared a targeted water master plan update for the Del Paso Manor Water District addressing priority water supply, conveyance, and system reliability recommendations for the District's drinking water wells and pipelines. The update supplemented a full master plan prepared by others in 2009 and included the following elements:

- Updated water demand analysis reflecting recent water conservation trends and revised projections
- Updated supply analysis accounting for recent changes to well operational status
- Hydraulic modeling of the distribution system under these revised demands and current fire flow criteria at hydrants throughout the system
- Identification of fire flow and pipeline conveyance capacity shortfalls requiring implementation of priority improvement projects, and modeling of those improvements
- Planning level cost estimates and a capital improvement plan focusing on near-term priorities
- Identification of longer-term projects to address backyard mains, evaluation of contamination plumes, conversion of residential services to metered services, and potential introduction of surface water supplies to the system

HydroScience collaborated closely with the District's general manager and presented findings and gathered feedback in several

meetings of the DWMWD board of directors. The final version of this master plan update will serve as a prioritized roadmap for rate adjustments and system capital improvements to achieve reliability and service level goals.

Whisman Pump Station

City of Mountain View, California

Principal-in-Charge. HydroScience provided a condition and risk assessment of the aging Whisman Pump Station, which identified various mechanical, structural and electrical improvements needed to enhance long-term reliability and potable water delivery throughout zones 1 and 2 of the City's distribution system. Budgetary construction costs were then determined to help the City plan for the upcoming CIP budget. The condition assessment included a site visit and a discussion with City operators, engineers, and facilities managers to identify expectations, goals, and objectives. HydroScience then developed a list of deficiencies requiring upgrade. Recommended improvements included the construction of two new 200-hp split-case centrifugal pumps for Zone 2 distribution, replacement of the existing Motor Control Center and Variable Frequency Drives, SCADA integration, seismic upgrades, mechanical improvements, and the development of an autonomous control system.

Water Master Plan

City of Foster City/Esterio Municipal
Improvement District, California

Project Manager. HydroScience was retained by the District to develop a comprehensive Water Distribution System Master Plan to identify strategies for planning, budgeting,

Mary Hoang, PE, Grade D5/T4



maintaining, and improving EMID's water distribution system based on current demands, future growth, and emergency situations. We developed water demand analysis and hydraulic model for evaluating the ability of the water system to operate under future water demand conditions as well as fire flow conditions. HydroScience prepared a prioritized capital improvement project plan and cost estimates for a 20-year period. Mary provided overall direction to the project team; served as the main point of contact for the District; prepared invoices and updates; ensured timely submission of deliverables; monitored project progress; maintained project budget and schedule; facilitated meetings; and ensured goals and objectives were met.

Water Supply Assessment

City of Foster City/Estero Municipal Improvement District, California

Principal-in-Charge. The City of Foster City received a proposal for construction of a new, four-story life sciences office building and associated site improvements at the former El Torito restaurant at the intersection of Vintage Park Drive and Chess Drive at the municipal boundary between Foster City and San Mateo. The proposed project will need to comply with the requirements of the California Environmental Quality Act (CEQA) and the City has elected to also conduct a Water Supply Assessment (WSA) in accordance with the requirements of Senate Bill 610 (SB 610). HydroScience is working with the environmental consultant, LSA, to develop the WSA to document any potential water supply shortages that may relate to the project development.

Municipal Water Master Plan

City of San Jose, California

Project Manager. HydroScience worked with the City of San Jose to prepare the San Jose Municipal Water Master Plan (WMP) project that serves as a comprehensive WMP for the 25-year planning horizon. HydroScience conducted an evaluation of the existing distribution system and development of future demand projections to understand system capacity under projected future conditions. HydroScience worked closely with operations staff to conduct an assessment of City facilities and identify and catalog known deficiencies. Based on the system evaluation, HydroScience developed a long-term implementation strategy to evaluate various alternatives and identified the recommended strategy. The recommended strategy served as the basis for developing the Capital Improvement Plan (CIP) for every five years over the 25-year planning horizon. Known deficiencies and the results of the system evaluation showing capacity deficiencies have been prioritized and incorporated into the CIP.

Water Supply Assessment Support

City of Manteca, California

Principal-in-Charge. This project involves support to Manteca Staff for review of Water Supply Assessments (WSAs) as they are submitted to the City. The City has grown significantly in recent years and has several WSA's in the queue for review. The City has tasked HydroScience with providing support to staff in the review process. Our review is based on the correlation between draft WSAs and the adopted UWMP and our understanding of Senate Bill 610 (SB 610). Each WSA is evaluated to assure that it addresses the need for sufficient water supply to serve future growth projections under normal, single-dry year, and multiple-dry years through a 20-year planning horizon as defined by SB610 and the UWMP Act.

First Street Water Utility Improvements

City of Gilroy, California

Principal-in-Charge. HydroScience worked with the City of Gilroy to design and implement the First Street Water Utility Improvements project, which replaced approximately 1.5 miles of existing 16-inch diameter piping with 24-inch diameter piping within Caltrans Highway 152. The project alignment impacted three major intersections and a number of minor intersections. Project challenges included limiting water service interruption, working in parallel to several PG&E gas transmission mains, developing a detailed traffic control plan, optimizing work hour restrictions, and addressing special Caltrans requirements included in the approved encroachment permits. Mary was responsible for dedicating the necessary resources needed for this project, as well as being backup contact to the City.

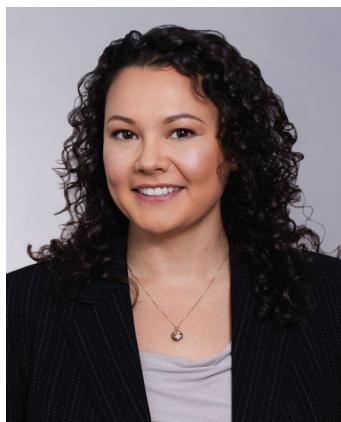
On-Call Water Quality Support Services

City of Sunnyvale, California

Principal-in-Charge. The City of Sunnyvale provides drinking water to a population of over 150,000 and receives its supply from the San Francisco Public Utilities Commission (SFPUC), the Santa Clara Valley Water District Valley Water, and six ground-water wells. Beginning in 2008, HydroScience has provided as-needed water quality support services to the City to help maintain regulatory compliance. This includes water quality compliance support for the revised Total Coliform Rule, Stage 2 Disinfection Byproducts, triennial Lead and Copper Rule monitoring, triggered source monitoring for Groundwater Rule, triennial Public Health Goals reporting, and Unregulated Contaminant Rule Monitoring (UCMR). Since that time, HydroScience has prepared the City's Annual Water Quality Report. HydroScience compiles the water quality data and prepares the text based on the most current requirements from DDW. HydroScience's Marketing Department designs the brochure and prepares the layout for printing.

Angela Singer, PE, Grade D2/T2, LEED AP

Modeling / DDW Regulatory Support / Funding



EDUCATION

M.S., Environmental Engineering and Science, Stanford University

B.S., Civil and Environmental Engineering, University of California, Los Angeles

REGISTRATION

Civil Engineer, California, Registration No. 70316

Grade D2 Water Distribution Operator, No. 53424, California

Grade T2 Water Treatment Plant Operator, No. 43730, California

LEED Accredited Professional, Green Building Certification Institute, No. 10162577

AFFILIATIONS

American Water Works Association

Bay Area Water Works Association

WaterReuse Association

Angela Singer has 16 years of experience serving as Project Manager, Project Engineer, and Associate Engineer on a variety of water, wastewater, and recycled water projects including feasibility studies, permitting, recycled water retrofits, and the modeling of water and sanitary sewer systems.

SELECT PROJECT EXPERIENCE

Water Master Plan Update

Del Paso Manor Water District, Sacramento County, California

Technical Support. HydroScience prepared a targeted water master plan update for the Del Paso Manor Water District addressing priority water supply, conveyance, and system reliability recommendations for the District's drinking water wells and pipelines. The update supplemented a full master plan prepared by others in 2009 and included the following elements:

- Updated water demand analysis reflecting recent water conservation trends and revised projections
- Updated supply analysis accounting for recent changes to well operational status
- Hydraulic modeling of the distribution system under these revised demands and current fire flow criteria at hydrants throughout the system
- Identification of fire flow and pipeline conveyance capacity shortfalls requiring implementation of priority improvement projects, and modeling of those improvements
- Planning level cost estimates and a capital improvement plan focusing on near-term priorities
- Identification of longer-term projects to address backyard mains, evaluation of contamination plumes, conversion of residential services to metered services, and potential introduction of surface water supplies to the system

HydroScience collaborated closely with the District's general manager and presented findings and gathered feedback in several meetings of the DWMWD board of directors. The final version of this master plan update will serve as a prioritized roadmap for rate adjustments and system capital improvements to achieve reliability and service level goals.

Water Master Plan

City of Foster City/Esterio Municipal Improvement District, California

Project Engineer. HydroScience was retained by the District to develop a comprehensive Water Distribution System Master Plan to identify strategies for planning, budgeting, maintaining, and improving EMID's water distribution system based on current demands, future growth, and emergency situations. We are currently working with the City to develop the water demand analysis and hydraulic model for evaluating the ability of the water system to operate under future water demand conditions as well as fire flow conditions. At the conclusion of the study, HydroScience will prepare a prioritized capital improvement project plan and cost estimates for a 20-year period.

Municipal Water System Master Plan

City of San Jose, California

Project Engineer / Distribution System Evaluation. HydroScience worked with the City of San Jose to prepare the Water Master Plan project that serves as a comprehensive WMP for the 25-year planning horizon. HydroScience conducted an evaluation of the existing distribution system and development of future demand projections to understand system capacity under projected future conditions. HydroScience worked closely with Operations staff to conduct an assessment of City facilities and identify and catalog known deficiencies. Based on the system evaluation, HydroScience developed a long-term implementation strategy to evaluate alternatives and identify the recommended strategy. The recommended strategy will serve as the basis for developing the Capital Improvement Plan (CIP) for every five years over the 25-year planning horizon. Known deficiencies and the results of the system evaluation showing capacity deficiencies have been prioritized and incorporated into the CIP.

Angela Singer, PE, Grade T2, LEED AP



Potable Water System Comprehensive Preliminary Design Study

City of Sunnyvale, California

Project Engineer. HydroScience was retained by the City of Sunnyvale to study the City's water demands as well as the condition of their existing potable water system assets. HydroScience then updated and calibrated the City's hydraulic model, analyzed it for energy efficiency, developed design guidelines for the potable water, fire services, and recycled water facilities, and compiled all of this information into a comprehensive preliminary design study. The study identifies and prioritizes upcoming CIP projects to enable the City to manage its budget while maintaining the highest possible level of service.

Sunnyvale On-Call Hydraulic Modeling

City of Sunnyvale, California

Hydraulic Modeling. Following completion of the Potable Water System Comprehensive Preliminary Design Study, the City of Sunnyvale contracted HydroScience to continue hydraulic modeling support on an as-needed basis. This as-needed services contract allows the City to use HydroScience to analyze the hydraulic model for future CIP projects, system outage plans, emergency situations etc. To-date, CIP projects have included water main replacements, redevelopment capacity confirmations, fire flow deficiency analysis etc. System outage analysis and associated action plans have included loss of service from wholesaler turnouts, reduction of service from wholesaler turnouts, removing individual water supply reservoirs, tanks, wells, turnouts etc. for maintenance. HydroScience provides the City with an assessment of how the system should react and recommends, when appropriate, steps in order for the City to maintain their established level of service.

2020 Urban Water Management Plan

City of Santa Clara, California

Project Manager. HydroScience prepared the 2020 Urban Water Management Plan (UWMP) Update for the City of Santa Clara. HydroScience worked with the City to examine its current and projected water supplies, demands, and sources; coordinate with BAWSCA; outline the City's conservation efforts; and comprehensive update of the water shortage contingency plan for compliance with new, more prescriptive legislative requirements. HydroScience prepared the announcements for public notification, documentation necessary for submittal to the Department of Water Resources (DWR) and completed online submittal of data through DWR's online submittal tool. HydroScience prepared the plan in accordance with the 2020 guidelines and regulatory requirements to ensure that the City maintains eligibility for state and federal funding.

First Street Water Utility Improvements Project

City of Gilroy, California

Permitting and Regulatory Support. HydroScience actively worked with the City of Gilroy to design and implement the First Street Water Utility Improvements project, which replaced approximately 1.5 miles of existing 16-inch diameter piping with 24-inch diameter piping within Caltrans Highway 152. The project alignment impacted three major intersections and a number of minor intersections. Project challenges included limiting water service interruption, working in parallel to several PG&E gas transmission mains, developing a detailed traffic control plan, optimizing work hour restrictions, and addressing special Caltrans requirements included in the approved encroachment permits.

On-Call Water Quality Support Services

City of Sunnyvale, California

Project Manager. The City of Sunnyvale provides drinking water to a population of over 150,000 and receives its supply from the San Francisco Public Utilities Commission (SFPUC), the Santa Clara Valley Water District Valley Water, and six groundwater wells. Beginning in 2008, HydroScience has provided as-needed water quality support services to the City to help maintain regulatory compliance. This includes water quality compliance support for the revised Total Coliform Rule, Stage 2 Disinfection Byproducts, triennial Lead and Copper Rule monitoring, triggered source monitoring for Groundwater Rule, triennial Public Health Goals reporting, and Unregulated Contaminant Rule Monitoring (UCMR). Since that time, HydroScience has prepared the City's Annual Water Quality Report. HydroScience compiles the water quality data and prepares the text based on the most current requirements from DDW. HydroScience's Marketing Department designs the brochure and prepares the layout for printing.

Potable Water Hydraulic Modeling

City of Santa Clara, California

Project Manager. HydroScience was retained by the City of Santa Clara to calibrate the City's potable water system hydraulic model and use the calibrated model evaluate the system under various conditions. Using the City's current hydraulic model, this project included preparing and implementing a calibration plan complete with hydrant flow testing; fully calibrating the hydraulic model; preparing average day demand, maximum day demand, and peak hour demand scenarios; and then using those scenarios to identify deficiencies in the system under fire flow conditions. The resulting accuracy of the hydraulic model for steady state and 24-hour extended period simulation was within 5%. HydroScience continues to provide ongoing support with residential and non-residential development impact analyses using the hydraulic model.

Jonathan Machorro, PE

Hydraulic Modeling / GIS



HydroScience 

Jonathan has eight years of engineering experience in flood-risk management and water resources engineering. He specializes in open-channel and closed-pipe hydraulic modeling with extensive experience using ArcGIS. Jonathan has served as project engineer in potable water, recycled water, and sewer system master plans and feasibility studies, recycled water retrofit designs, pump and lift station designs, and flood-risk management channel capacity analyses.

SELECT PROJECT EXPERIENCE

Water Master Plan Update

Del Paso Manor Water District, Sacramento County, California

Hydraulic Modeling / GIS. HydroScience prepared a targeted water master plan update for the Del Paso Manor Water District addressing priority water supply, conveyance, and system reliability recommendations for the District's drinking water wells and pipelines. The update supplemented a full master plan prepared by others in 2009 and included the following elements:

- Updated water demand analysis reflecting recent water conservation trends and revised projections
- Updated supply analysis accounting for recent changes to well operational status
- Hydraulic modeling of the distribution system under these revised demands and current fire flow criteria at hydrants throughout the system
- Identification of fire flow and pipeline conveyance capacity shortfalls requiring implementation of priority improvement projects, and modeling of those improvements
- Planning level cost estimates and a capital improvement plan focusing on near-term priorities
- Identification of longer-term projects to address backyard mains, evaluation of contamination plumes, conversion of residential services to metered services, and potential introduction of surface water supplies to the system

HydroScience collaborated closely with the District's general manager and presented findings and gathered feedback in several meetings of the DWMWD board of directors. The final version of this master plan update

will serve as a prioritized roadmap for rate adjustments and system capital improvements to achieve reliability and service level goals.

Water Distribution System Master Plan

Cities of Foster City and San Mateo, California

Project Engineer. The Estero Municipal Improvement District (EMID) is the water retailer for over 37,700 residents within the Cities of Foster City and San Mateo located in San Mateo County, California. HydroScience was retained by the EMID to prepare a Water Distribution System Master Plan (WMP) and establish a prioritized 20 year Capital Improvement Plan (CIP). The WMP evaluated the ability of the existing water distribution system to meet current and future water demands and conduct hydraulic modeling to evaluate the distribution system and identify system capital improvements to address deficiencies. The hydraulic modeling, which included the entire EMID water distribution system, was developed using Bentley WaterGEMS in conjunction with ArcGIS. HydroScience also updated the existing EMID ArcGIS database and facilitated an ArcGIS training session for the City of Foster City staff.

Municipal Water System Master Plan

City of San Jose, California

Support Engineer. HydroScience worked with the City of San Jose to prepare the San Jose Municipal Water Master Plan (WMP) project that serves as a comprehensive WMP for the 20-year planning horizon. HydroScience conducted an evaluation of the existing distribution system and development of future demand projections to understand system capacity under projected future conditions. HydroScience worked closely with Operations

Jonathan Machorro, PE



staff to conduct an assessment of City facilities and identify and catalog known deficiencies. Based on the system evaluation, HydroScience developed a long-term implementation strategy to evaluate various alternatives and identify the recommended strategy. The recommended strategy will serve as the basis for developing the Capital Improvement Plan (CIP) for every five years over the 20-year planning horizon. Known deficiencies and the results of the system evaluation showing capacity deficiencies have been prioritized and incorporated into the CIP.

Sunnyvale On-call Hydraulic Modeling

City of Sunnyvale, California

Hydraulic Modeling. Following completion of the Potable Water System Comprehensive Preliminary Design Study, the City of Sunnyvale contracted HydroScience to continue hydraulic modeling support on an as-needed basis. This as-needed services contract allows the City to use HydroScience to analyze the hydraulic model for future CIP projects, system outage plans, emergency situations etc. To-date, CIP projects have included water main replacements, redevelopment capacity confirmations, fire flow deficiency analysis etc. System outage analysis and associated action plans have included loss of service from wholesaler turnouts, reduction of service from wholesaler turnouts, removing individual water supply reservoirs, tanks, wells, turnouts etc. for maintenance. HydroScience provides the City with an assessment of how the system should react and recommends, when appropriate, steps in order for the City to maintain their established level of service.

Potable Water Hydraulic Modeling

City of Santa Clara, California

Hydraulic Modeling, Calibration, GIS. HydroScience was retained by the City of Santa Clara to calibrate the City's potable water system hydraulic model and use the calibrated model evaluate the system under various conditions. Using the City's current hydraulic model, this project included preparing and implementing a calibration plan complete with hydrant flow testing; fully calibrating the hydraulic model; preparing average day demand, maximum day demand, and peak hour demand scenarios; and then using those scenarios to identify deficiencies in the system under fire flow conditions. The resulting accuracy of the hydraulic model for steady state and 24-hour extended period simulation was within 5%. HydroScience continues to provide ongoing support with residential and non-residential development impact analyses using the hydraulic model to evaluate fire flow conditions and the need for potential infrastructure improvements to support the development.

Grandpark Water Master Plan

Sacramento County, California

Hydraulic Modeling. Grandpark is located in the Natomas area of unincorporated Sacramento County. The proposed project will include 24,00 residential dwelling units, commercial, schools, parks, and mixed-use land uses over approximately 5,675 acres. The project is anticipated to have a buildout of 30 years. The Potable Water Master Plan was prepared to analyze the water treatment, transmission, and distribution infrastructure, as well as the water supply and technical requirements in support of Grandpark.

Freedom Blvd. Water and Sewer Improvements - Phase 1 Preliminary Design Report

City of Watsonville, California

Water Modeling. The City has contracted with HydroScience to assess the sewer and water facilities in the area relative to current design and separation standards, hydraulic capacity needs, existing pipeline conditions and alignment constraints. This first phase will include hydraulic modeling, condition assessment, standards review, and site assessment to inform improvement needs and recommendations. Additionally, HydroScience will review the City's water design standard details and specifications to identify whether updates/revisions are prudent.

Water and Sewer Master Plans

City of Mountain View, California

Water Hydraulic Modeling. HydroScience is working with the City of Mountain View to develop comprehensive Water and Sewer Master Plans. The overarching objective of this project is to develop Capital Improvement Projects to address supply and capacity deficiencies in the water and sewer systems.

As part of the master planning effort, HydroScience is developing and calibrating that City's hydraulic models for both the water and sewer systems using InfoWater and InfoWorks ICM, both Innovaze software. The hydraulic modeling work involves using the existing hydraulic models, City GIS, system plat maps, and record drawings to update the model infrastructure and conduct a quality assurance and quality control review. An essential element of the hydraulic modeling work includes a comprehensive water demand assessment to evaluate historical water usage and sewer flows according to user type and land use to establish a baseline for existing demands/flows and project for future conditions. This data will be used to populate the hydraulic models and form the basis for calibration and system analysis. Both models will be calibrated against real time data collected in the field.

Marc Fernandez

Pipeline / Civil Design



EDUCATION

B.S., Civil Engineering,
California State University
Fullerton

REGISTRATION

Engineer-in-Training, California

AFFILIATIONS

American Society of Civil
Engineers (ASCE), member

Marc is a project manager and project engineer with 15 years of experience. His focus is on planning, design, permitting, agency coordination, and field support for pipelines, pump stations, and related water/wastewater infrastructure. Marc has experience in pipeline/wet utilities design, plans and profiles in Civil 3D, project coordination with local, county, and state agencies and related permitting, construction oversight and owner's representation, development plan reviews, capital improvement plan development, grant funding assistance, client staff augmentation, and roadway design including grading, street improvement, drainage, and related permitting.

SELECT PROJECT EXPERIENCE

Manteca TCP Mitigation Project

City of Manteca, California

Engineering Support. HydroScience provided engineering design services consisting of design report preparation, development of detailed plans and specifications, and construction phase engineering support as part of this design/build project to install Granular Activated Carbon (GAC) treatment vessels on four existing groundwater well sites in the City of Manteca. The GAC treatment systems addressed concentrations of the synthetic organic chemical 1,2,3-trichloropropane (TCP) in City groundwater. HydroScience teamed with a general engineering contractor to implement this turn-key project on a Guaranteed Maximum Price (GMP) contractual basis. This project included the design of 4,000 feet of raw water pipeline, CEQA documentation, and incorporating new GAC instrumentation with existing well pump performance. The project also included an earthen stormwater retention basin.

Bickford Ranch Off-Site Water Infrastructure

Bickford Ranch, Placer County, California

Engineering Support. HydroScience prepared a potable water hydraulic model to serve this 1,928 acre development in Placer County. The design includes development of a new green-field tank and pump site adjacent to the Catta Verdera neighborhood in Lincoln, CA. New water facilities include one 1.4 million-gallon (MG) tank to mitigate impacts of peak hour deliveries from Placer County Water Agency (PCWA) and provide operational storage, a 7.5 mgd booster pump station with canned vertical turbine pumps, 10,000 gallon



hydropneumatic tank for pressure control, CMU pump station building, 4,000 LF of 18-inch transmission main pipeline, and 4,000 LF extension of PCWA's 60-inch Ophir transmission pipeline. The project included Caltrans permitting, as the sewer pipeline parallels Hwy 193. Placer County is obtaining a cooperative agreement with Caltrans because of this complex project.

Capital Improvement and Water Augmentation Fee Study

Rancho Murieta Community Services District, California

Project Engineer. The Rancho Murieta Community Services District is an independent special district that provides essential services to the community of Rancho Murieta. The purpose of the Capital Improvement and Water Supply augmentation fee study was to fund the developments of additional water supply to meet the needs of the community. The original Capital Improvement Project list were such that many outstanding projects and equipment were no longer appropriate to serve build-out of the District. I worked with operation and maintenance staff to develop a technical memorandum, creating and evaluating a new list of capital improvement projects that will increase water and sewer capacities of the District. The study further expanded on the tech. memo to calculate updated future impact fees for new users.

SJWD WTP On-Site Residuals Management

San Juan Water District, California

Engineering Support. HydroScience evaluated the District's WTP on-site residuals

Marc Fernandez



handling practices with respect to current and future regulations. Evaluations included quantifying the solids produced and determining the solids drying area required under current and buildup conditions. Based on the preliminary evaluations, HydroScience proposed improvements to the solids drying area to better retain solids and capture rain runoff. The recommended improvements include provisions to return runoff into the WTP process stream. HydroScience prepared a Technical Memorandum that summarized the evaluation results and preliminary design parameters for a solids retention bed (for additional drying) and for a sump and pump to collect surface runoff from the solids retention bed.

Mission Trunk Rehabilitation

Sacramento Area Sewer District, California

Project Engineer. HydroScience is providing engineering services to Sacramento Area Sewer District (SASD) to rehabilitate the Mission Trunk Sewer, a 34,000 lineal foot unlined reinforced concrete pipe (RCP) ranging in diameter from 36 to 75 inches. This critical trunk sewer carries flows from Citrus Heights, Orangevale, Fair Oaks, and Carmichael to the Regional San Northeast Siphon and Interceptor. SASD performed CCTV inspections of the trunk sewer and determined that 62% of inspected pipes have medium to severe corrosion with exposed aggregate and exposed rebar. HydroScience prepared a preliminary evaluation report that reviewed and recommended rehabilitation alternatives for both pipeline and manholes, as well as sewer bypass options. Following approval of the recommendations, contract documents were prepared based on CIPP of the pipeline, polymer concrete repairs of manholes, replacement of a junction structure, new manholes, sewer bypass plans, and traffic control plans. SASD also opted to include rehabilitation of downstream facilities as part of the project, which included replacement of existing T-lock liners another junction structure, among other pertinent work. HydroScience will also provide bid phase assistance and engineering services during construction. Marc's duties included preparation of plan & profiles, technical specifications, agency coordination and permitting, and a temporary sewer bypass plan.

Sewer Trunk South of Highland

City of Morgan Hill, California

Support Engineer. HydroScience is providing planning and design services for a 36-inch diameter relief sewer trunk that extends nearly seven miles. Construction methods include traditional open-cut methods, pilot tube auger boring, and/or horizontal directional drilling methods where the pipeline crosses under the Union Pacific Railroad train tracks, Highway 101, Leavesley Road, a large slough, and a small creek. A stepped approach was employed to identify seven potential alignments, review system hydraulics, potential traffic constraints, available easements, number of trenchless crossings,

impacted businesses and residents, and estimated construction costs. This comprehensive effort laid the groundwork for the preliminary design and contract document development, currently underway. HydroScience is proactively working with the City of Morgan Hill, City of San Martin, City of Gilroy, Santa Clara County, Santa Clara Valley Water District, neighboring cities, other utility owners, UPRR, and Caltrans to address the project stakeholders' encroachment permit and design requirements. Design includes two double barrel siphons encased in special considerations at two locations where the design grade compels deep excavations in high utility-congested areas; and coordination with current and future developments. HydroScience is also supporting the environmental consultant with the CEQA effort tied to this project, and is preparing the Type 3 SWPPP meeting Construction General Permit requirements. Current projection of estimation of probable construction costs is \$30M. Marc's duties included assisting in the plan and profile design of approximately 7 miles of 36" trunk sewer, which includes utility crossing coordination, trenchless construction methods, and two inverted siphons.

Tule River Tertiary Wastewater System Facilities

Tule River Tribe, Porterville, California

Project Engineer. HydroScience has been retained by the Tule River Tribe to design and provide permitting and funding support for a new Water Recycling Treatment Plant, recycled water storage and conveyance infrastructure, and offsite wastewater collection system improvements in the City of Porterville, California. The project objective is to offset the potable water demand associated with the Tribe's proposed Eagle Mountain Casino and Resort Relocation Project in accordance with mandated CEQA requirements. The City of Porterville currently does not treat wastewater to tertiary standards therefore; an agreement between the Tribe and City will permit the production of recycled water using the City's existing WWTP outfall. The project includes the design and construction of a new 0.308 MGD ultrafiltration plant, 0.5 MG steel storage tank, 900 gpm vertical turbine pump station, 7,000 linear feet of 12 inch PVC recycled water distribution piping, electrical and SCADA improvements, civil site improvements including a new access road, and the irrigation retrofit of the City's existing sports complex for permitted reuse of recycled water. Offsite improvements include the replacement of two existing sanitary sewer lift stations and collection system improvements. Challenges include a fast-track schedule and the need to streamline the permitting process. The project is currently in design. Marc's duties include plan and profile design, site grading design for two sewage pump stations, access roadway, and tertiary wastewater system site.

Sim Blake, PE, Grade T4 Water Operator

Wells and Wellhead Treatment



Sim is a Principal with HydroScience and is a licensed Grade T4 Water Operator. He has 30 years of experience planning, design, and construction management of water treatment, storage, and distribution facilities. He has managed or led numerous project evaluations and studies, conventional and advanced surface water treatment plants, water tanks, wells, pump stations, and numerous pipeline projects.

SELECT PROJECT EXPERIENCE

Manteca TCP Mitigation Projects

City of Manteca, California

DDW Compliance. HydroScience provided engineering design services consisting of design report preparation, development of detailed plans and specifications, and construction phase engineering support as part of this design/build project to install Granular Activated Carbon (GAC) treatment vessels on four existing groundwater well sites in the City of Manteca. The GAC treatment systems addressed concentrations of the synthetic organic chemical 1,2,3-trichloropropane (TCP) in City groundwater. HydroScience teamed with a general engineering contractor to implement this turn-key project on a Guaranteed Maximum Price (GMP) contractual basis. This project included the design of 4,000 feet of raw water pipeline, CEQA documentation, and incorporating new GAC instrumentation with existing well pump performance. The project also included an earthen stormwater retention basin.

Kishi Water Production and Treatment Facilities

City of Livingston, California

Project Manager. HydroScience provided pre-design, design, construction management, inspection, and startup services for a 1,300-gpm water production well and an arsenic treatment system. The City has adopted the HydroScience designed well mechanical and building enclosure as a standard for future wells. Features included a building enclosure for the well pump, chemical equipment, electrical switchgear, and backup generator. HydroScience developed the DHS Merced County District's first Operations Plan for an arsenic groundwater treatment plant as part of the project permitting.

Elk Grove Water District Well 13 Rehabilitation and Treatment

City of Elk Grove, California

Principal-in-Charge. HydroScience provided feasibility, predesign and design services for the rehabilitation of an inactive water production well and manganese treatment plant. The plant was designed to remove manganese, but was decommissioned after arsenic levels were exceeded subsequent to the lowering of the Federal MCL. HydroScience provided oversight on a zone sampling and water quality profiling for the well for contaminant avoidance and minimization. After evaluation of the existing manganese removal facility, it was determined that the existing process plant could be converted to a conventional manganese greensand system, and retrofit to remove arsenic using coagulation/filtration at minimal cost. Additional elements included a retrofit electrical and SCADA system, mechanical and piping modifications, new control valves and control system, and new chemical storage and feed equipment.

Delano Arsenic Wellhead Mitigation Wells 21, 22, 24 & 26

City of Delano, California

Project Manager. The City of Delano provides municipal water service to customers within the City limits by means of groundwater wells. Nine of the wells exceeded the State and Federal arsenic Maximum Contaminant Level (MCL) of 0.010 mg/L. The City retained HydroScience to perform a predesign investigation for the addition of wellhead treatment facilities to remove arsenic from four of these wells, and to prepare plans and specifications for the system recommended in the predesign investigation. The predesign investigation recommended a four cell pressure filter system consisting of a single, horizontal

EDUCATION

M.S., Civil Engineering,
California State University,
Sacramento

B.S., Mechanical Engineering,
California State University,
Sacramento

REGISTRATION

Civil Engineer, California,
Registration No. 53955

Grade T4 Water Treatment
Operator, California, No. 16170

Private Pilot, FAA, ASEL and
Instrument Airplane Ratings

AFFILIATIONS

American Society of Civil
Engineers

American Water Works
Association

Sacramento Area Water Works
Association

Angel Flight West

Sim Blake, PE, Grade T4 Water Operator



pressure vessel internally partitioned into four cells. The overall treatment system also includes a pH adjustment system using sulfuric acid, a coagulant addition system using ferric chloride, an adjustable speed rapid mixer, a backwash settling tank, and a decent recycle pump.

Modesto Well 299 Arsenic Treatment

City of Modesto, California

Project Manager. HydroScience was contracted by the City of Modesto to prepare an evaluation of options for mitigating elevated arsenic and nitrate levels in its Well 299, which serves the Salida area. After evaluating treatment options, well rehabilitation, and intertie construction, recommendations were made to construct a replacement well with selective zone screening, which none of the existing wells featured. HydroScience then prepared a predesign level report addressing the design criteria for the downhole and mechanical facilities, including base bid quantities for the well drilling specifications.

Granite Way Well Project

Soquel Creek Water District, Santa Cruz County, California

Project Manager. HydroScience was retained to plan and design a new production well within the Aptos Village Development. The well will pump groundwater to an existing iron and manganese treatment facility. HydroScience prepared a Preliminary Design Technical Memorandum for the new Granite Way Well, and is currently designing the well site layout, well pump and discharge piping, and electrical, instrumentation and control systems.

Cache Creek Water Treatment Facilities (Phase 1 and 2)

Yocha Dehe Wintun Nation/Cache Creek Casino Resort, Yolo County, California

Project Manager. HydroScience provided design services for this 650,000 gpd (expandable to 1.0 MGD) surface water treatment plant per Surface Water Treatment Rule requirements. Since surface water can only be drawn from Cache Creek for seven months per calendar year, HydroScience selected as the treatment technology Kruger ceramic microfiltration membranes, which can be stored dry for the five months in which the plant is non-operational. Once the water is treated, it is processed through the WDTF to remove salts, and solids handling is achieved onsite with remaining rejected water sent to the WWTP. Because of the unique and successful operation of desalinating the groundwater supply to achieve recycled water quality standards, the WDTF was recognized by the WaterReuse Association nationally as the 2009 Desalination Project of the Year.

Aptos Junior High Well Improvements

Soquel Creek Water District, Santa Cruz County, California

Project Manager. HydroScience was retained to evaluate and design upgrades for the Aptos Junior High replacement well for the Soquel Creek Water District. The District has been experiencing issues with the well site, which was originally drilled in 1927. Improvements include the installation of a VFD with bypass starter on the recently replaced well head motor, installation of a new discharge header and flow meter, replacement of the iron and manganese treatment plant influent header and surface spray header, relocation of the ferric chloride injection point, and the installation of a gravity retaining wall and replacement well equipment/work pad. HydroScience provided engineering services during construction.

American Canyon Water Treatment Plant

City of American Canyon, California

Project Manager. A 3.0 MGD membrane surface water plant (expandable to 6.0 MGD) was designed to treat North Bay Aqueduct water. The design consisted of a parallel ultrafiltration membranes and supporting chemical facilities and it required inter-ties to the existing supply and distribution system. Prior to design, HydroScience conducted a two-month pilot testing program on various membranes to evaluate their economic, operational, and technical performance. The plant was linked to the City's central SCADA system, and internal SCADA software was used for enhanced plant control, data collection and trending, and regulatory report generation.

TCP 1, 2, 3 Removal Project

City of Livingston, California

Principal-in-Charge. This project included the construction of a standardized granular activated carbon treatment system for the removal of TCP 1, 2, 3 and other volatile organic compounds from groundwater for the City of Livingston. The treatment units consisted of two skid mounted pressure vessels and controls rated at a nominal capacity of 1,500 gpm to be installed at multiple water production well locations within the City.

Buena Vue Rancheria Well Drilling Program

Buena Vue Rancheria of Me-wuk Indians, Amador County, California

Principal-in-Charge. Sim served as Principal-in-Charge and technical advisor for a well drilling and water well construction program that included three wellhead pump stations, a water treatment facility for iron and manganese removal, and a 1.25 MG potable water tank. The iron and manganese removal facility consisted of a manganese greensand pressure filtration system using vertical pressure filters.

Chris Dodge, PE

Piping and Trenchless Rehabilitation



EDUCATION

B.S., Civil Engineering,
California Polytechnic State
University, San Luis Obispo

REGISTRATION

Civil Engineer, California,
Registration No. 43650

AFFILIATIONS

American Society of Civil
Engineers

Chris is a project manager with 37 years of experience in planning, design and construction for water and recycled water projects. He has served as project manager for the design of distribution and transmission pipeline replacement projects in public streets and easements, totaling over 130 miles. Many of these replacement projects were in response to unanticipated repair events. Chris has also provided construction management services for open trench and trenchless installations including pipe-bursting, CIPP, HDD, sliplining and bore & jack.



SELECT PROJECT EXPERIENCE

Condition Assessment Main Replacement Area (MRA) 03B

Sacramento Suburban Water District (SSWD), California

Project Manager. HydroScience has been contracted to provide support to SSWD to validate the ROF ranking of pipelines within this area, and to refine the selection of specific pipelines for replacement or rehabilitation. To do so, a combination of direct condition assessment methods and a hydraulic capacity assessment was employed. The direct inspections included extractions of the existing pipe and joint samples from various locations within MRA 03B in order to visually observe the pipe, joints, gaskets, and in-situ trench conditions. Observations were reported based upon visual inspections and engineering judgement in evaluating the condition of the existing 73-year old 8-inch diameter asbestos cement (AC) pipe joints and AC pipe gaskets against its assumed new condition. The condition assessments also included utilization of Echologics LLC technologies to Determine the current condition of approximately 2 miles of the water mains by measuring the remaining structural wall thickness of the asbestos cement pipes and to investigate the water mains for any potential leaks.

City of Napa Trenchless Support Services

City of Napa, California

Project Engineer & QA/QC. Since 2016 HydroScience has provided Cured-in-Place Pipe (CIPP) design support services to the City for various water main rehabilitation projects. The first project, Stanley Lane, included site and record drawing review, design criteria development and assessment, outreach to manufacturer(s), and specifications

development including contractor qualifications for performing the work. Additional trenchless support services were provided to consider several other candidates in the City's water distribution and transmission system for either spray-in-place lining or CIPP.

HydroScience is now under contract for continued, "as-needed" trenchless design consultation services serving to accomplish three separate tasks:

- Downtown area CIPP Project: Coordination, management, site investigation and technical design review, plan peer review, draft and final specifications development, and estimate of probable construction costs. Also includes as needed bid and construction support services.
- Napa Valley Transit Authority (Sheehy Court) CIPP Project: Coordination, management, site investigation and technical design review, plan peer review, draft and final specifications development, and estimate of probable construction costs. Also includes as needed bid and construction support services.
- As-Needed CIPP Design Services: Any planning, design, peer review, site assessments, bidding or engineering services during construction needed up to a maximum amount to assist the City with identifying candidates and tailoring their execution in-house.

HydroScience was selected to provide these services based on our experience and expertise in the trenchless rehabilitation industry, both applied to small and large diameter water mains and as applied to pressure systems. Chris provided on-call engineering services for designing CIPP rehabilitations of pressurized potable water pipelines.

Chris Dodge, PE



Water and Sewer Line Improvements

City of Hayward, California

Water Project Engineer. This project will result in the replacement of approximately 3.5 miles of sewer and 5 miles of water pipelines within the City of Hayward. Pipeline replacement projects were selected for a variety of factors, including increasing O&M capabilities (installing new manholes), replacing sewer/water mains (due to pipe sags, cracked pipes, and pipe deformations), improving maintenance access, alleviating capacity constraints/ adding pipeline capacity, and replacing pipelines that have reached the end of their useful life. HydroScience looked at some of the more challenging aspects and identified potential solutions to each, including easements, Caltrans, UPRR, and BART permitting, and pavement moratoriums. This approach anticipates potential challenges and fast tracks a process to develop solutions that will minimize surprises and keep the project on schedule. HydroScience is providing engineering design, bidding, and construction support services for this important project encompassing 17,847 feet of sewer and 26,229 feet of water pipelines ranging in pipe diameter from 8" to 15". The project also contains four trenchless repair sections. There are three trenchless sections that cross underneath railroad tracks and a 24" gas transmission main that will be replaced via bore and jack. In addition, there is one sanitary sewer trenchless section that under crosses three sets of railroad tracks that are owned and operated by two different railroads. The sanitary sewer trenchless replacement will be constructed via guided boring.

Chain of Lakes Pipeline Alignment Study

Zone 7 Water Agency, Alameda County, California

Project Engineer. The Chain of Lakes (COL) are a series of ten quarries that are expected to be ceded to Zone 7 over the next ten years. To maximize the use of these lakes, Zone 7 has asked HydroScience to perform a pipeline alignment study for a major water transmission pipeline with multiple water sources, to flow in both directions between their water treatment plant and furthest downstream lake. The project scope targets multi-stage refinement of alignment alternatives, with each progressive stage comprised of more in-depth study of discrete alignment opportunities and constraints. Criteria reviewed include hydraulic analyses, geotechnical investigation, tunneling/trenchless construction assessments, environmental considerations, constraints relative to existing and planned buried and above-ground infrastructure, and conceptual level costs, among other factors. The ultimate deliverable is a well-vetted study describing alternatives and criteria used, supporting a single recommended alignment corridor to house the approximately 36-inch to 42-inch water pipeline.

Freedom Blvd. Water and Sewer Improvements - Phase 1 Preliminary Design Report

City of Watsonville, California

Project Manager. The City contracted with HydroScience to assess the sewer and water facilities in the area relative to current design and separation standards, hydraulic capacity needs, existing pipeline conditions and alignment constraints. This first phase included hydraulic modeling, condition assessment, standards review, and site assessment to inform improvement needs and recommendations. Additionally, HydroScience reviewed the City's water design standard details and specifications to identify whether updates/revisions are prudent.

Camp Parks Water Main Improvements

Dublin San Ramon Services District, Contra Costa County, California

Project Manager. The water system within Camp Parks has posed operational and maintenance challenges due to shallow, aging pipelines. Sections of the water mains have experienced leaks and breaks over the years, and some pipelines may be undersized to meet the ultimate needs of the area. HydroScience is providing engineering design services for water main improvements to help ensure DSRSD and Camp Parks has a reliable water supply relative to demand and quality. This project includes preparation of a conceptual design report documenting findings from HydroScience's hydraulic evaluation, survey collection and basemap development, geotechnical desktop study, and design alternatives analysis. HydroScience is also supporting the District with the NEPA process as well as public outreach.

Infrastructure Renewal Program

East Bay Municipal Utility District, Alameda County, California

Supervisor. Chris supervised the planning, design and construction efforts to replace decaying pipeline facilities, including risk management modeling by analyzing hazards and consequences of failures. This program has an annual budget of \$28M, with approximately 40 projects totaling 13 miles per year. Chris procured sufficient appropriations, then monitored cash flow for each project. He met with city staff for the procurement of construction permits, including description of work and schedules, negotiation of permit conditions, plus creating traffic control plans as needed. He served as point of contact for public information to describe projects and impacts to customers. He was in charge of procurement and management of consulting agreements and specialty construction services for trenchless pipe-bursting, HDD, sliplining and bore & jack projects. He led research & development efforts to stay abreast of emerging technologies, including management of trenchless technology projects. Work included creation of master plans to determine long-term goals and identify funding and staffing needs, plus development of environmental documents in conformance with CEQA regulations.

Eric Jones, PE

Pipes, Pump Stations, CM/Inspection



Eric Jones is a project manager, construction manager and project engineer with more than 21 years of experience in water, wastewater, and recycled water facility planning, design and construction assistance. His specific areas of focus have included pump station design, pipeline design including trenchless technologies, water and wastewater treatment design, feasibility studies and construction management. He has played key roles in several design and construction services teams for many projects throughout California and Australia. Eric has significant experience with rehabilitation and upgrade of existing wastewater treatment plants, including complex coordination with electrical design.

SELECT PROJECT EXPERIENCE

EDUCATION

B.S., Mechanical Engineering (Environmental Engineering emphasis), University of California, Santa Barbara

REGISTRATION

Civil Engineer, California, Registration No. 68550

Ashland Water Pipeline Rehabilitation Project I

City of Folsom, California

Project Manager. This project involves rehabilitation of 1,500 lineal feet of an existing 20 and 21-inch water transmission pipeline located along Folsom Auburn Boulevard and Greenback Lane. Rehabilitation will include pipeline replacement with ductile iron and fusion bonded epoxy steel pipe using open-cut construction, trenchless rehabilitation technologies of the existing pipeline including Spray-in-Place Pipe (SIPP) with cement mortar lining (CML), SIPP with epoxy lining, Fold and form lining, and Cured-In-Place Pressure Pipe., addition of SCADA to an existing PRV station, and miscellaneous replacement to failed valves. The project includes coordination with USBR regarding the section of pipe located on either side of Rainbow Bridge to obtain a temporary construction easement for rehabilitation of the pipeline within USBR property. The project is currently in design with construction planned for the Spring 2022.

Ashland Water Pipeline Rehabilitation Project II

City of Folsom, California

Project Manager. This project consists of improvements to allow for abandonment of an existing water main by extending 6 existing branch mains, replacing 22 water services and replacing 3 fire hydrant service and connection the new and extended services to an existing parallel active 14-inch water main located along Baldwin Dam Road. The project also includes slurry seal of the entire roadway, evaluation of the benefits for providing a

new PRV station and demolition of an existing vacant pump station. Once complete the existing transmission line will provide fully isolated section of main between all branch tie-ins. HydroScience has incorporated many measures in design to minimize disruption to customers, including hot tap sleeves for connecting new service to the active ACP and steel pipeline. Outage maps will be provided to the Contractor as an attachment to the specifications for each of the planned outages. These maps will show exactly which customers and fire hydrants would be affected by the outage to help the contractor coordinate the notification process during construction. The project is currently in design with construction planned for the Spring 2022.

SJWD WTP On-Site Residuals Management

San Juan Water District, California

Project Engineer. HydroScience evaluated the District's WTP on-site residuals handling practices with respect to current and future regulations. Evaluations included quantifying the solids produced and determining the solids drying area required under current and buildout conditions. Based on the preliminary evaluations, HydroScience proposed improvements to the solids drying area to better retain solids and capture rain runoff. The recommended improvements include provisions to return runoff into the WTP process stream. HydroScience prepared a Technical Memorandum that summarized the evaluation results and preliminary design parameters for a solids retention bed (for additional drying) and for a sump and pump to collect surface runoff from the solids retention bed.

Eric Jones, PE



Cache Creek Water Treatment Facilities (Phase 2)

Yocha Dehe Wintun Nation/Cache Creek Casino Resort, Yolo County, California

Field Engineer. HydroScience provided design services for this 650,000 gpd (expandable to 1.0 MGD) surface water treatment plant per Surface Water Treatment Rule requirements. Since surface water can only be drawn from Cache Creek for seven months per calendar year, HydroScience selected as the treatment technology Kruger ceramic microfiltration membranes, which can be stored dry for the five months in which the plant is non-operational. Once the water is treated, it is processed through the WDTF to remove salts, and solids handling is achieved onsite with remaining rejected water sent to the WWTP. Because of the unique and successful operation of desalinating the groundwater supply to achieve recycled water quality standards, the WDTF was recognized by the WaterReuse Association nationally as the 2009 Desalination Project of the Year.

Fire Related Repairs to Water and Sewer Facilities

City of Santa Rosa, California

Project Manager. The City of Santa Rosa (City) selected HydroScience to prepare detailed plans and specifications to implement repairs and modifications to each of their ten potable water facilities and five of their sewer lift stations damaged in the Tubbs Fire. HydroScience visited each facility and verified the required repairs. The project scope and contract documents were developed in compliance with FEMA and CAL OES requirements under the Public Assistance Grant program. The repaired facilities included pump stations, reservoirs, and a well. Design for repairs included recoating a fire-damaged reservoir, replacing damaged generator, site equipment, fencing, irrigation, paving, and some building rehabilitation. HydroScience prepared plans, specifications, estimates, and contract documents for the projects.

Folsom Ashland PRV Project

City of Folsom, California

ESDC / Project Engineer. HydroScience designed improvements and modifications to three existing Pressure Reducing Valve (PRV) stations on the City's water distribution system. Tasks included the removal and retirement of one PRV station, the relocation of one PRV station to a separate system, the re-configuration of hydrants as blowoffs for system flushing, raising the PRVs above grade to eliminate immersion potential, and the replacement of an isolation valve between two zones with an above-grade PRV station. All designs were completed in accordance with CDPH requirements. Specific services provided by Eric included design and preparation of the final construction documents and engineering services during construction.

Associate Engineer, Commercial Meter Audit

Dublin San Ramon Community Services District, California

HydroScience obtained and compiled water data, prepared standard drawings and field inspection report forms, and established a priority for work. HydroScience inspected and prepared consumption reports upon completion of the work.

LAVWMA Export Pump Station, Storage, Pipeline, and San Leandro Sample Station Evaluations

Livermore-Amador Valley Water Management Agency, Alameda County, California

SLSS Mechanical Assessment. HydroScience performed three engineering evaluations of the Livermore-Amador Valley Water Management Agency (LAVWMA) treated wastewater storage, pumping, and conveyance infrastructure which conveys flows to the East Bay Dischargers Authority (EBDA) outfall system. The System Capacity Analysis included modeling of existing and future LAVWMA flows and storage operations to analyze operating scenarios, evaluate regulatory options for local discharge, and identify future EBDA capacity needs. The Export Pipeline Condition Assessment included CCTV inspection, condition assessment, and prioritized rehabilitation and future inspection program recommendations for the 15.6 mile Export Pipeline system. The San Leandro Sample Station Improvements Evaluation recommended mechanical, electrical, instrumentation and control (I&C) upgrades to LAVWMA's existing surge relief and alternate discharge point facility to improve flow metering and control, ensure effluent dechlorination effectiveness, and achieve reliable automation to reduce burden on the operators.

Penn Valley Dual Sewer Force Main and Pump Station

Nevada County Sanitation District No. 1, California

Project Engineer. HydroScience provided assessment, hydraulic modeling, preliminary design, final design, and bid period engineering services for a new lift station and two (parallel) 6-inch sanitary sewer force mains from the Penn Valley community to the Lake Wildwood WWTP. The dual forcemain is 23,900 LF, with forcemain termination at an existing manhole to receive energy dissipation improvements as part of the project design. The pipeline design included suspension of the two 6-inch force mains on an existing bridge structure, one bore-and-jack installation at State highway intersection, and one HDD installation beneath several large-diameter stormwater cross-culverts. Close coordination with Caltrans, the District, and the subconsultants was necessary to keep the project on schedule. Creative bid structuring allowed for bid alternates depending upon the available funds held by the District against the current bidding climate.

Ed Francisco

Inspection



EDUCATION

B.S., Mechanical Engineering,
California State University,
Sacramento

REGISTRATION

Cross Connection Control
Specialist Certification #2429



Edwin Francisco has 30 years of experience. He has served as project manager, project engineer, construction manager, construction inspector, and associate engineer on various water reclamation, water treatment plant design, and retrofit design projects. Ed is also a certified cross connection control specialist, certified backflow tester, and has managed the construction and supported project implementation efforts for over 300 site retrofits.

SELECT PROJECT EXPERIENCE

Spanish Flat and Berryessa Pines Water System Improvements

Spanish Flat Water District and Berryessa Pines Water System, Napa County, California

Project Engineer. HydroScience designed water system improvements consisting of one 120-gpm surface water treatment plant for the Spanish Flat water system and a 60-gpm surface water treatment plant for the Berryessa Pines water system. Both plants use the dual-stage pressure filtration process with pressure contact clarifiers for pretreatment. The new plants replace old surface water treatment plants that were out of compliance with the Surface Water Treatment Rule. Other improvements consisted of a raw water pumping station, water storage tanks, and CT reservoirs.

Kishi Water Production and Treatment Facilities

City of Livingston, Merced County, California

Project Engineer. HydroScience provided pre-design, design, construction management, inspection, and startup services for a 1,300-gpm water production well and an arsenic treatment system. The City has adopted the HydroScience designed well mechanical and building enclosure as a standard for future wells. Features included a building enclosure for the well pump, chemical equipment, electrical switchgear, and backup generator. HydroScience developed the DHS Merced County District's first Operations Plan for an arsenic groundwater treatment plant as part of the project permitting.

Sun Valley Estates Well

City of Livingston, Merced County, California

Project Engineer. HydroScience was contracted to provide predesign, design, construction management, inspection, and startup

services for a 1,500-gpm well serving a subdivision in Livingston, Calif. Features included a building enclosure for the well pump, chemical equipment, electrical switchgear, and backup generator.

Aston Avenue Water Main and Sewer Replacement

City of Santa Rosa, Sonoma County, California

Project Manager. After the City of Santa Rosa identified improvements to meet residual pressure criteria and fire flow demands, HydroScience provided plans and specifications to replace 720-feet of 6-inch water main with a 12-inch water main, abandon an existing 8-inch sanitary sewer, and install 300-feet of 4-inch sanitary sewer to terminate to a sanitary sewer manhole. Design challenges included routing the mains around numerous existing utilities and structures along the 24-foot wide Aston Avenue.

American Canyon Water Treatment Plant Upgrade

City of American Canyon, California

Project Engineer for Construction Administration. The construction administration phase of the project included the review and approval of construction submittals and provided engineering support for the review of Requests For Information (RFIs) and Requests for Design Clarification (RFDCs).

Groundwater Development

Graton Rancheria Hotel and Casino Project, Federated Indians of Graton Rancheria, Sonoma County, California

Project Manager and Construction Inspector. HydroScience prepared all permitting, design, and construction phase services for the development of a new groundwater supply

Ed Francisco

well to serve as the primary water supply to this new hotel and casino project in Sonoma County, CA. This 650-foot deep water well was developed with a capacity of 500 gpm. The well was drilled and developed, and screens placed based on water supply and water quality. Ed served as the construction inspector for this project.

Lincoln Oaks Storage Tank, Pump Station, and Transmission Pipeline

California American Water Company, Citrus Heights, California

Project Engineer. The Lincoln Oaks water system is a stand-alone system with 26 well sites and one storage facility, but struggled from limited fire flow capacity and system reliability. HydroScience was selected by Cal Am to plan, design, and provide engineering services during construction for a new 1.5 MG water storage tank and 2,500 gpm booster pump station. HydroScience also designed 10,000 LF of transmission and distribution system improvements, in phases, to increase fire flow capacity and system reliability. Key project elements included an extensive public outreach campaign involving the CPUC, local cities and water districts, and businesses and residents who would be impacted by the project. Ed designed and developed AutoCAD design drawings for the transmission pipeline. Conducted site surveys and worked with other staff disciplines to provide complete design plan set.

San Jose Water Recycled Water Master Plan and Program Implementation

San Jose Water, California

Project Engineer. HydroScience assisted San Jose Water (SJW) in working with the City of San Jose to expand the use of recycled water by facilitating and developing Amendments to the City's wholesaler-retailer agreement with SJW to retail recycled water. HydroScience assisted SJW in negotiating with the City to own, operate, and maintain recycled water lines within SJW's service area, then developed a Recycled Water Master Plan (RWMP) for SJW identified 17 potential recycled water alignments in the City of San José representing 6,700 AFY of recycled water opportunities for nonpotable uses and up to 25,000 AFY of potable reuse opportunities. Together, these alignments represent over \$100M of infrastructure to be implemented over a 10-year period.

San Ramon Valley Recycled Water Landscape-Irrigation Customer Retrofit

East Bay Municipal Utility District, Contra Costa County, California

Construction Manager / Project Engineer. HydroScience prepared 40 recycled water retrofit designs in accordance with CDPH standards, coordinated the designs with the City of San Ramon and customers, and obtained CDPH approval of the retrofit plans. HydroScience coordinated all design efforts and



prepared designs based on site surveys, available irrigation and utility drawings, and the requirements for cross-connection control, separation, and labeling of recycled water facilities. Customers have a combined annual demand of approximately 800 acre-feet per year and included the Bridges Golf Course, Chevron's corporate headquarters, a shopping center, and several schools and parks. This was the first major design-build project of its kind in Northern California. Specific activities involved overseeing the retrofit designs and construction. Performed detailed onsite surveys to document existing irrigation infrastructure to create detailed base mapping for design purposes. Provided coordination with the customer to ensure minimal interruptions was experienced during water service interruptions. Provided construction inspections to ensure compliance to the design drawings. Developed record drawings at the end of project for the client.

Wastewater Treatment Plant Improvements Project and Study

Rodeo Sanitary District, Contra Costa County, California

Construction Manager. HydroScience prepared preliminary and final designs for high-priority improvements to the RSD's 1.14 MGD secondary activated sludge wastewater treatment plant. The preliminary design phase included evaluations, preliminary designs, and engineer's opinions of probable construction costs from new improvements to the administration building, aeration basin, utility water pumping systems, digester equipment, and PLC/SCADA system. Specific daily activities included, but not limited to the following: Participation in weekly project status meetings with the client and contractor. Daily observation of ongoing construction activities to ensure compliance to the design drawings. Daily inspection reports with photos. Reviewed and approved change-order request. Reviewed certified payroll invoicing for approval of contractor progress payments.

Amador Lakes Recycled Water Retrofit

Rafanelli and Nahas Management, Contra Costa County, California

Construction Manager / Project Engineer. HydroScience was retained to design the retrofit of the Amador Lakes Community in Dublin to receive recycled water for landscape irrigation. This retrofit includes over 500 units, three clubhouses, over 70 controllers, and eight separate irrigation systems, and was further complicated by only one recycled water point of connection. HydroScience analyzed the system, reviewed the site, and designed the retrofit to allow the eight irrigation systems to continue operating independently, while avoiding excessive trenching of new recycled water pipelines in the street. HydroScience also separated the system from the existing potable and well water supplies onsite, and provided site permitting, inspection, cross-connection testing support, and coverage testing services.

Mike A. Marandi, PE

Electrical, Instrumentation & Control Lead



HydroScience 

EDUCATION

M.S. - Electrical Engineering, Control Systems, California State University, Sacramento, California

B.S. – Double Major Electrical and Electronics Engineering and Material Science Engineering, University of California, Berkeley, California

REGISTRATION

Electrical Engineer, California, Registration No. E14505

AFFILIATIONS

Institute of Electrical and Electronics Engineers

International Society of Automation

California Water Environment Association

Water Environment Association

Mike has 40 years of experience in engineering and design of electrical, instrumentation and supervisory control and data acquisition (SCADA) systems. Mike serves as the electrical department manager. His experience includes project/task management, field investigation, technical analysis, construction services, technical writing, specifications, and Codes and Standards. His experience ranges from system design and integration to application of advanced technology in development of cost effective systems tailored to the clients' project needs and requirements.

SELECT PROJECT EXPERIENCE

Water System Improvements and Valve Replacements

City of Foster City/Esterio Municipal Improvement District, California

Lead Electrical Engineer. HydroScience was retained to design the replacement of two water valves and the installation of two new bypass assemblies at various locations in the City of Foster City service area. The valve replacements included an 18-inch gate valve and a 16-inch butterfly valve at busy intersections in Foster City and San Mateo. The two new bypass assemblies will be installed on the existing 24-inch transmission main attached to the Seal Slough Bridge, which serves as the main water supply pipeline to Foster City. The bypass assembly consists of dual 12-inch bypass connections with 12-inch butterfly valves, and additional 24-inch isolation valves on the transmission main. The bypass system provides a critical piece of infrastructure to the City's water supply system to increase reliability and maintain water service during an emergency, and is being designed to route the flow around the bridge using temporary 12-inch aluminum pipe, flexible 12-inch hoses, and the bypass assemblies. HydroScience performed site investigations and will provide bidding and engineering services during construction.

Manteca TCP Mitigation Projects

City of Manteca, California

Electrical Engineer. HydroScience provided engineering design services consisting of design report preparation, development of detailed plans and specifications, and construction phase engineering support as part of this design/build project to install Granular Activated Carbon (GAC) treatment vessels

on four existing groundwater well sites in the City of Manteca. The GAC treatment systems addressed concentrations of the synthetic organic chemical 1,2,3-trichloropropane (TCP) in City groundwater. HydroScience teamed with a general engineering contractor to implement this turn-key project on a Guaranteed Maximum Price (GMP) contractual basis. This project included the design of 4,000 feet of raw water pipeline, CEQA documentation, and incorporating new GAC instrumentation with existing well pump performance. The project also included an earthen stormwater retention basin.

Facility Master Agreement, San José-Santa Clara Regional Wastewater Facility

City of San José, California

Electrical, Instrumentation & Control Lead. HydroScience is providing on-call planning, evaluation, detailed design, and construction support services under a multi-year Master Services Agreement (MSA) with the City of San José. The Regional Wastewater Facility (RWF) is a 167 MGD secondary and tertiary wastewater treatment plant. HydroScience is working directly with the RWF's engineering, operations, and maintenance staff to implement studies and designs on an on-call basis throughout the facility. HydroScience has completed condition assessments and evaluations for the outfall bridge, major pond gates, and HVAC systems. HydroScience also completed designs of nitrification clarifier exterior lighting to improve safety during night-time operations, and designed the replacement of the existing process water (3W) pumps which deliver up to 14,000 gpm to unit processes throughout the plant.

Mike A. Marandi, PE



Wolfe-Evelyn Water Plant Reconstruction

City of Sunnyvale, California

Electrical and Instrumentation Lead. HydroScience is providing planning and design services for the City of Sunnyvale at the Wolfe-Evelyn Water Plant to replace four existing and aged pumps with new VFD controlled pumps with a capacity of approximately 7.9 MGD. The proposed design will allow the plant to safely remain on-line while the new electrical system is installed and each existing pump is replaced and tested in succession. Upon replacement of the final pump, the entire outdated electrical system will be removed. Other site upgrades include site paving around the existing pump building, grading and access road improvements around the storage tank, a vehicle tire wash down station, and seismic upgrades to the existing pump building. HydroScience is also slated to prepare the CEQA documentation for Categorical Exemption for the City, as well as assist in the preparation and acquisition of any other required permitting or documentation.

Florin Pump Station Improvements

City of Sacramento, California

Electrical Engineer. In late 2017, the City of Sacramento received an air quality assessment report on the Florin Pump Station, a large below-ground water booster pump station located adjacent to a neighborhood recreational park. This report found excessive levels of carbon monoxide and methane gases at levels exceeding OSHA thresholds. HydroScience worked closely with City engineering staff to develop a detailed project scope, evaluate ventilation improvement alternatives, and implement a ventilation improvements design to improve worker health and safety and comply with OSHA thresholds. Improvements include: modification of exhaust stack outlets to improve dispersion of gases, installation of a separate air supply and cooling for the control room, and supply and exhaust ducting and fan additions in the equipment room. HydroScience also designed electrical power and controls modifications to operate the new equipment. The City later determined that separately designed metering, exit stair, and control system improvements should be bundled into the same bid package for construction by a single general contractor. HydroScience incorporated these separate design elements into one unified set of plans and specifications, applying creative approaches to organize the project components into a five-part set of plans and specifications.

Ashland Water Pipeline Rehabilitation Project I

City of Folsom, California

Lead El&C. This project involves rehabilitation of 1,500 lineal feet of an existing 20 and 21-inch water transmission pipeline located along Folsom Auburn Boulevard and Greenback Lane. Rehabilitation will include pipeline replacement with ductile iron and fusion bonded epoxy steel pipe using open-cut construction,

trenchless rehabilitation technologies of the existing pipeline including Spray-in-Place Pipe (SIPP) with cement mortar lining (CML), SIPP with epoxy lining, Fold and form lining, and Cured-In-Place Pressure Pipe., addition of SCADA to an existing PRV station, and miscellaneous replacement to failed valves. The project includes coordination with USBR regarding the section of pipe located on either side of Rainbow Bridge to obtain a temporary construction easement for rehabilitation of the pipeline within USBR property. The project is currently in design with construction planned for the Spring 2022.

Aptos Junior High Well Improvements

Soquel Creek Water District, Santa Cruz County, California

Electrical and Instrumentation. HydroScience was retained to evaluate and design upgrades for the Aptos Junior High replacement well for the Soquel Creek Water District. The District has been experiencing issues with the well site, which was originally drilled in 1927. Improvements include the installation of a VFD with bypass starter on the recently replaced well head motor, installation of a new discharge header and flow meter, replacement of the iron and manganese treatment plant influent header and surface spray header, relocation of the ferric chloride injection point, and the installation of a gravity retaining wall and replacement well equipment/work pad. HydroScience provided engineering services during construction.

Auburn Water Treatment Plant Improvements

Placer County, California

Senior Engineer. This project included major upgrades to the water treatment plant processes, electrical system, and control system. Water treatment facilities design included raw water pumping, seven Membrane Treatment Units (MTU), chemical processes, high service and backwash pump stations, electrical room, and administration building. The electrical system included a 1600A, 480VAC switchboard, three motor control centers, and one 1000kW standby generator. The control system included PLC based Ethernet TCP/IP SCADA system including a Main Control Panel, several Remote Control Panels, and four SCADA stations. The control system communications system included several radios and fiber backbone linking new SCADA station with Water Quality SCADA, existing Auburn Business Center, and new Maintenance Building SCADA system. Responsibilities included supervision of the design team, Quality Control, and sealing of the contract documents.

Thinh Le, PE

Electrical, Instrumentation & Control Support



EDUCATION

M.S., Electrical Engineering,
California State University,
Sacramento

B.S., Electrical Engineering,
California State University,
Sacramento

REGISTRATION

Electrical Engineer, California,
Registration No. E18362

Thinh Le has over 17 years of experience serving as Project Manager, Lead E&IC Engineer on a variety of water, wastewater, and recycled water projects. He has knowledge of ISA, IEEE, NEC, NFPA, and codes applicable to electrical and I&C system design and construction. He has worked in both electrical and I&C roles on design and construction management projects and has an extensive working knowledge of electrical project development from analysis, SCADA systems, network & communication security, industrial automation controls, emergency and standby power, and electrical power systems including low and medium voltage electrical systems.

SELECT PROJECT EXPERIENCE

Manteca TCP Mitigation Projects

City of Manteca, California

Lead EI&C. HydroScience provided engineering design services consisting of design report preparation, development of detailed plans and specifications, and construction phase engineering support as part of this design/build project to install Granular Activated Carbon (GAC) treatment vessels on four existing groundwater well sites in the City of Manteca. The GAC treatment systems addressed concentrations of the synthetic organic chemical 1,2,3-trichloropropane (TCP) in City groundwater. HydroScience teamed with a general engineering contractor to implement this turn-key project on a Guaranteed Maximum Price (GMP) contractual basis. This project included the design of 4,000 feet of raw water pipeline, CEQA documentation, and incorporating new GAC instrumentation with existing well pump performance. The project also included an earthen stormwater retention basin.

Wolfe-Evelyn Water Plant Reconstruction

City of Sunnyvale, Santa Clara County,
California

Electrical Engineer. HydroScience provided planning, design and construction services for the City of Sunnyvale at the Wolfe-Evelyn Water Plant to replace four existing and aged pumps with new VFD controlled pumps with a capacity of approximately 7.9 MGD. The design allows the plant to safely remain on-line while the new electrical system is installed and each existing pump is replaced and tested in succession. The entire outdated electrical system was removed and updated with arc-clash compliant motor control centers. Other



site upgrades include site paving around the existing pump building, grading and access road improvements around the storage tank, a vehicle tire wash down station, and seismic upgrades to the existing pump building. HydroScience prepared the CEQA documentation for Categorical Exemption for the City, as well as assist in the preparation and acquisition of any other required permitting or documentation.

Water Treatment and Storage Facility

Lytton, Sonoma County, California

E&C. HydroScience is providing design engineering and engineering support of construction for new groundwater wells, groundwater treatment, treated water storage, and booster pumping facility to serve the Lytton Rancheria Project, a tribal residential development located near Windsor, CA. HydroScience's role is design engineer-of-record as part of a design/build project team. The facility will produce an average day flow of approximately 120K gpd at buildout. New wells will deliver raw water to a water treatment system to reduce concentrations of arsenic and manganese in the groundwater to below primary maximum contaminant levels. The treatment process will include pH adjustment, oxidation, coagulation/filtration, post-filtration adsorption, and backwash thickening. Dosing of sodium hypochlorite followed by storage in on-site welded steel storage tanks will follow. A booster pump station consisting of banks of low and high flow pumps followed by a hydropneumatic tank will deliver water to the distribution system for residential demands and fire flows. The treatment and pumping equipment will be housed in a new CMU building, which will also contain an

Thinh Le, PE



operations office, lab, power distribution, and control systems. The design phase has been completed and HydroScience will provide construction phase support including review of RFIs and submittals, field visits, and commissioning support.

Pacheco Pumping Plant Adjustable Speed Drive Replacement Project

Santa Clara Valley Water District, Pacheco, Santa Clara County, California

Project Engineer. The project involved replacing the pump motor drives at this large and critical facility which is owned by the US Bureau of Reclamation and is critical to the water supply of the Santa Clara Valley. The project includes replacing the drives on (12) 2000 hp pumps, while maintaining operability of the pumping plant throughout construction.

Water Treatment Facilities Improvements

Contra Costa Water District, Concord, Contra Costa County, California

Lead Electrical Engineer. Thinh was responsible for designing the electrical and control systems upgrades for this project which involved upgrades to five of the District's pump stations and six potable water reservoirs. Specific work included replacing MCCs and implementing electrical system upgrades. Other project elements included connecting a new on-site emergency generator and coordination with new electrical service, and adding mechanical mixers at the reservoirs to improve water quality.

Whisman Pump Station

City of Mountain View, California

Electrical and I&C. HydroScience provided a condition and risk assessment of the aging Whisman Pump Station, which identified various mechanical, structural and electrical improvements needed to enhance long-term reliability and potable water delivery throughout zones 1 and 2 of the City's distribution system. Budgetary construction costs were then determined to help the City plan for the upcoming CIP budget. The condition assessment included a site visit and a discussion with City operators, engineers, and facilities managers to identify expectations, goals, and objectives. HydroScience then developed a list of deficiencies requiring upgrade. Recommended improvements included the construction of two new 200-hp split-case centrifugal pumps for Zone 2 distribution, replacement of the existing Motor Control Center and Variable Frequency Drives, SCADA integration, seismic upgrades, mechanical improvements, and the development of an autonomous control system.

Fire Related Repairs to Water and Sewer Facilities

City of Santa Rosa, California

Lead EI&C. The City of Santa Rosa (City) selected HydroScience to prepare detailed plans and specifications to implement

repairs and modifications to each of their ten potable water facilities and five of their sewer lift stations damaged in the Tubbs Fire. HydroScience visited each facility and verified the required repairs developed in partnership with FEMA and CAL OES under the Public Assistance Grant program. The facilities including pump stations, reservoirs, and a well. Design for repairs included recoating a fire-damaged reservoir, replacing damaged generator, site equipment, fencing, irrigation, paving, and some building rehabilitation. HydroScience prepared plans, specifications, estimates, and contract documents for the projects.

Arnold WWTF Improvements

Calaveras County Water District, California

Electrical and I&C Lead. HydroScience is providing preliminary and final design of improvements to the Arnold Wastewater Treatment Facility (WWTF) for the Calaveras County Water District (CCWD). The Arnold WWTF is a 175,000 gpd facility that uses an oxidation ditch, secondary clarifier, pressure filter, and chlorine disinfection to treat to secondary standards. The facility currently serves 835 equivalent single-family units (ESFUs) and is covered under the General Order for Small Domestic Treatment Systems (WQ-2014-153-DWQ-R5190). The facility currently lacks unit process redundancy and has insufficient capacity to reliably treat peak wet weather flows. The existing electrical power distribution is over 35 years old and does not have sufficient capacity to serve an expanded facility. HydroScience is developing the design in close collaboration with CCWD engineering, operations, and maintenance staff. The project will add a second secondary clarifier, improve mixed liquor flow control with provisions for a future second oxidation ditch, increase aerobic digestion capacity, replace the return and waste activated sludge pump station, and upgrade effluent pumping. CCWD decided to expand the project scope by adding complete replacement of the utility power feed, motor control center, SCADA system, and PLC control panel which will be completed as a collaborative effort with District staff and their preferred controls engineer.

LAVWMA Export Pump Station, Storage, Pipeline, and San Leandro Sample Station Evaluations

Livermore-Amador Valley Water Management Agency, Alameda County, California

EI&C Evaluation. HydroScience performed three engineering evaluations of the LAVWMA treated wastewater storage, pumping, and conveyance infrastructure which conveys flows to the East Bay Dischargers Authority (EBDA) outfall system. The System Capacity Analysis included modeling of existing and future LAVWMA flows and storage operations to analyze operating scenarios, evaluate regulatory options for local discharge, and identify future EBDA capacity needs.

Anthony Perez

Drafting / Standard Details



EDUCATION

A.A., Computer Aided Drafting & Design Technology, ARC
Sacramento

HydroScience 

Anthony has extensive knowledge of AutoCAD Civil 3D with specialized knowledge in steel and stainless steel piping fabrication. His 14 years of experience ranges from drafting engineered drawings to the drafting of precise shop fabrication drawings for piping solutions in adherence to custom specifications and local governing standards. He was trained by the Pipefitters Union Local #447 in the fabrication and installation of water and wastewater piping in commercial structures across Northern California. He is an Autodesk Certified Professional and member of the Autodesk User Group International (AUGI).

SELECT PROJECT EXPERIENCE

First Street Water Line and Storm Drain Replacement

City of Gilroy, California

CAD Drafter. HydroScience worked with the City of Gilroy to design and implement the First Street Water Utility Improvements project, which replaced approximately 1.5 miles of existing 16-inch diameter piping with 24-inch diameter piping within Caltrans Highway 152. The project alignment impacted three major intersections and a number of minor intersections. Project challenges included limiting water service interruption, working in parallel to several PG&E gas transmission mains, developing a detailed traffic control plan, optimizing work hour restrictions, and addressing special Caltrans requirements included in the approved encroachment permits.

Bickford Ranch Off-Site Sewer Design

Placer County, California

CAD Drafter. The Bickford Ranch Specific Plan (Bickford Ranch) is located just east of the City of Lincoln's sphere of influence. Sewer flows from Bickford Ranch will be conveyed to the Regional Sewer interceptor along State Route 193. HydroScience is designing the 18-inch off-site gravity sewer pipeline (6,900 linear feet of PVC piping) that connects the Bickford Ranch's sewer collection system to Placer County's section of the existing Regional Sewer interceptor system. The off-site sewer pipeline will be owned and maintained by Placer County. Approximately 3,200 linear feet will be installed within the Sierra College Boulevard right-of-way (ROW) and will require an encroachment permit from Placer County. The remaining 3,700 linear feet of pipeline will be installed within Caltrans right-of-way (State Route 193) and will require a Caltrans

encroachment permit. In addition to the permitting challenges, other project challenges include designing the pipeline to meet both jurisdiction's design standards, avoiding potential wetland areas, installing through areas with bedrock formations.

Manteca TCP Mitigation Projects

City of Manteca, California

Drafting. HydroScience provided engineering design services consisting of design report preparation, development of detailed plans and specifications, and construction phase engineering support as part of this design/build project to install Granular Activated Carbon (GAC) treatment vessels on four existing groundwater well sites in the City of Manteca. The GAC treatment systems addressed concentrations of the synthetic organic chemical 1,2,3-trichloropropane (TCP) in City groundwater. HydroScience teamed with a general engineering contractor to implement this turn-key project on a Guaranteed Maximum Price (GMP) contractual basis. This project included the design of 4,000 feet of raw water pipeline, CEQA documentation, and incorporating new GAC instrumentation with existing well pump performance. The project also included an earthen stormwater retention basin.

Granite Way Well

Soquel Creek Water District, Santa Cruz County, California

CAD Drafter. HydroScience was retained to plan and design a new production well within the Aptos Village Development. The well will pump groundwater to an existing iron and manganese treatment facility. HydroScience prepared a Preliminary Design Technical

Anthony Perez



Memorandum for the new Granite Way Well, and is currently designing the well site layout, well pump and discharge piping, and electrical, instrumentation and control systems.

Florin Pump Station Improvements

City of Sacramento, California

CAD Drafter. In late 2017, the City of Sacramento received an air quality assessment report on the Florin Pump Station, a large below-ground water booster pump station located adjacent to a neighborhood recreational park. This report found excessive levels of carbon monoxide and methane gases at levels exceeding OSHA thresholds. HydroScience worked closely with City engineering staff to develop a detailed project scope, evaluate ventilation improvement alternatives, and implement a ventilation improvements design to improve worker health and safety and comply with OSHA thresholds. Improvements include: modification of exhaust stack outlets to improve dispersion of gases, installation of a separate air supply and cooling for the control room, and supply and exhaust ducting and fan additions in the equipment room. HydroScience also designed electrical power and controls modifications to operate the new equipment. The City later determined that separately designed metering, exit stair, and control system improvements should be bundled into the same bid package for construction by a single general contractor. HydroScience incorporated these separate design elements into one unified set of plans and specifications, applying creative approaches to organize the project components into a five-part set of plans and specifications.

East Dunne Potable Water Transmission Main

City of Morgan Hill, California

Drafting. The City of Morgan Hill identified improvements necessary to increase water system reliability in the City's Holiday Estates upper pressure zone. A new water transmission main was needed to feed a new water tank located in the upper pressure zone. HydroScience was selected to provide design services for the construction of approximately 4,000 LF of 16-inch PVC C905 potable water transmission main piping from the East Dunne Booster Pumping Station to the future tank site. Design included two enclosed pressure reducing valves to feed two lower pressure zones. New interties with the existing 8-inch potable water distribution main provided reliability to the distribution system in the upper zone. HydroScience also provided bidding services and engineering services during construction. The water main construction was completed December 2016.

Camp Parks Water Main Improvements

Dublin San Ramon Services District, California

CAD Drafter. The water system within Camp Parks has posed operational and maintenance challenges due to shallow, aging pipelines. Sections of the water mains have experienced leaks and breaks over the years, and some pipelines may be undersized

to meet the ultimate needs of the area. HydroScience is providing engineering design services for water main improvements to help ensure DSRSD and Camp Parks has a reliable water supply relative to demand and quality. This project includes preparation of a conceptual design report documenting findings from HydroScience's hydraulic evaluation, survey collection and basemap development, geotechnical desktop study, and design alternatives analysis. HydroScience is also supporting the District with the NEPA process as well as public outreach.

Water and Sewer Line Improvements

City of Hayward, California

Drafter. This project will result in the replacement of approximately 3.5 miles of sewer and 5 miles of water pipelines within the City of Hayward. Pipeline replacement projects were selected for a variety of factors, including increasing O&M capabilities (installing new manholes), replacing sewer/water mains (due to pipe sags, cracked pipes, and pipe deformations), improving maintenance access, alleviating capacity constraints/ adding pipeline capacity, and replacing pipelines that have reached the end of their useful life. HydroScience looked at some of the more challenging aspects and identified potential solutions to each, including easements, Caltrans, UPRR, and BART permitting, and pavement moratoriums. This approach anticipates potential challenges and fast tracks a process to develop solutions that will minimize surprises and keep the project on schedule. HydroScience is providing engineering design, bidding, and construction support services for this important project encompassing 17,847 feet of sewer and 26,229 feet of water pipelines ranging in pipe diameter from 8" to 15". The project also contains four trenchless repair sections. There are three trenchless sections that cross underneath railroad tracks and a 24" gas transmission main that will be replaced via bore and jack.

Fire Related Repairs on Ten Potable Water Facilities

City of Santa Rosa, California

CAD Drafter. The City of Santa Rosa (City) selected HydroScience to prepare detailed plans and specifications to implement repairs and modifications to each of their ten potable water facilities and five of their sewer lift stations damaged in the Tubbs Fire. HydroScience visited each facility and verified the required repairs. The project scope and contract documents were developed in compliance with FEMA and CAL OES requirements under the Public Assistance Grant program. The repaired facilities included pump stations, reservoirs, and a well. Design for repairs included recoating a fire-damaged reservoir, replacing damaged generator, site equipment, fencing, irrigation, paving, and some building rehabilitation. HydroScience prepared plans, specifications, estimates, and contract documents for the projects.

Brad Friederichs, SE

Structural Engineer



EDUCATION

B.S., Civil Engineering with honors, California State University, Sacramento

REGISTRATION

Structural Engineer, California, Registration No. S2780

AFFILIATIONS

Structural Engineers Association of Central California, president 1989-90

American Society of Civil Engineers

American Concrete Institute

American Institute of Steel Construction

Brad Friederichs has 38 years of experience as a structural engineer for wastewater, water treatment, commercial, industrial, agricultural, retail and residential structures. His expertise is in cast-in-place concrete, prestressed concrete, steel, wood and masonry construction. His specialty is in producing completely detailed, contractor friendly, value-oriented construction documents resulting in projects that bid well with few change orders.

VE Solutions

PROJECTS AS SUBCONSULTANT TO HYDROSCIENCE

Water System Improvements and Valve Replacements

City of Foster City/Estero Municipal Improvement District, California

Structural Engineer. HydroScience was retained to design the replacement of two water valves and the installation of two new bypass assemblies at various locations in the City of Foster City service area. The valve replacements included an 18-inch gate valve and a 16-inch butterfly valve at busy intersections in Foster City and San Mateo. The two new bypass assemblies will be installed on the existing 24-inch transmission main attached to the Seal Slough Bridge, which serves as the main water supply pipeline to Foster City. The bypass assembly consists of dual 12-inch bypass connections with 12-inch butterfly valves, and additional 24-inch isolation valves on the transmission main. The bypass system provides a critical piece of infrastructure to the City's water supply system to increase reliability and maintain water service during an emergency, and is being designed to route the flow around the bridge using temporary 12-inch aluminum pipe, flexible 12-inch hoses, and the bypass assemblies. HydroScience performed site investigations and will provide bidding and engineering services during construction.

Lincoln Oaks Storage Tank, Pump Station, and Transmission Pipeline

California American Water Company, Citrus Heights, California

Structural Engineer. The Lincoln Oaks water system is a standalone system with 26 well sites and one storage facility, but struggled from limited fire flow capacity and system reliability. HydroScience was selected by Cal Am to plan, design, and provide engineering services during construction for a new 1.5 MG

water storage tank and 2,500 gpm booster pump station. HydroScience also designed 10,000 LF of transmission and distribution system improvements, in phases, to increase fire flow capacity and system reliability. Key project elements included an extensive public outreach campaign involving the CPUC, local cities and water districts, and businesses and residents who would be impacted by the project. Bids came in below the original project estimate.

Manteca TCP Mitigation Projects

City of Manteca, California

Structural Engineer. HydroScience provided engineering design services consisting of design report preparation, development of detailed plans and specifications, and construction phase engineering support as part of this design/build project to install Granular Activated Carbon (GAC) treatment vessels on four existing groundwater well sites in the City of Manteca. The GAC treatment systems addressed concentrations of the synthetic organic chemical 1,2,3-trichloropropane (TCP) in City groundwater. HydroScience teamed with a general engineering contractor to implement this turn-key project on a Guaranteed Maximum Price (GMP) contractual basis. This project included the design of 4,000 feet of raw water pipeline, CEQA documentation, and incorporating new GAC instrumentation with existing well pump performance. The project also included an earthen stormwater retention basin.

Bickford Ranch Off-Site Water Infrastructure Project

Bickford Ranch, Placer County, California

Structural Engineer. HydroScience prepared a potable water hydraulic model to serve this 1,928 acre development in Placer County.

Brad Friederichs, SE

VE Solutions

The design includes development of a new green-field tank and pump site adjacent to the Catta Verdera neighborhood in Lincoln, CA. New water facilities include one 1.4 million-gallon (MG) tank to mitigate impacts of peak hour deliveries from Placer County Water Agency (PCWA) and provide operational storage, a 7.5 mgd booster pump station with canned vertical turbine pumps, 10,000 gallon hydropneumatic tank for pressure control, CMU pump station building, 4,000 LF of 18-inch transmission main pipeline, and 4,000 LF extension of PCWA's 60-inch Ophir transmission pipeline. The project included Caltrans permitting, as the sewer pipeline parallels Hwy 193. Placer County is obtaining a cooperative agreement with Caltrans because of this complex project.

County Service Area 11 Water Supply

County of San Mateo, California

Structural Engineer. The County Service Area 11 (CSA 11) is a public water system comprising of two groundwater wells, a pump house, a 140,000 gallon storage tank, and potable water distribution system serving the Town of Pescadero, California. The CSA 11's water source is an underground aquifer adjacent to the Pacific Ocean. Due to the declining water table, drop in capacity, and a lack of redundancy in the system, the County asked HydroScience to update the hydrogeologic report, design a new groundwater well, and design a new 140,000 gallon water storage tank. HydroScience completed the report and recommended that a deeper well be installed to take advantage of overlying potable groundwater supplies. HydroScience developed the designs for the new well and tank, and provided construction management. As the Pescadero area was identified as a disadvantaged community, this project was funded by a grant from the Bay Area IRWM. HydroScience assisted the County in preparing all of the IRWM documentation required to receive the grant.

Community Park Irrigation and Well No. 11 Conversion

City of Davis, California

Structural Engineer. The City of Davis provides and maintains parks and open spaces that enhance the quality of life for Davis residents and visitors. For a sustainable landscape at the City's Community Park, the Public Works Department has collaborated to reduce water consumption in the City Parks and Greenbelts. As part of our current master agreement with the City, HydroScience was asked to provide Preliminary Engineering, Design, and Construction services for this project, which focused on the following objectives:

- Disconnecting existing Well #11 and the Community Park irrigation system from the City's potable water system.
- Converting existing Well #11 to an irrigation only supply well.
- Connecting the Community Park irrigation system to the supply from Well #11.

Whisman Pump Station

City of Mountain View, California

Structural Engineer. HydroScience provided a condition and risk assessment of the aging Whisman Pump Station, which identified various mechanical, structural and electrical improvements needed to enhance long-term reliability and potable water delivery throughout zones 1 and 2 of the City's distribution system. Budgetary construction costs were then determined to help the City plan for the upcoming CIP budget. The condition assessment included a site visit and a discussion with City operators, engineers, and facilities managers to identify expectations, goals, and objectives. HydroScience then developed a list of deficiencies requiring upgrade. Recommended improvements included the construction of two new 200-hp split-case centrifugal pumps for Zone 2 distribution, replacement of the existing Motor Control Center and Variable Frequency Drives, SCADA integration, seismic upgrades, mechanical improvements, and the development of an autonomous control system.

Buena Vue Casino Water and Wastewater Facilities

Buena Vue Rancheria, Amador County, California

Structural Engineer. HydroScience provided detailed design for wells, potable water supply, and wastewater treatment systems for this casino project. Wastewater treatment utilizes a 100,000 gpd membrane bioreactor (MBR) providing tertiary-treated Title-22 compliant effluent for discharge and onsite irrigation use in accordance with an NPDES permit. The wastewater treatment system includes influent pumps, fine screens, nitrification/denitrification, equalization, emergency storage, hollow fiber membrane modules, ultraviolet disinfection, and solids screw press. Water supply components include three wells, sodium hypochlorite injection, greensand filtration for iron and manganese removal, 1.25 MG storage tank, booster pumps for fire and domestic demands, and backwash/solids handling systems. The project was constructed via the design-build delivery method.

Wolfe-Evelyn Water Plant Reconstruction

City of Sunnyvale, California

Structural Engineer. HydroScience provided planning, design and construction services for the City of Sunnyvale at the Wolfe-Evelyn Water Plant to replace four existing and aged pumps with new VFD controlled pumps with a capacity of approximately 7.9 MGD. The design allows the plant to safely remain on-line while the new electrical system is installed and each existing pump is replaced and tested in succession. The entire outdated electrical system was removed and updated with arc-clash compliant motor control centers. Other site upgrades include site paving around the existing pump building, grading and access road improvements around the storage tank, a vehicle tire wash down station, and seismic upgrades to the existing pump building.



via Personal Delivery / email

December 22, 2021

Del Paso Manor Water District
1817 Maryal Drive, Suite 300
Sacramento, CA 95864

Re: Statement of Qualifications for District Engineer

Dear members of the Selection Team:

Thank you for inviting Forsgren Associates, Inc. (Forsgren) to submit our qualifications to Del Paso Manor Water District (District) for serving as your District Engineer.

It was my distinct pleasure to lead Forsgren in our previous services to the District, and it would be my privilege to resume this role should Forsgren be selected as your District Engineer. As you read through the following Statement of Qualifications (SOQ) I ask that you consider the following benefits that Forsgren offers to the District:

- ***Direct Experience with the District:*** Forsgren offers a level of institutional knowledge of the District that would be challenging for any other firm to match. With Forsgren serving as District Engineer from 2011 to 2019, and one of our Key Team Members – Rich Bolton – working as an employee of the District for 30 years, we have a broad and deep understanding of the District's infrastructure condition, operational challenges, regulatory constraints, and funding limitations. In addition, many of our employees have worked on District projects over the years, and most of these employees are still a resource for the District. This means that not only do we bring valuable institutional knowledge to the table, but also, we will be able to get up to speed on your current challenges that much faster, and help you build solutions that much sooner. You will see this emphasized as you read through our qualifications, but it is perhaps best summarized in the figure included in Section 6 – Additional Comments.
- ***Understanding of Regional Issues:*** Forsgren has been working as part of the northern California water community for over 20 years. We are long-term participants/members of the Sacramento Area Water Works Association (SAWWA), Regional Water Authority (RWA), Sacramento Groundwater Authority (SGA), and more. As such, we are in tune with the regional issues facing the water community, and have existing relationships with many of the managers, operators, and regulators in the water community. This means that we can help you react quickly to challenges and opportunities.
- ***Experience with Water Utilities:*** Forsgren has provided engineering and related services to its clients across the west for nearly 60 years, with most of these services related to water. We have provided these same services to water utilities in northern California for over 20 years. With our 100 engineers, scientists, and other professionals company-wide, Forsgren has the breadth and depth of experience to tackle any challenges you are likely to face.

As a Vice President, I am an authorized representative of Forsgren Associates, Inc. Please note that this Statement of Qualifications is valid for 90 days from the date of this letter.

SOQ for District Engineer

December 22, 2021

Page 2 of 2

Thank you for taking the time to review our Statement of Qualifications, and we look forward to your response. Please contact me with any questions or to discuss our qualifications at (916) 638-1119 or adriscoll@forsgren.com.

Respectfully,



Alan Driscoll
Vice President, Division Manager

Cc: Brian Gach, P.E., Project Manager
 Larry Evans, P.E., President
 M.J. Dela Cruz, Project Administrator

Enclosure

1. Scope Understanding

With infrastructure aged beyond any reasonable service life, the program for replacing this infrastructure postponed for several years, funding for the needed replacements limited, costs for the needed replacements continuing to escalate, and now, scrutiny by the Sacramento Grand Jury...the Del Paso Manor Water District has a difficult road ahead.

If we are selected to serve as your District Engineer, we anticipate working with District staff to establish a Master Services Agreement, and an initial On-Call Services Task Order (TO). This will allow us to quickly become engaged, and to begin helping the District to navigate this difficult road.

Priorities

The District is currently attempting to 1) “get its arms around” the host of operational, regulatory, and legal issues it faces, 2) determine appropriate actions to address these issues, 3) prioritize these actions based on the nature and seriousness of the issues, and 3) time these actions to fit the realities of funding limitations. The District is organizing these needed actions – or projects – as high-, medium-, or low-priority. In truth, these terms really describe the timing of the projects, which will be dictated by the availability of funding – all of the foreseeable actions are critical for the District.

Though we are not up to speed with respect to the District’s current strategy, we expect that high-priority actions will include those that the District needs to take in order to 1) respond to the Sacramento Grand Jury by February 4, 2022, and 2) ensure its ability to fulfill its primary mission “*to provide safe drinking water in accordance with California and federal regulations and to maintain a reliable water supply for water consumption and fire protection*”, or more succinctly, to “*to meet peak hourly demand while complying with drinking water standards [and all other applicable] regulations*.“ We also expect that the high-priority projects will utilize existing District funds, though public funds may be available to address certain issues. Next, we expect that the medium-priority actions will include any from the high-priority category that could not be completed because of funding limitations. And finally, we expect that the low-priority actions will be those taken in order to ensure the long-term viability of the District as an independent water purveyor.

High Priority Projects

Under an On-Call Services TO, we envision providing a series services intended to help the District move from a reactive to a proactive mode. Some of these high-priority services may include:

- **Support for Grand Jury Response** - Schedule a meeting with District staff to 1) discuss the status of the response(s) to the Grand Jury, 2) discuss and agree on what remains to be done to complete the technical aspects of the response(s), and 3) discuss and agree on how Forsgren can help. Perform a Peer Review of the Strategic Water Solutions Technical Memorandum (HydroScience, May 2021), review other relevant documentation, and then utilize our institutional knowledge to ground-truth the Tech Memo’s observations, findings, and recommendations, and provide support for the District’s response(s) to the Grand Jury.
- **System Assessment** - Work with District staff to assess the current condition of the District’s overall system and facilities. This will entail a review of any relevant documentation not previously reviewed, a physical inspection of the facilities, and preparation of a

spreadsheet and accompanying memorandum documenting the assessment, and summarizing observations, deficiencies, and recommended actions. This will be followed by a meeting with District staff to compare and reconcile needed actions identified in previous documents, or currently being considered by the District.

- **Road Map** – Once the list of high-priority actions has been compiled, the District will need to prioritize them. We envision a “Road Map”, a spreadsheet and memorandum building on the previous Assessment that summarizes the issues, the actions intended to address the issues, decision criteria, and a decision matrix to aid in prioritization. The Road Map will be rudimentary (i.e. cost effective, and fast), but will provide important structure for prioritizing the needed actions. It will be organized, defensible, transparent, and dynamic – it can be adapted and updated as things change. This process will involve discussion with District staff regarding decision criteria, weighting factors, opportunities for grant funding, anticipated timing for resumption of planned infrastructure replacements, and more. Decision criteria for the Road Map may include:
 - Risk of not completing (Supply, Water Quality, Regulatory, etc.).
 - Value vs. use of existing funds, or “Bang for the Buck”.
 - Environmental considerations.
 - Estimated Cost.
 - Estimated Schedule.
 - Risk of obsolescence. Balance need for short-term repairs to existing system against ability to wait for planned system improvements (e.g. moving pipelines to streets).
- **General Support** – Under the On-Call Services TO we anticipate participating in meetings and telephone/video calls for general planning, to discuss funding opportunities, etc.

Once the needed actions have been prioritized, the District will be able to move forward with its high-priority projects. These actions/projects will be better defined, and in most cases will warrant independent Task Orders. Note: we anticipate that some projects may be high enough in priority that the District will want to move forward with them before the planning (above) is completed.

- **Implement High-Priority Projects** – These are the projects that are time-sensitive, relatively well defined, and can be completed with the District’s existing (limited) funding. Examples of these projects may include:
 - Critical maintenance, repairs and upgrades.
 - Rehabilitation of Well 7 – increase from standby to regular use.
 - Potential Repair of Wells 2 and 4.

Medium Priority Projects

We envision that projects prioritized, but not able to be completed because of funding limitations may be considered medium-priority projects. These projects would likely be funded through grants or debt service. Examples of these projects may include:

- Well 5 casing repairs (hole in casing)
- Well 3: further testing and assessment for TCP

Low Priority Projects

We envision that low-priority projects may represent some variation on a resumption of the infrastructure replacement program originally presented in the 2009 Master Plan. These projects would likely be funded through debt service, though grant funding may be possible. Low priority projects may include the following:

- Well Replacements
- Pipeline Replacements
- Emergency Interties
- Conjunctive Use
- Surface Water Rights Utilization
- Metering

Services

The objective of our services to the District will be to help with infrastructure improvements for potable water facilities such as wells, well sites, well houses, pump stations, pipelines, and appurtenances. At some point, there may be a need to help with storage tanks, dams, and diversion structures. In meeting this objective, our specific services may include the following:

Planning and General Support

- Planning/strategies for funding and implementing improvements.
- Alternatives Analyses for well siting, etc.
- Feasibility Studies to ground-truth concepts, inform design, and aid with funding.
- Hydrogeologic Studies for Well Siting and Improvements.
- Update and maintain Hydraulic Model; perform hydraulic modeling and analyses.
- Environmental Studies to understand and plan for water supply impacts.
- Conjunctive Use and/or Surface Water Utilization Planning.
- Scheduling for project-specific and District-wide activities.
- GIS mapping and analysis for planning and presentation.
- Support for new Development (impact analysis, procedures, forms, fees, etc.).
- Update and maintain Standard Details & Specifications.
- Complete, update, and maintain System Map.

Wells & Pumps

- Permitting and Environmental Analysis.
- Pilot Boring design, oversight, and pump testing.
- Hydrogeologic analysis of cuttings and water-bearing zones.
- Zone sampling and water quality analysis for screening selection.
- Production well design, drilling and completion oversight.
- Aquifer testing and pump sizing.
- Well-head assembly design.

Structures - Well Houses, Pump Stations, etc.

- Topographic survey, boundary surveys, legal descriptions, easements, etc.
- Geotechnical investigation and engineering.
- Structural Engineering for buildings and appurtenances.
- Electrical Engineering and Instrumentation/Controls.
- Preparation of plans, specifications, and cost estimates.

Pipelines

- GIS Mapping and Analysis.
- Alignment Studies.
- Utility Research and Coordination.
- Geotechnical investigation and engineering.
- Corrosion studies and engineering.
- Preparation of plans, specifications, and cost estimates.

Environmental & Permitting

- Preparation of environmental documents such as Initial Studies, Mitigated Negative Declarations, and Environmental Impact Reports.
- Environmental studies for CEQA/NEPA compliance (noise studies, biological surveys, etc.)
- Permitting support to acquire permits from regulatory agencies including City of Sacramento, US Army Corps of Engineers, Caltrans, County of Sacramento, Regional Water Quality Control Board, State of California Division of Drinking Water, etc.

Services during Bidding and Construction

- Engineering support during bidding.
- Bid Packages, Pre-Bid Meetings, Bid Openings.
- Construction Management
 - Pre-construction and construction progress meetings.
 - Inspection and documentation.
 - Submittals, RFIs, Change Orders, Field Orders, Payment Applications, etc.
 - Coordination for Special Testing and Inspection.
 - Punch List, Walk-Through, and Project Closeout.
- Engineering support during Construction.
- Preparation of Record Drawings.

Personnel who will be providing these services are presented in the next section, Project Team.

2. Project Team

As stated in our Cover Letter, Forsgren offers a level of institutional knowledge of the District that would be challenging for any other firm to match. We served as District Engineer from 2011 to 2019, with Alan Driscoll leading our efforts throughout. Numerous Forsgren employees have worked on District projects over the years, and some of them are included here as Key Team Members. Others are still available as a resource to the District, and will be pulled in if/as appropriate needs arise. One of our Key Team Members – Rich Bolton – worked as an employee of the District for 30 years. Rich and the Forsgren team built a good working relationship over the years, leading to Rich joining us as an employee a little over a year ago. We're happy to be able to offer his unparalleled institutional knowledge to the District as part of our team.

Biographies for our Key Team Members are presented below, followed by an organization chart. Abbreviated resumes follow at the end of this section. The figure included in Section 6 – Additional Comments, illustrates the involvement of our Key Team Members in District projects.

Alan Driscoll, P.G. (CA) - Alan will serve as our contract manager, and project manager for many of our tasks. He was the point person, technical advisor, sometimes field hand for virtually everything Forsgren did for the District over our 8 years of service. Alan brings 35 years of experience in managing infrastructure, environmental, and natural resources projects, with more than 20 of those years in California with Forsgren. Over his long tenure with Forsgren he has worked with all members of our team and understands how they do and can work as a team. He fosters open and frequent communication with project stakeholders, embracing the concept that a successful project is one in which everybody wins. Alan specializes in the management of resources to solve problems and build projects. His multidisciplinary construction, scientific, and engineering experience has cultivated his ability to bring the best resources and technologies to bear, in order to deliver cost-effective solutions to his clients. Alan manages Forsgren's Sacramento office.

Brian Gach, P.E. (CA) – Brian learned about the District's system through total immersion. In trying to establish the District's ability to deliver fire flows to the Del Paso Manor Elementary School, Brian worked closely with Alan, Rick, Nick, Jane, and Rich to update the District's hydraulic model, to design and implement a flow testing and pressure measurement program, and then to use these field measurements to calibrate the model. As a formerly licensed water system operator, Brian is very “hands on”, and will be ideally suited to assess the condition of the District's facilities, and to recommend practical, cost-effective solutions. Brian has planned, permitted, modeled, designed, prepared bid and contract documents, managed construction, managed close-out, prepared record drawings, prepared O&M manuals, and managed O&M for a wide range of water infrastructure projects, including pipelines, wells, pump stations, and treatment plants. His hands-on experience with construction, installation and operation of multiple water systems makes him extremely valuable for the inspection of these systems during construction – and – makes him just as valuable in reviewing engineering designs for these systems. He may be utilized for Permitting Assistance, Design Oversight, Bidding and Contracting, Construction

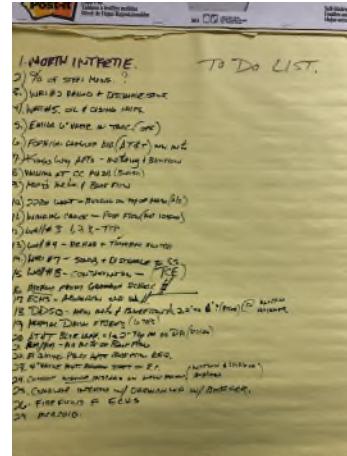
Management, Inspection, and/or Project Close-Out. Brian is located in our Reno, NV office, part of our Sacramento Division.

Rich Bolton, our Senior Technician, has more than 30 years of experience operating, maintaining, and inspecting construction of water supply and distribution systems. Rich has been an employee of Forsgren Associates for a little over a year now, but spent the prior 30 years in the trenches – as an employee of the Del Paso Manor Water District. In this capacity he was responsible for building, repairing, and and/or managing construction for virtually every conceivable element of the District's water system. Rich has a long list of improvements he'd like to make to the District's facilities (the list shown in the photo to the right was just off the top of his head), but Rich also knows how to extract the best

performance out of the system “as is”. He knows how to “fool” the mercoid switches in order to activate Well Nos. 2, 3, 4, 5, and 8; he knows the location of the three left-handed valves in the system; he knows you have to flush the north intertie much longer than you might expect because of the spiral-wound steel pipeline; and he is more familiar than he'd like to be with “The Bad Valve”, which is located in a fence corner and tightly constrained by cobbled rocks, concrete poured up to the fence line, a sewer clean-out, a gas line, and a SMUD power pole, all located within a 3' by 3' area, and requiring a special ratchet key to operate. Rich knows these things and more. During the last 8 years of his tenure with Del Paso he developed a solid working relationship with Alan and Forsgren, resulting in his joining the Forsgren team in 2020. Rich will be a truly invaluable asset for the District. Rich is based in our Sacramento office.

Gary Ashby, P.E. (ID) – Gary was the lead engineer for the design of Well No. 6B, including the well-head completion, pump, and appurtenances. Gary has also worked closely with Alan on many California projects over the years. Gary is a civil engineer with more than 25 years' experience in water resource and engineering consulting. Gary has specific expertise in planning, design, and construction of water supply and resource projects, master planning, hydraulic design, in-stream/hydraulic structure design, open channel and closed conduit delivery, pumping facility design, and implementation of efficiency measures. Through his project experience, Gary has become expert at integration of multiple scientific and engineering disciplines including surveying, geotechnical, geomorphology, structural, mechanical, and electrical engineering. He has particular expertise in working collaboratively with various entities to arrive at consensus and develop strategies to achieve win-win solutions and implement projects with a broad range of benefits. Gary is located in our Boise, Idaho office.

Liam Bailey, P.E. (CA) – Liam has worked on a variety of District projects over the years, including the development of the first version of the hydraulic model for the District's



current system, and preliminary engineering for the Del Paso-Carmichael Water District intertie. He is both an engineer, and a contractor. He's good at designing things, and he's good at building them too. This combination of skills makes him very good at catching issues early, before they become problems, and he has worked closely with Alan on several such projects over the years. His specializes in design, project management, construction management and constructability analysis for pipelines, wells, pump stations, tanks, and treatment systems for water infrastructure. Liam is based in our Sacramento office.

Nick Patterson, P.E. (UT) – Nick routinely serves as project engineer and lead designer for water, wastewater, and reclaimed water projects for municipalities, industries, and government agencies. Nick was the technical lead for our most recent update to, and calibration of the District's hydraulic model as part of the Del Paso Elementary School project. He has worked on numerous projects with Alan and Brian in California and elsewhere. Working with Alan, Nick led the design for implementation of upgrades to a potable water booster pump station for the Fall River Valley Community Services District. He developed a three-dimensional model of the building expansion, booster pumps, and waterworks, and designed drainage improvements. He has engineered and designed pump stations, pipelines, and unit processes for water and wastewater treatment projects as well as sewer collection and treatment system master plans and plans of operation. He develops comprehensive hydraulic models for water and sewer systems and assists in managing construction of wastewater treatment projects including submittal reviews of piping, valves, and mechanical equipment. He has also developed operation and maintenance (O&M) manuals for treatment facilities. He routinely utilizes a wide range of modeling and design software including ArcGIS, SewerGEMS, WaterGEMS, AutoCAD MEP, AutoCAD Civil3D, and Primavera P6 scheduling software. Nick is based in Salt Lake City, Utah.

Jane Dela Cruz will provide the glue to hold our projects together. As an experienced construction administrator and project assistant, her organizational skills and attention to detail are key to her success, and ours. She is typically responsible for logging, tracking, and shepherding critical project documents such as Submittals, RFIs, Field Orders, Work Change Directives, Change Orders, and Pay Requests. She exemplifies the practice of completing tasks sooner, rather than later. Her unfailing professionalism and good attitude pervade every project she is involved with, and her document control expertise will be fundamental to the success of our projects under this contract. In addition to the above responsibilities, Jane is also responsible for keeping the lights on in our Sacramento office.

Patrick Wickman will assist with environmental (permitting, investigation, and compliance), planning, and GIS, as needed. He has been involved with several District projects over the years, and was primarily responsible for developing the mapping used in public meetings for the District's proposed rate increase. Patrick is an environmental scientist by trade, and a project manager by demand. He is routinely sought after for his ability to compile, organize, analyze, and present information for large, complex, and fast-moving projects. He develops and utilizes a wide variety of project management tools to

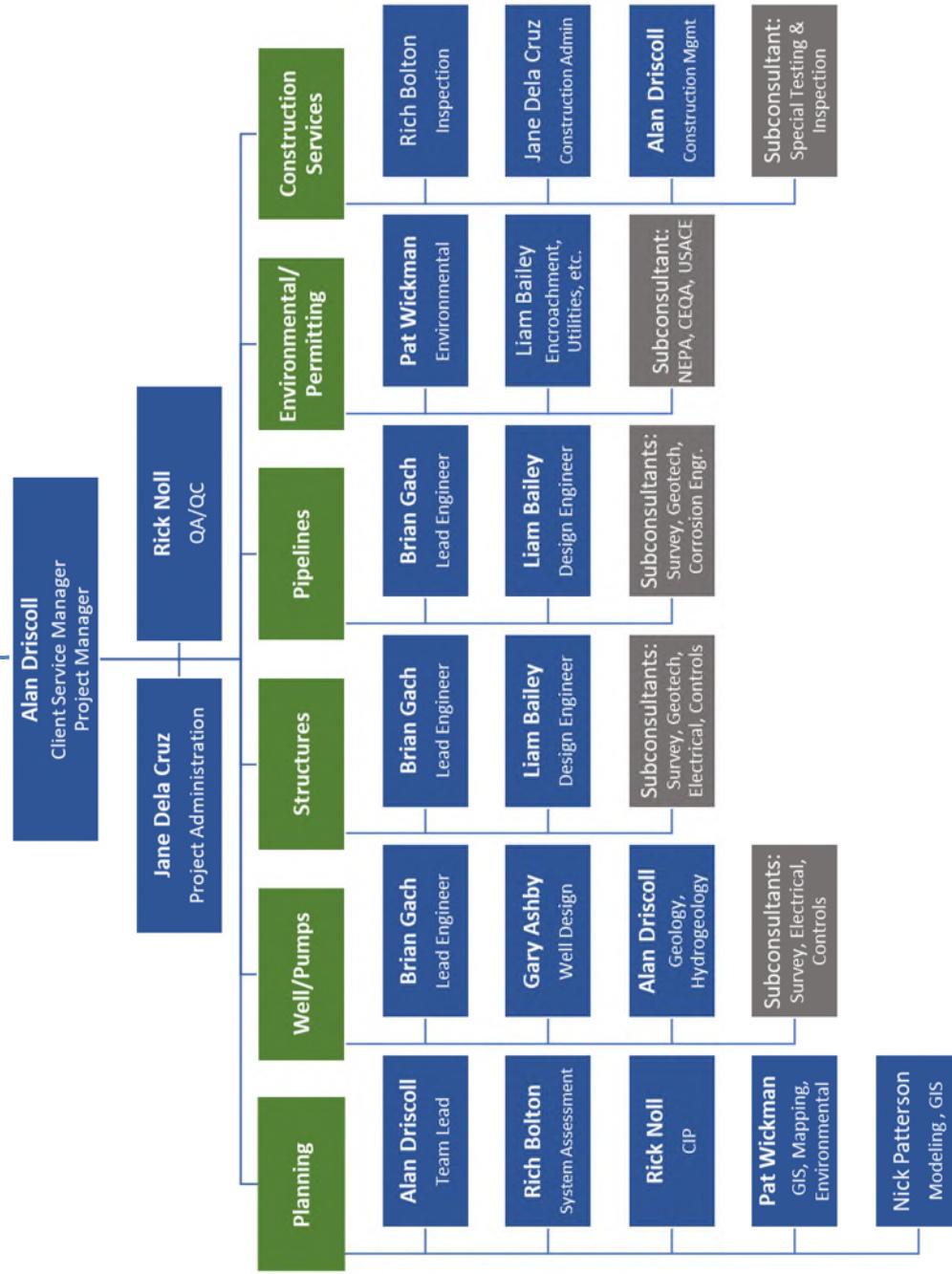
control schedules and costs on large, complex projects. Pat was part of our Sacramento Division for many years, and remains heavily involved in many of our northern California projects. He is based in Boise, ID.

Rick Noll, P.E. (UT) – Rick has been with Forsgren for more than 30 years, and has been working with Alan on projects in California for more than 20 years. Rick was involved with many of our previous Del Paso projects, and was instrumental in organizing and presenting the District's justification for its proposed rate increase starting in 2015. Rick has planned, designed, funded, permitted, constructed, and upgraded enough water system infrastructure projects over his career that his instincts are extremely valuable. He knows what works, and what doesn't. His light touch on your projects will help to ensure that they're headed in the right direction. Rick was Forsgren's President for many years, and now serves as a technical expert for projects across the company. He is based in Salt Lake City, UT.

The chart on the following page illustrates the general organization of our project team, including names for our Key Team Members. Support will be provided as needed by our 100 engineers, scientists, technicians, and administrative support professionals, along with subconsultants, as needed.

Subconsultants

In addition, a number of subconsultants are anticipated to be needed during the course of the contract. Three key subconsultants have been identified, and have been included as part of our team: Rincon Environmental, Geocon, and CTA. Qualifications for these three firms are included on the following pages, and their Rate Schedules are included in Section 4. Other subconsultant needs may include an Electrical and Controls Engineer, and a Corrosion Engineer to perform studies and engineering related to pipeline emplacement. These and other subconsultants will be identified and engaged as needs arise, with District collaboration as appropriate.



Alan Driscoll, Jr., P.G.

Started Career: 1986 • Joined Firm: 2001

Role Client Service Manager / Project Manager

Education BS, Geology, Purdue University
MS, Geology, Virginia Polytechnic Institute & State University

Registrations Professional Geologist: California, Idaho, Utah, Washington, Wyoming

Summary Mr. Driscoll has more than 30 years of experience with water and related projects for utilities, special districts, agencies, and private companies. He has overseen planning, studies, funding, engineering, environmental, permitting, construction, and operations for a wide range of water projects. His project experience includes pipelines, water master plans, sanitary surveys, water supply wells, treatment plants, and more. His wide range of experience in the scientific, engineering, and construction fields has cultivated his ability to “get to the heart” of issues, to find creative and cost-effective solutions, and to lead multidisciplinary teams to deliver successful projects for his clients.

Selected Experience *Del Paso Manor Water District: On-Call Services*

Alan led Forsgren's services for the Del Paso Manor Water District between 2011 and 2019, and worked closely with Del Paso on long-term water planning and policy issues, master plan implementation, and infrastructure improvements. Alan led a wide variety of projects including 1) development and field-calibration of a new hydraulic water system model; 2) evaluation of alternatives for rehabilitation or replacement of the 50-year-old Well No. 6 that involved capital costs, life-cycle costs, yield, schedule, etc.; 3) permitting, design, and construction of a new 350-foot deep, 16-inch diameter, 1,100 gpm well, along with well house and site improvements; 4) Rate Study; and 5) miscellaneous pipeline and other projects. In order to improve the District's water supply reliability, and help with conjunctive use planning, Alan also led a study to explore the utilization of the District's surface water rights. In close coordination with the District, its Board, and legal counsel, Alan and his team developed a “Decision Tree”, or flow chart that graphically illustrated each alternative, the steps required to explore it, the decisions made, “off-ramps” if the alternative became no longer viable (technically, economically, or politically), and specific required analyses such as cost estimates, contractual reviews, legal reviews, etc. At the end of this study the Del Paso Board had a clear picture of its alternatives, and were able to confidently re-prioritize its capital investments, knowing that its decisions were defensible to its customers and the public.

Water System Improvements, Golden State Water Company, California

For over 12 years, Alan has led Forsgren's projects in support of GSWC's water system improvements. He has led and/or managed a wide range of projects including design for numerous pipeline replacement projects, construction observation for pipelines and wells, evaluation of well sites and fluoridation design, technical support for Master Planning and Rate Case Hearing preparation for over a dozen separate systems, analysis and mapping of water supply infrastructure for all of GSWC's systems, watershed sanitary survey for 18 Clear Lake systems (twice), and construction management for more than a dozen separate infrastructure projects, including a \$9M federally funded meter replacement project. Alan responded on 24-hour notice to provide a full-time inspector and address stormwater pollution issues for the high-profile North/South Main Transmission pipeline that passed along Sun Center Drive in front of the Regional Water Quality Control Board offices. Alan and his team immediately implemented stormwater BMPs to address potential violations, then prepared a model SWPPP that was later utilized by GSWC as a template throughout its northern District.

District Planning Support – Tuolumne City Sanitary District, CA

Alan currently leads a multi-disciplinary team in supporting TCSD with the management their operations and capital improvement program. Alan's team worked closely with District staff, other consultants, and contractors to develop a comprehensive Master Schedule that illustrates all capital projects, key operational activities, and District-level planning activities. Alan leads bi-weekly meetings with District staff and others to review the status and progress on various District activities, updates the Master Schedule, and prepares Meeting Agendas, Minutes, and Action Items. Alan's team provides planning, engineering, environmental, and construction management services for a host of operational and capital projects.

Master Plan Implementation, Calaveras Public Utility District, California

CPUD was struggling to implement its Master Plan. Alan assembled and led a team in the review and analysis of the Master Plan, CIP, and hydraulic model. The MP was found to be solid, but not detailed enough. The justification for the CIP had not been well documented, and the prioritization and need for the projects was in question. A review of the hydraulic model showed that there were important errors in the water system representation, and dramatic differences in simulated pressures and flows. Alan directed an effort to reconstruct and recalibrate the model, and then to develop appropriate justification and prioritization in the form of a “Road Map” that utilized a ranking system to help prioritize improvements, and was transparent enough to allow District staff to adapt to changing conditions down the road.

Regional Water Master Plan, Douglas County, Nevada

Alan led a comprehensive review and analysis of the County water system, which consisted of a series of water systems that had been built independently, then interconnected over time as build-out progressed. The County recognized that these systems had not been planned with interconnection in mind, and was beginning to encounter problems. They realized that improvements were imperative, but needed to understand the drivers, costs, and priorities for the improvements before committing precious public funds. Alan’s team worked closely with County staff to research, inspect, and characterize the system infrastructure; construct and calibrate a hydraulic model of the system; simulate operation of the system under a range of scenarios in order to identify deficiencies and needs; and provide specific recommendations, including priority and estimated costs, for addressing these deficiencies and needs.

CIP Support – Sacramento Suburban Water District, CA

The Sacramento Suburban Water District manages a Capital Improvement Program with an annual budget of \$15M. The District has struggled to meet the CIP production goals necessary for the orderly replacement of its aging infrastructure, and asked Alan to help. Alan and his team worked with District staff to organize documentation on the more than 50 ongoing capital projects, to ground-truth and update the individual schedules for each of these projects, and then to compile them into a comprehensive Master CIP Schedule illustrating for the first time – at a glance – the status of the entire CIP.

Water System Improvements, Calaveras County Water District, California

Alan managed our master agreement with CCWD, and had overall responsibility for budgets, schedules, quality, and customer service. Under his direction, Forsgren provided construction management, inspection, and engineering services for projects that included: Tank 602 elevated water tower; Dennis Court Booster Pump Station and Transmission Main; Hwy 26 Water Main Extension; miscellaneous Developer Program projects; and update of new District Standards, Specifications, and Details.

Program Manager, On-Call Services, Cal-Am Water Company, CA

Alan and his team worked as an extension of Cal-Am’s staff. He was responsible for technical oversight and management of a wide variety of services, including: 1) construction observation for more than 50 developer and capital infrastructure projects; 2) engineering design for the replacement of 1800 feet of 20-inch water main; 3) consultation on best management practices for water conservation (Advisory Panel member); 4) on-site CAD support to integrate backlogged and incoming as-built drawings into the company’s outdated system maps, and to develop route maps for its new meter reading program.

Water Master Plan Update, City of Ripon, California

The City of Ripon was struggling with a shrinking groundwater supply as its wells were being systematically shut down due to groundwater contamination. The City was wrestling with the desire to protect its groundwater resource, versus the investment in new surface water infrastructure. As a result, the City’s Water Master Plan had been stymied. Alan led an effort to objectively evaluate the system infrastructure, evaluate the City’s water supply options, and lay the foundation for City managers making informed decisions as to their systems’ future development.

Water System Improvements, South San Joaquin Irrigation District, California

Alan worked with SSJID on a series of improvements to its drinking water system. Alan led a team to perform a Peer Review of treatment plant improvement designs, bidding and construction services for these improvements, planning and permitting for filter backwash disposal, and design services for a range of system improvements. Alan also led the effort to evaluate the capacity of the 26-mile long, 40-inch diameter transmission main that supplies drinking water to the cities of Tracy, Manteca, and Lathrop in order to identify improvements necessary to meet anticipated demands.

Brian Gach, P.E.

Started Career: 2007 • Joined Firm: 2018

Education B.S Civil Engineering, University of Nevada, Reno

Professional Registration Professional Engineer: CA C86926, NV 023242, OR 94132PE; Water Operator D-1 NV (inactive)

Summary Brian has spent the past 10 years helping municipal and industrial clients achieve their water infrastructure goals. Brian has played a major role in the design and construction of water pipelines, treatment plants, processing plants, and potable water systems. Brian has been personally responsible for the design of steel access platforms, tank foundations, retaining walls, pipe supports, equipment support structures, water pipelines, sewer force mains, and onsite sewage disposal systems. Additionally, Brian has spent years gaining hands on experience with construction, installation and operation of water and water treatment systems of various sizes.

Selected Experience *Del Paso Manor Water District Distribution System Model Calibration, Sacramento, CA*

The San Juan Unified School District wanted to build an addition to the Del Paso Elementary School. In order to do so, it was required that the district show that they fire flow could be provided to the school without impacting customers throughout the distribution system. Working with a team of college interns and Del Paso's system operators, Brian helped coordinate a program to flow test fire hydrants throughout the distribution system in order to calibrate the Watergems model that Forsgren had previously created. Responsible for intern and operator training, oversite, verifying field measurements, correlating field data with modeling results, and project documentation. Also assisted with model calibration and client communication.

Cavitt Stallman Road Water Main, San Juan Water District, California

Brian provided technical input and QA/QC for this project that included approximately 500 linear feet of 12-inch water main and a future pressure reducing valve site equipped with check valve, piping, isolation valves and water meter. This project, located between Mystery Creek Lane and Oak Pine Lane, complied with Placer County requirements.

Auburn Folsom Road Water Main Replacement, San Juan Water District, California

Brian provided technical input and QA/QC in the preparation of design plans for replacement of an existing 6-inch water main and service connections on Auburn Folsom Road. This project included a drainage crossing, and design in accordance with Placer County requirements.

Elm Avenue Waterline Replacement, Orange Vale Water Company, California

Brian provided technical input and QA/QC of this project to replace approximately 1,000 linear feet of 12-inch water line, and approximately 400 linear feet of 8-inch, 6-inch and 4-inch water lines. Valves and fire hydrants were also replaced as part of the project. Brian also submitted documents on OVWC's behalf to Sacramento County for an encroachment permit.

Silver Knolls Mutual Water Company Arsenic Treatment Pilot Project, Silver Knolls, NV

Designed, installed, and operated a pilot adsorptive media water treatment system to remove arsenic from well water that supplies a municipal water system. Responsible for attending and presenting at stakeholder meetings, design, permitting, installation, operation, and design report that was submitted to Washoe County Division of Health, and the Nevada Bureau of Safe Drinking Water. Brian is currently the water company's engineer, and is working on their behalf to permit a new arsenic treatment system as well as to address their other compliance issues.

Golden State Water Company Arden Fluoridation Project, Sacramento, CA

Managed a team of engineers in the design of five wellhead fluoride and sodium hypochlorite dosing systems throughout the Sacramento area. Responsible for site layouts, building design, compilation of design drawings and specifications, and maintaining project schedule and budget. Also assisted client with bid documents, contractor questions, and permitting issues.

TCSD Effluent Blending Project, Tuolumne, California

Managed a team of engineers in the design of a new 6-inch pipeline that allowed TCSD to eliminate direct discharge of to a flood irrigation field. The new pipeline allows TCSD to discharge effluent that is blended with creek water. This project included hydraulic modeling, pipeline design, and permitting and correspondence with the California Regional Water Quality Control Board.

Cortez Gold Mine Dewatering Pipeline, Crescent Valley, Nevada

Managed a team of engineers in the design of a 12-mile, 18 to 30-inch pipeline that conveys 12,800 gpm of water from Barrick's underground mining operations to two different locations in adjacent valleys. Lead engineer for pipeline design and modeling, design of two pump stations, a stilling basin, and two sets of four infiltration basins. Also provided bidding, construction, and field engineering services. This project was a redesign of another consultant's work. Incorporating Forsgren's redesign saved the client over \$4 million dollars in capital costs.

Relief Canyon Mine Potable Water System, Pershing County, Nevada

Managed a team of engineers in the design of a site wide potable water system. This design included repurposing of over a mile of 6-inch pipeline, a steel water storage tank, water supply well, approximately 2,000-ft of new 8-inch pipeline, new service connections, and a pressure reducing station.

Barrick Goldstrike East 2 Pipeline Project, Carlin, NV

Managed a team of engineers in the design of 2-mile above ground steel pipeline that feeds Barrick's roaster. Responsible for pipeline modeling, design, expansion/contraction joint design, and design of various tie-ins. Also provided procurement assistance for the pipeline and appurtenances as well as regular field visits and inspections during construction.

Elko County School District Ruby Valley School Well and Pipeline Design, Ruby Valley, NV

Designed and permitted new potable water well and buried HDPE pipeline for an elementary school in Ruby Valley, Nevada. Responsible for well design, pipeline modeling, compilation of permit package, and final design report that was submitted to the Nevada Bureau of Safe Drinking Water.

Plumas Eureka Community Services District Arsenic Treatment Pilot Project, Blairsden, CA

Designed, installed, and oversaw operation of a pilot water treatment system designed to test three different arsenic removal technologies head to head for effectiveness. Responsible for treatment system design, pilot treatment plant deployment and installation, managing a team of operators, and finalizing the design report for submittal to the California Department of Drinking Water.

Barrick Cortez Mine Cottonwood Pipeline Review, Crescent Valley, NV

Managed team of structural engineers that performed a peer review of engineering design of above-ground steel pipeline that had deformed due to thermal expansion and contraction. Responsible for technical review, report writing, client communication, and project management.

Barrick Turquoise Ridge Fire Water Pipeline Extension, Getchell, NV

Provided civil site engineering pipeline modeling, and pipeline design of buried HDPE and steel pipelines feeding a new water treatment plant. Piping design included an extension of the fire suppression supply pipeline, water treatment plant feed, effluent, and waste stream pipelines, and inter-process piping.

Newmont's Leeville Potable Water System Expansion, Carlin, NV

Provided engineering, drawings, and permit submittal package for potable water system modifications ranging from pipe network expansion to well replacement to RO system expansion. Responsible for buried HDPE and steel pipe network design, backflow prevention, air gap, and break tank design, and overseeing construction observation. Additional work for this client included engineering the expansion of their existing treatment capacity with a second RO system and associated plant piping.

Skull Valley Indian Reservation, Skull Valley, Utah

Quality Assurance for a potable water tank and HDPE conveyance pipeline. Ensured that the tank and piping were installed according to the engineer's design and specifications. Performed foundation, earthwork, piping, and trenching inspections during the course of this project. Ensured that disinfection, bacteriological sampling, and commissioning of the system were performed according to AWWA standards. Responsible for correcting issues of non-compliance, and served as the liaison between the contractor and the client.

Rich Bolton

Experience: 30+ Years • Joined Firm: 2020

Education	Community College of the Air Force American River College California State University, Sacramento – Office of Water Programs
Training and Certifications	Water Distribution Grade III Water Treatment Grade II Back Flow Specialist
Summary	Rich has 30 years of experience operating, maintaining, and inspecting construction of water supply and distribution systems. Rich is personable and articulate – interfacing comfortably with contractors, developers, and customers. He is diligent in his work – committed to performing his work to the highest standards, and helping to ensure that projects he is involved with are successfully completed to the highest standards.
Work Experience	<p>Forsgren Associates, Inc. Rich currently serves as lead inspector for a wastewater treatment plant improvement project, and for a wastewater collection system improvement project at the Tuolumne City Sanitary District, California. He recently completed inspection work for the installation of a new Golden State Water Company potable water system at the California Military Department Headquarters, at the former Mather AFB in Rancho Cordova, CA. Rich's working relationship with Forsgren goes back many years, as he was Forsgren's client when he worked at Del Paso Manor Water District.</p> <p>Del Paso Manor Water District, Operator, 1989-2019 During the course of his 30-year career with Del Paso, Rich became extremely well versed in virtually all aspects of operating and maintaining water supply and distribution systems. He started in the trenches – literally - digging ditches, and worked his way up to Field Manager, where he served for many years. He repaired countless leaks - in streets, backyards, landscaping, under tree roots, and under swimming pool decks. He installed pipelines, valves, fire hydrants, and appurtenances, and disinfected all of the above. He performed well maintenance, flushing, disinfection, and water quality testing. His responsibilities also included AC pipe removal and handling, concrete work, open ditch work, confined space work, shoring, water quality testing, traffic control, underground service alerts, and service line locating and marking. He supported the District in routine operations including budgeting, planning, Board meeting reports, vendor orders and invoice review, O&M, and inventory. He managed contractors and performed inspection for the installation of miles of pipeline, multiple wells, and appurtenances; reviewed and approved contractor submittals, RFIs, change orders, and pay estimates; inspected and approved materials brought to site for construction; and served as liaison between the District and its customers. In the 8 years leading up to his retirement from Del Paso, Rich worked closely with, and built strong working relationships with multiple people at Forsgren.</p>

NAVCO, Mechanic, 1989

Responsible for rebuilding electrical motors and installing motors into a variety of equipment.

US Air Force, Air Crew Life Support Technician, 1985-1989

Responsible for loading/unloading, inspecting, and maintaining all manner of safety equipment for a variety of aircraft, specializing in C-141, C-130, and C-5 military transports. Cross-trained as a chemical defense specialist.

Gary Ashby, P.E.

Experience: 23 Years • Joined Firm: 2001 • Idaho PE #9191

Education M.S., Civil and Environmental Engineering, Utah State University
B.S., Civil Engineering, Utah State University

Summary Gary is a civil engineer with more than 25 years' experience in water resource and engineering consulting. Gary has specific expertise in planning, design, and construction of water supply projects, master planning, hydraulic design, in-stream/hydraulic structure design, open channel and closed conduit delivery, pumping facility design, and implementation of efficiency measures. Through his project experience, Gary has become expert at integration of multiple scientific and engineering disciplines including surveying, geotechnical, geomorphology, structural, mechanical, and electrical engineering. He has particular expertise in working collaboratively with various entities to arrive at consensus and develop strategies to achieve win-win solutions and implement projects with a broad range of benefits.

Selected Experience **Project Manager – Del Paso Manor Water District, Well 6B Design, CA**

Gary led the design effort for replacement of the District's Well 6 that was out of compliance with respect to safety and environmental requirements, and near the end of its useful life. Gary helped to design and coordinate a pilot boring that provided necessary information on stratigraphy, water bearing zones, and water quality. Gary worked with Alan to make decisions regarding the production well, then prepared plans and specifications for the well itself, and also for the surface completion, pump, and appurtenances. Gary provided engineering services throughout the process, including during design and construction of the well house, and site improvements.

Project Manager – Shasta River Water Conservation Study

The goal of the study was to investigate water usage efficiencies for delivery and application of irrigation water. The effort involved extensive field flow measurement along irrigation canals to develop estimates of water losses and define areas where piping and lining will be most effective in reducing necessary river diversions. The study provided the basis for design and provided the background data needed to pursue funding for project design and construction. Extensive land owner coordination and cooperation was involved in the study.

Project Manager – Araujo Dam Improvements Design, CA

This project replaced an 80-year-old flashboard dam and fish barrier with an in-stream rock grade control structure for fish passage. Four irrigation diversions were consolidated and are now served by one pumping facility allowing improved water delivery efficiency. A flat plate fish screening structure keyed into the river bank has been provided eliminating off channel screening. The project was designed to NMFS criteria and was completed under an extremely aggressive time schedule to take advantage to project funding constraints. The project was recognized by the California USDA NRCS for its excellence in conservation.

Project Engineer – Shasta Water Association Diversion Improvements Design, Shasta Valley Conservation District

For this project Gary managed a multi-disciplined team of engineers and scientist to design and construct improvements to the Shasta Water Association irrigation diversion. Gary was a leading participant in efforts to obtain funding for design and construction. This required coordination with the Shasta Water Users Association, the Shasta Valley RCD, and the CDFG, to develop funding strategies and prepare funding applications. Gary regularly met with the RCD and SWA board members to obtain input and report on progress.

Project Engineer - Klamath-Shasta Water Transfer Feasibility Study

This project investigated the feasibility of transporting water from the Klamath River into the Shasta River Valley for irrigation purposes. The feasibility of a pumping scenario from Iron Gate Dam and a gravity flow scenario from Keno, Oregon was investigated. Various methods for delivering 100 to 200 cfs approximately 90 miles were investigated. The project required evaluation of tunneling through mountainous terrain or construction of a pump station requiring approximately 18,000 horse power. Costs were estimated for various alternatives for comparison purposes.

Liam P. Bailey P.E.

Started Career: 2000 • Joined Firm: 2012

Education BS Civil Engineering, University of the Pacific
Stockton, CA

Relevant Expertise Pipeline, pump station, and storage tank design.
Water/Wastewater system Planning and Hydraulic Modeling.
Constructability and Peer Review.
Proficient in AutoCAD, Microsoft Project, Excel and Word. Proficient in surveying and grade setting.

Registrations California Professional Engineer: C69080
California Licensed General Engineering Contractor A 910263
California Certified QSD/QSP #21043

Summary Liam has specialized in pipeline design, water system infrastructure design, project management, construction management and constructability analysis. Liam has managed all manner of water infrastructure projects from multimillion-dollar pipelines and membrane filtration plants to commercial well and booster pump stations.

Selected Experience

Project Engineer
Dawes St. Pipeline, Golden State Water Company, Rancho Cordova, CA
Project Engineer for 8" DIP, 1800-foot pipeline project design in Golden State Water Company's Rancho Cordova system. Duties included design of pipeline, coordination with sub-consultants, management of staff for project plan preparation, management of project budget and other duties to ensure on time delivery of project plans to owner.

Project Engineer
Del Paso-Carmichael Intertie Project, Sacramento, CA
Project Engineer for intertie proposed to connect the Del Paso Manor and Carmichael Water Districts in order to improve water supply reliability for both districts. Responsible for development of preliminary design drawings, budgetary cost estimate, and project description for inclusion in a grant application. Also supported the development and update of multiple versions of the District's hydraulic model.

Project Engineer
Pipeline Design, Orange Vale Water Company, Orangevale, CA
Project Engineer for the design of a pipeline replacement along a section of Central Avenue in Orangevale. Responsible for developing drawings, specifications, and engineer's estimate of probable construction cost.

Resident Engineer
Paseo Well 24, Golden State Water Company, Rancho Cordova, CA
Resident Engineer for this \$1.4M project in Golden State Water Company's Rancho Cordova System. Project included construction of a new drinking water well including installation of well, well pump, masonry block building, disinfection system, electrical system, connections to system and other appurtenances. Performed all construction management and inspection on the project. The final project cost was less than 1% over the bid price, solely due to additional work GSWC requested the Contractor complete.

Project Engineer
Fall River Valley CSD Well #1 Booster Pump Station and Tank, Fall River Mills, CA
Project engineer for this new booster pump station and 180,000-gallon tank project to provide system storage and increase reliability in the system. Duties included completion of and overseeing finalization of plans, specifications and estimates for project and additional water modeling and system improvement recommendations requested by the District.

Nick A. Patterson, P.E.

Experience: 14 Years Joined Firm: 2007

Professional License Utah P.E. # 10288921-2202

Education B.S., Civil Engineering, University of Utah
A.A.S., Engineering Graphics and Design Technology, Utah Valley University

Relevant Expertise Master Planning, Water Modeling, and Treatment Projects Design and Construction

Summary Nick Patterson has been with Forsgren Associates for 14 years and has practical experience designing a variety of engineering projects. He is highly skilled in a wide range of modeling and design software, including: ESRI, Bentley, Autodesk, Microsoft Office products, and Primavera. He has served and is currently acting as project engineer and lead hydraulic modeler for various projects involving water, wastewater, and reuse for communities, municipalities, industries, and government agencies. He has designed and engineered pump stations, piping, and treatment processes for water projects across the Western United States. Nick works closely with city engineers and special service district staff from project conception to completion, building lasting relationships with clients.

Selected Experience WATER SYSTEM MASTER PLANNING AND MODELING

Project Engineer & Lead Hydraulic Modeler

Del Paso Manor Water District; Sacramento, CA

Nick performed as lead hydraulic modeler for this water district in Sacramento, CA. He developed a calibrated hydraulic water model to accurately replicate current system conditions and determine where old, undersized pipes were causing critical deficiencies. He created extended period simulations to evaluate pressures and available fire flow during peak day, peak instantaneous, and fire flow scenarios. He prepared specific scenarios in the model to determine if adequate pressures and fire flow are available at the new school and to analyze school demand effects on other critical areas in the system. He provided recommendations for pipe sizing and system looping based on modeling results.

Project Engineer & Lead Hydraulic Modeler

East Duchesne Culinary Water Improvements District; Duchesne, Utah

Nick performed as project engineer and hydraulic modeler for design evaluations for the East Duchesne Culinary Water Improvements District. He developed a comprehensive water model to evaluate pipe upgrades to boost pressures at specific locations in the water system. He used extended period simulations to evaluate peak day, peak instantaneous, and fire flow demands to determine if additional water storage is needed in the system. He prepared a technical memorandum to explain findings and provide recommended solutions.

Project Engineer and Lead Designer

Booster Pump Station, Fall River Valley CSD, CA

Nick acted as project engineer and lead CAD designer for this booster pump station upgrade. He developed a water model to determine demand locations in the system experiencing low pressures. He used data from the model to evaluate pump upgrades in the pump station to help better serve the system. He also acted as lead designer to develop a 3D CAD model of the existing pump station with its recommended upgrades.

Project Engineer

Water System Master Plan; Town of Monument, Colorado

Nick performed as project engineer and hydraulic modeler on development of the Town of Monument Water System Master Plan. He utilized existing GIS data to develop maps and data sets in ArcGIS and prepared a working water system model in Bentley's WaterGEMS modeling software. He created scenarios to observe existing conditions of the water system and capacities of groundwater wells to supply the system. He developed scenarios to forecast the system's capacity to supply potable water to future developments and to determine future locations for water storage tanks based on hydraulic grade lines. He also assisted in development of the Water System Master Plan documents.

Mary Jane Dela Cruz

Started Career: 1999 • Joined Firm: 2014

Assignment Project Assistant

Education Bachelor of Science, Tourism Management, Polytechnic University of the Philippines

Relevant Expertise Document Control, Cost Tracking, Customer Relations, Problem Solving

Summary Jane is an administrative support professional, experienced working in fast-paced environments. She is efficient and adept at managing documents and information - whether financial, technical, or personal in nature.

Selected Experience

San Juan Water District, California

Jane served as Project Assistant for the Cawitt Stallman and Auburn Folsom pipeline design projects. She performed document and data management; billing, budget and cost tracking; and prepared agendas, notes, and action item summaries for project meetings.

Orange Vale Water Company, California

Project Assistant for Elm Avenue and Central Avenue pipeline replacement projects. Performed document and data management; billing, budget and cost tracking; and prepared agendas, notes, and action item summaries for project meetings.

Cortez Gold Mine Dewatering Pipeline, Crescent Valley, Nevada

Project Assistant for design and construction phases of 12-mile pipeline project. She performed document and data management; billing, budget and cost tracking; and prepared agendas, notes, and action item summaries for project meetings. Maintained logs for submittals, RFIs, and COs during construction phase of project. Assisted with preparation and submittal of technical documents, including record-of-construction report.

Relief Canyon Mine Potable Water System, Nevada

Project Assistant for design and permitting of a potable water system for a newly operating gold mine. Performed document and data management; billing, budget and cost tracking; and prepared agendas, notes, and action item summaries for project meetings. Assisted with preparation and submittal of technical documents, including preliminary engineering report and communications with regulatory agencies.

Holden Mine Reclamation, Construction Services, WA

Served as Project Assistant for fast-paced, logically challenging construction services project. Performed billing, budget and cost tracking; organized, logged, and processed employee expenses and mileage, as well as subcontractor and vendor invoices. Prepared agendas and action item summaries for weekly project coordination meetings. Prepared applications for payment and conditional waivers and releases. Managed logistics for training, medical monitoring, and travel for 20-person field team.

Exploration Drilling, Pinnacle Potash, UT

Assisted Project Manager and project team members on project with 11 borings drilled to more than one mile in depth. Performed cost tracking, billing, and coordination. Logged and tracked daily cost information for 14 separate contractors/vendors. Organized and processed pay estimates/invoices, change order requests, and submittals. Coordinated equipment and travel logistics for field team.

Patrick A. Wickman

Started Career: 2002 • Joined Firm: 2013

Education M.S., Environmental Sciences Management, Pratt Institute; B.A., Geo-archaeology, Hamilton College

Summary Patrick routinely performs environmental analysis and permitting for federal, state, and private sector clients. His experience includes planning for environmental impacts, hazard risk assessments analyses for NEPA/CEQA environmental documents, and Phase 1 Environmental Site Assessments. He develops and utilizes a wide variety of project management tools to control schedules and costs on large, complex projects.

Selected Experience

Environmental Scientist

Fall River Valley Community Services District – Water Tank and Booster Pump Station

Fall River, California

Patrick managed the environmental and GIS services performed for a disadvantaged services district to add a water tank and booster pump station. Patrick was responsible for the preparation of RFPs for environmental services, proposal evaluation and consultant selection. He worked with the selected consultant (SWCA) to develop an appropriate scope of work and oversaw the preparation of their “Environmental Package.” The package included the CEQA Initial Study/ Mitigated Negative Declaration (IS/MND), Cultural Resources Report and Biological Assessment Report.

Environmental Scientist

Tuolumne City Sanitary District– Tailwater Runoff Control & Discharge Permit Management

Tuolumne City, California

Patrick worked with district staff to review their new California Regional Water Quality Control Board Order to discharge wastewater. As part of his review, Patrick developed a 300-line schedule outlining all environmental submittals and deliverables required under the new Order. IN additional the discharge order, Patrick’s schedule also included the district’s collection system and waste water treatment plant improvement project and all monitoring and reporting requirements. Patrick meets with the District bi-weekly to update their schedule and ensure projects stay on track.

Environmental Scientist

Montana Department of Transportation, 12 Bridge Rehabilitation Project

Sanders and Lincoln Counties, Montana

Patrick inspected twelve bridges in Jefferson and Lincoln counties and prepared an environmental analysis on potential environmental concerns associated with MDT replacing or rehabilitation the twelve bridges. Patrick’s scope included Clean Air Act compliance, Biological Review (Threatened and Endanger Species/Migratory Birds), floodplain review, Wild and Scenic Rivers Impacts, National Historic Preservation Act Compliance Coordination and Public Involvement.

Environmental Scientist

Champion Mine Remediation Project, The Sierra Fund

Nevada City, California

Mr. Wickman worked with a California non-profit (The Sierra Fund) to evaluate environmental conditions associated with abandoned and removed former mine facilities on a 40-acre property in the Sierra Nevada’s. Mr. Wickman worked with the client to develop a site-specific Sampling and Analysis Plan (SAP), and identify clean-up requirements for use of an EPA Brownfield Grant.

Environmental Scientist

Various Phase 1 Environmental Site Assessments

Mr. Wickman has investigated sites and prepared Phase 1 Environmental Site Assessments in California, Utah, Washington, and Nevada. He has investigated water and groundwater concerns, historic and regulatory database reviews, and completed on-site investigations, all to ascertain if recognized environmental conditions are suspected.

Richard M. Noll, P.E.

Started Career: 1979 • Joined Firm: 1984

Education
M.S., Civil and Environmental Engineering, University of Iowa
B.S., General Science, University of Iowa

Registrations UT PE 170276; ID PE 6492; NM PE 11359

Summary
With nearly four decades of experience in civil and environmental engineering projects, Rick is a recognized expert across the full breadth of infrastructure development, including civil and structural engineering, water and wastewater, and construction management. His design and management of projects across the US and Mexico have given him extensive insights into resolving the disparate challenges often associated with large, dynamic, or innovative projects. Rick is an assertive proponent of utilizing treated effluent for water reuse and managed the first unrestricted wastewater reuse projects in three states. His leadership in reuse consistently proves to be of significant value to clients with limited water supplies and growing demands.

Selected Experience

Senior Engineer
Well Evaluation and Replacement, Del Paso Manor Water District, Sacramento, California
Rick analyzed water quality of 50-year-old Well #6 and concluded that elevated manganese and iron concentrations justified drilling a new adjacent well. He developed the Master Plan and Capitalization Program to assist the District help its water users understand the implications and benefits of replacing the well. He reviewed plans and specifications and served as a frequent technical resource for the Board at often-contentious public meetings.

Senior Engineer
Membrane Treatment Plant Optimization, South San Joaquin Irrigation District, California
Rick evaluated process optimization and improvements of a 36-MGD membrane treatment plant. He identified improvements to membrane treatment and dissolved air flotation basins, Powdered Activated Carbon and Granular Activated Carbon units for organic precursor removal and taste and odor control; hypochlorite, ferrous chloride, and associated chemical addition systems; and lime grit classification. He provided engineering design, peer review, permitting assistance, and engineering services during bidding and construction.

Senior Engineer
Fluoridation Pre-Design, Golden State Water Company, Sacramento, California
Rick provided conceptual design and cost estimates to add fluoride to community water supplies in the Arden Cordova service area. He authored the final report.

Project Manager
Tiger Woods Foundation Learning Facility, Orange County, California
Rick managed horizontal construction activities, designed site infrastructure, and oversaw development and negotiation of a complex Water Quality Management Plan required by the county and that focused on conservation of water resources, especially through best irrigation practices. He oversaw development of the Stormwater Pollution Prevention Plan to ensure its approval by local governments.

Senior Project Engineer
Reverse Osmosis Water Treatment, Utah Target and Training Range, US Army Corps of Engineers
Rick developed plans and specifications for a new RO water treatment facility to address challenging source water conditions such as organic solvent contamination and TDS concentrations exceeding 4800 mg/l. He designed granulated activated carbon units, RO units with multi-media and cartridge filters, pH adjustment and chemical mixers, decarbonator tower, chlorine gas for disinfecting, clear well, and pumps. He designed a SCADA system to control source wells, treatment, pumping, transmission, and storage.

3. Experience

Forsgren Associates, Inc. (Forsgren) is a multi-discipline consulting firm providing engineering, environmental, construction management, and program management services from our offices across the west. Founded in 1962, we have been serving our clients for more than half a century, and provide everything you need to conceive, plan, fund, design, permit, construct, operate, and maintain your water infrastructure.

Public agencies are core clients for Forsgren, the heart of our business. Simply put...*it's what we do*. We serve as District, City, and County Engineers throughout the west, and routinely provide on-call services. One of the reasons for our success is that we invest the time to understand your challenges, issues, and opportunities. We invest the time to develop strong working relationships with you, your staff, your Board, your Counsel, your other consultants, and where appropriate...your regulators. We invest time in understanding the ever-changing political and regulatory environment that you work within. Through these investments, we are better able to understand the framework within which you operate, and are better able to help you achieve your goals.

We don't view projects as stand-alone efforts – we recognize that they don't start with an RFP and end with a deliverable. We view projects as part of the continuous process in which you strive every day to maintain and improve your infrastructure, to plan and prepare for changing regulations and politics, to anticipate and react to external pressures, and fundamentally, to deliver the quality services that your community expects and deserves. At Forsgren we take pride in, and deliver value by helping you deliver successful projects for your community. ***That's*** the bottom line. And it's also our motto:

engineering stronger communities

FORSGREEN
Associates Inc.



Forsgren has worked in northern California for more than 30 years, and Alan Driscoll has been our lead in this area for the last 20 – he established our office in Rancho Cordova in 2001. From this office Alan and his team have provided a wide range of services for numerous clients, most of whom are water and wastewater utilities. Some of our recent clients include the following:

- Del Paso Manor Water District
- Golden State Water Company
- Sacramento Suburban Water District
- San Juan Water District
- Carmichael Water District
- Citrus Heights Water District
- Orange Vale Water Company
- California-American Water Company
- Calaveras County Water District
- South San Joaquin Irrigation District
- Stockton East Water District
- Calaveras Public Utility District
- Placer County Water Agency
- South Placer Municipal Utility District
- Tuolumne City Sanitary District
- City of Stockton
- City of Ripon
- City of Davis
- County of Lake
- County of Amador

The following project summaries demonstrate our experience in providing on-call engineering and related services, and our experience with water systems. Where appropriate, involvement from the Key Personnel proposed in this SOQ are indicated.

**District Engineer/ On-Call Services
Del Paso Manor Water District**

Period of Service: 2011-2019

Key Personnel:

Alan Driscoll – Client Service Manager,
Forsgren Team Leader

Brian Gach – Engineering, Modeling

Gary Ashby – Engineering, Wells

Nick Patterson – Modeling

Patrick Wickman – GIS, Environmental

Liam Bailey – Engineering, Modeling,
Inspection, CM

Jane Dela Cruz – Project/Construction
Administration

Rick Noll – Engineering, QA/QC

Larry Evans – QA/QC

Client Contact:

Debra Sedwick, General Manager (ret.)

Phone: (916) 214-1533

Email: debsedwick@att.net

Forsgren provided a wide range of consulting services for the Del Paso Manor Water District over a period of eight years. Alan Driscoll led the effort from the beginning, and worked closely with Rich Bolton and other District staff throughout. A sampling of the services we provided to the District are listed below, with some of these efforts then described in further detail:

- Water Supply Planning
- Condition Assessment - Well No. 6
- Alternatives Analysis - Well Replacement Options.
- Design - Well 6B.
- Construction Management - Well 6B.
- Development and Calibration of Hydraulic Water Model.

- Design – Well 6B Well-House & Site.
- CM for Well-House & Site.
- Conjunctive Use / Surface Water Utilization Planning.
- Preliminary Engineering for intertie with Carmichael Water District.
- Cost-Benefit Analysis for Replacement of Backyard Pipelines.
- Environmental Services
- Mapping and GIS services
- Evaluation of impacts from proposed development projects.

Water Supply Planning

The District is 100% dependent on groundwater for its supply, with all of this supply provided by its 8 wells. In 2011, at the beginning of our work with the District, Well No. 1 had recently been replaced with Well No. 9. This work was completed as part of the District's infrastructure replacement program being guided by the 2009 Master Plan. With the 7 remaining wells all more than 50 years old and in various states of disrepair, the District recognized that bolstering its water supply was still its highest priority.

Accordingly, Forsgren's first task for the District was to help plan for its next well replacement. At the time, Well No. 6 was of the greatest concern to the District, but also offered the greatest opportunity to improve the District's water supply. The well was old, and its condition uncertain. It was also out of compliance for both safety and environmental reasons. But could it be salvaged? And with the age of the well would it be worth the investment to salvage it? If it couldn't be salvaged, where should a replacement well be constructed? To answer these and other questions, we broke the process down into a series of logical steps.

Well No. 6 Condition Assessment

For the first step, Alan and his team worked with District staff to assess the condition of Well No. 6B. We helped the District plan and contract for a downhole-

video of the well, oversaw the down-hole survey, then reviewed and assessed the video findings. We inspected the surface facilities, planned and oversaw a geotechnical investigation for the site, then prepared a cost estimate to effectuate the needed improvements to the well. We determined that the well could continue to be used, but would require significant investment, and no guarantee of the well's continued serviceability.

Alternatives Analysis

To help determine if further investment in Well No. 6 was warranted, Alan's team developed a multi-layered alternatives analysis to help unravel not only factors related to the cost of a replacement well, but also obfuscating factors related to the presence of the District's (then) current office on the same site as Well No. 6, the contemplated future use of that site for a pump station to serve an intertie with Carmichael Water District, and the potential need for acquisition of new property to accommodate the well. Tools utilized in this analysis included the hydraulic model we developed for the water system, along with pumping tests and draw-down analyses we performed on the District's wells. We developed decision criteria and analyzed the alternatives by comparing costs and benefits of multiple options, then led the staff and Board in a workshop to complete a decision matrix, enabling the Board to confidently, defensibly, and unanimously choose a path forward. The clear decision was made to abandon Well No. 6, to construct a new Well No. 6B on the same site, to temporarily relocate the District's office to a leased space on Maryal Drive, and to keep the option open for a future Pump Station at the Well No. 6B site.

Well No. 6 Demolition & Well No. 6B Construction

Once this decision was made, Alan's team planned, inspected and managed construction for the demolition and abandonment of the

existing well and appurtenances; demolition, backfill, and compaction of the ground where an underground vault had housed the old generator and equipment; drilling the 510-foot pilot boring; zone-specific sampling in the pilot boring for water quality analysis; logging drill cuttings for stratigraphic analysis; engineering (Gary) for well-screen design; reaming the pilot boring for the 320-foot deep 16-inch diameter production well; and installation of the well screen and well-head assembly. Challenges faced during construction included 1) apparently excessive concentrations of iron and manganese in the water quality samples - which we were able to resolve with the laboratory by suggesting a different filtration protocol; 2) a drilling contractor who underbid the project and sought every opportunity (and created others) to find relief – which we managed through diligent record-keeping, and clear communication with the District.

Hydraulic Modeling

We needed to know how increased flow from the new Well No. 6B would impact the water system, and needed to ensure that water produced by the well could actually be utilized by the system. The hydraulic model prepared as part of the 2009 Master Plan was well done, however, it was a model of the future system envisioned at the completion of the twenty-year infrastructure replacement program. In other words, no model existed for the current system. With modeling information needed for the design of not only the well, but also for the piping connecting the well to the remainder of the water system, Forsgren recommended that a new hydraulic model of the current system be developed. The District agreed, and Alan worked with Liam and other Forsgren engineers in the development and calibration of a new hydraulic model. This model proved critical in completing the well design, and was updated and utilized several times by Forsgren as part of its services to the District. We understand that this model has

also been utilized to answer questions, and solve problems since then.

Well No. 6B Well-House/Site Design

We designed improvements to the site, as well as a new pump house and appurtenances that include a vertical turbine pump (sized to operate from 100gpm to 1,100gpm), sodium hypochlorite disinfection system, and standby generator. We worked closely with District staff to identify operational requirements and which design options were favored based on their previous well construction and operations experience. We utilized the results from our hydraulic modeling to design piping from the new well to the existing system; a new CMU well house with disinfection, a back-up generator, and instrumentation & controls; and site work including concrete, storm drainage, and a retaining wall.

Well No. 6B Well-House/Site Construction Management

As part of our Construction Management responsibilities we documented, evaluated, and recommended action for submittals, RFIs, COs, and Payment Requests. We advised the District on negotiations with the contractor concerning change order requests, and tracked project progress and budget. We managed SWPPP compliance issues, and worked closely with the contractors, subcontractors, and District to facilitate the smooth flow of work on this very small site. Challenges faced during construction included a civil contractor who changed project managers in mid-stream, all but bringing the project to a halt – which we managed through diligent and professional communication, and close coordination with the District.

El Camino High School Fire Flow

As the Well 6B project was nearing completion, the San Juan Unified School District requested that the District provide a second water service connection to the El Camino Fundamental High School to meet fire flow requirements. Forsgren designed 400 feet of 12-inch pressurized pipeline and a 6-

inch service connection. This and other District water pipeline projects were complicated by the lack of accurate maps of the 75-year old distribution system. We utilized our hydraulic model to determine a suitable water main size that met Sacramento Metropolitan Fire Department fire flow capacity requirements.

We also prepared plans and specifications and provided construction management for a 2,175-foot long water main along Annette Street and Eastern Avenue, and associated service connections. This was a key element in re-establishing an abandoned intertie with the adjacent Sacramento Suburban Water District to increase system reliability during an emergency. Our hydraulic modeling enabled us to optimize pipeline size to meet daily flow requirements and to provide additional fire flow capacity.

Conjunctive Use & Surface Water Utilization Planning

The District is completely dependent upon groundwater, and, while they do have interties with neighboring systems for emergency use, they are essentially “landlocked” in terms of access to surface water. The District recognized this water supply vulnerability early on, and in 1968 invested in a contract for surface water via the City of Sacramento’s water rights. Improving the reliability of the District’s supply also fit with the 2009 Master Plan’s goal of investing in conjunctive use, and the District asked Forsgren to investigate the use of this contract on which they’d been paying annually for the previous 47 years. The impetus for this request included the following:

- The Board wanted to participate more actively in regional groundwater management efforts;
- The Board was interested in protecting the ratepayer’s trust through a responsible use of resources, including this potential for surface water;

- Contaminants in groundwater, though not (then) impacting the District, were (are) a threat, and underscore the District's sole dependence on groundwater; and
- District management and Board felt that flexibility and adaptive capacity are responsibilities of a public water provider.

Forsgren began with a Board workshop to develop specific goals for the process, in order develop a more robust understanding of the project on all sides, as well as to guide activities and ensuing decisions. We then conducted a secondary research effort: the age of the contract could have made it challenging to understand the full legal nuance, but our in-region experience allowed for a deeper understanding of regional relationships and infrastructure complexity, helping us to tease apart historical facts, legal precedent and potential, and political nuance. As the range of opportunities presented itself we developed a living document to track these opportunities and the relationships between them. The document took the form of a flow chart, which helped the Directors to better understand connections, pathways, opportunities, and off-ramps on a holistic basis. It also allowed them to document decision points along the way, and the reasoning behind those decision points. This was an essential part of showing process transparency and a good use of ratepayer funds.

The outcome of the process was documented in a road map that described the entire process, providing the Board and Management the technical, financial, and policy information it needed to confidently make informed decisions in the best interest of the District and its customers. Forsgren was a close team member of the District's staff throughout the process, facilitating brainstorming meetings, consistently updating the mapping tools, and leading the Board through this complex and challenging process.



On-Call Services
Golden State Water Company

Period of Service: 2007-Present

Key Personnel:

Alan Driscoll – Client Service Manager,
Forsgren Team Leader
Brian Gach – Engineering
Liam Bailey – Engineering, Inspection, CM
Rich Bolton - Inspection
Rick Noll – Engineering, QA/QC
Jane Dela Cruz – Project/Construction Administration

Client Contact:

Paul Schubert, General Manager
Phone: (916) 853-3636
Email: pschubert@gswater.com

Forsgren Associates has a long-standing partnership with the engineering and operational sides of GSWC, and Alan Driscoll has been our point-person for all of it. Over the last 14 years we have supported GSWC on a wide variety of planning, design, and construction projects, most of which have been performed under Master Services Agreements. A sampling of some of our services are summarized below, with more detailed descriptions of a few projects following:

- Engineering design for multiple pipeline projects including Water, Sunset, Driftwood, Willow Pass, Albert, and Dawes Streets.
- Modeling, design, and cost estimating for the Chadwick Booster Pump Station in the Bay Point system.
- Master Plan updates for 18 water systems, and CIP cost estimate updates for 38 water systems in support of rate case hearing.
- Engineering improvements to the Park Well controls;
- Two Watershed Sanitary Survey updates involving 18 separate water systems in Clear Lake, California.

- Preparation of a Stormwater Pollution Prevention Plan template for use throughout GSWC's Northern and Coastal Districts (Alan).
- Construction management for \$9M meter retrofit project in Cordova system.
- Fluoridation studies and engineering for five well sites in the Arden service area (Alan, Brian).
- Inspection, 3-D Survey, and analysis of differential settling of 5MG Tank No. 4 at the Coloma Water Treatment Plant, Cordova system (Alan, Rick, Brian).
- Paseo Well No. 24 - Inspection for drilling, well construction, well house, and site work in the Cordova system (Alan, Liam).
- Constructability Reviews/Engineering support for Chasella Way and Doyle Drive pipelines, Hill Street Water Treatment Plant demolition, and Sonoma Sludge Drying Beds (Alan).
- CM/Inspection for 10 other water infrastructure projects (Alan).

Pipeline Designs

Our first project for GSWC was in the Bay Point system in the east San Francisco Bay area. Alan's team responded to Golden State's request for a fast and constructible design to replace 1,800 feet of severely deteriorated 8-inch distribution line along Water Street. A primary challenge was to replace the old waterline while maintaining services. Our under-budget, schedule-beating response resulted in the award of three additional pipeline replacement designs which we also completed within GSWC's timeline.

Our design of 1,400 feet of 8 to 16-inch water line on Willow Pass Road and 600 feet of 8 to 12-inch water line in Alberts Avenue was complicated by the large number of utilities within the existing roadway. These included an un-odorized, high pressure

natural gas line, high-voltage overhead power lines, East Bay Mutual Utility District conduits, major AT&T conduits, sewer lines, storm drain lines, and signal light loop detectors. Our design services included extensive coordination to locate existing underground utilities, and coordination with the County for traffic control.

Pump Station Design

We prepared plans and specifications to replace the Chadwick Pump Station which was the sole source of water to an upper supply zone. A design challenge was that the new pump station is located on the same site as the existing pump station, which needed to remain in service during the construction. Our design ensured minimum disturbance to regular service during construction. Another constraint was the small size of the existing site and its location in a swale that was 12 feet below sidewalk grade. We designed a tiered retaining wall allowing construction of the new station to match the existing sidewalk grade. Our design included two 3-HP and two 25-HP pumps, connections to an existing PRV, a well, and all electrical and SCADA components.

Rate Case Support

In support of GSWC's pending rate case, Forsgren was tasked with researching, analyzing, and representing all of GSWC's California water supplies and systems on a single map. Forsgren reviewed Master Plans and interviewed GSWC staff to develop and accurately depict groundwater vs. surface water supplies for over thirty systems, along with those portions of the Central Valley Project, State Water Project, and other projects upon which GSWC's supply depends. Forsgren followed this effort with modeling, cost estimating, CAD, and GIS services in support of Master Plan updates to more than a dozen of these systems.

Construction Management

We managed construction for the installation of more than 6,200 water meters

in the Cordova system. The project paid on a time and materials basis, which meant that all quantities, personnel, and equipment had to be documented for each of the 6,200 installations. To compound this challenge, the contractor utilized multiple crews with vacuum trucks to accelerate the construction.

We fielded multiple crews operating in parallel to conduct daily inspections and verify that work was performed in accordance with plans, specifications, and SWPPP BMPs. We developed project-specific field forms that helped us to quickly and accurately record installation information, utilized white-boards to verify field photographic information, developed a database and employed a data-entry specialist to upload and track the field data, developed a photograph coding system to quickly document pre-construction, construction, and post-construction conditions, and developed a library to store and catalog the more than 30,000 photographs for the project. These photographs later became invaluable as customer and contractor claims began to emerge.

We led weekly construction project meetings, and coordinated closely with the contractor, Engineer, and GSWC on project progress, payment, and technical issues. We reviewed and made recommendations for submittals (materials and testing), requests-for-information, change orders, certified payroll reports for Labor Compliance, and payment requests. At the close of the project we submitted a final report that documented the construction work, and included a complete construction file with hard and electronic copies of all project documentation.

Stormwater Management

Forsgren responded on 24-hour notice to address stormwater concerns on the high-profile North/South Main Transmission pipeline that passed along Sun Center Drive in front of the Regional Water Quality Control Board offices in Rancho Cordova.

We worked with the contractor and GSWC staff to identify and immediately implement relevant stormwater BMPs, which significantly reduced the risk of violations. We provided full-time inspection services for the remainder of the project, allowing GSWC and the contractor to focus on getting pipe in the ground. Forsgren prepared a stormwater pollution prevention plan (SWPPP) for the project that was utilized as a template for Northern District construction projects.

Stormwater Management

Forsgren provided on-site services to observe, document, and photograph construction of the GSWC water system for the new California Military Department headquarters complex in Rancho Cordova, CA. We coordinated closely with GSWC, the water subcontractor, and the general contractor to schedule inspections, and to address and resolve technical issues in a timely manner. We provided flexible “on-call” inspection and administrative services over the protracted construction period as high-level decisions resulted in significant delays.

On-Call Services

Tuolumne City Sanitary District, CA

Key Personnel:

Alan Driscoll – Client Service Manager,
Construction Manager
Rich Bolton - Inspection
Brian Gach – Engineering
Liam Bailey – Engineering, Inspection, CM
Matt Vallarino – Engineering
Rick Noll – Engineering, QA/QC
Jane Dela Cruz – Construction
Administrator
Patrick Wickman – Permitting,
Environmental, CM Support

Client Contact:

Dave Andres, General Manager
Phone: (916) 390-0785
Email: djand@comcast.net

Forsgren is providing a wide range of consulting services to TCSD, including District Planning Support, engineering and environmental services for improvements to a land application facility, engineering support, and construction management services for multiple projects.

We provide CM for improvements to their Wastewater Treatment Plant. We performed constructability reviews; planned, led, and documented a pre-construction meeting; and coordinated environmental permitting, clearance, and compliance activities. We provide an on-site inspector to observe, document, and photograph construction; manage the flow of all project communications; maintain multiple sets of full project records; receive, log, and shepherd submittals/RFIs for review by the Engineer, Owner, and/or various subs; define scopes, negotiate, write, log, and shepherd Field Orders, Work Change Directives, and Change Orders; inspect materials, parts, and equipment delivered to the site; develop and maintain an independent construction schedule to verify compliance with contract, environmental, and funding conditions; coordinate, lead, and document construction meetings (in-person and video) to address technical issues, progress, schedule, and budget; and verify quantities and recommended approval of payment requests. We also maintain Red-Line drawings for use in preparing Record Drawings, and seeing the project through final Close-Out.

On-Call Engineering Calaveras County Water District, CA

Key Personnel:

Alan Driscoll – Project Manager,
Construction Manager
Rick Noll – QA/QC

Client Contact:

Dave Andres, General Manager (former)
Phone: (916) 390-0785
Email: djand@comcast.net



Forsgren provided construction management and inspection services on a variety of projects for Calaveras County Water District. Alan received the call to mobilize on 24-hour notice to assume responsibility for managing construction of an 85-foot-high, 200-gal water tower. Our success on this project led to a Master Agreement under which we managed construction of a new Booster Pump Station, a steep-gradient 8-inch Transmission Pipeline, a 3,000 foot 12-inch pipeline along a State highway, and multiple development projects. We led a task force to overhaul the District's standards and specifications which were 12 years out of date, and in conflict with other District documents, and prepared their Water Conservation Plan.

On-Call Services

Silver Knolls Mutual Water Company, NV

Key Personnel:

Brian Gach – Project Manager,
Engineering
Alan Driscoll – Technical Guidance,
QA/QC
Jane Dela Cruz – Project Assistant

Client Contact:

Tina Pope, President
Phone: (775) 530-3975

Silver Knolls was in a tight spot. Their arsenic removal system was overdue for an upgrade, and they couldn't provide water that met drinking water standards. The company did not have the funding to implement the improvements themselves, and were stymied by the labyrinthine requirements of the funding agencies. Forsgren helped Silver Knolls to navigate the State Revolving Fund process to secure funding for the project, then worked closely with management and operational staff to develop a strategic plan to bring the purveyor into compliance with regulatory requirements. Our optimized schedule to address multiple deficiencies included: backup well assessment, rehabilitation, and testing; storage tank

coating; and replacement of the arsenic removal system. Our ongoing services include providing planning documents, facilitating financing applications, developing designs and specifications, coordinating and facilitating regulatory approvals, and managing construction.

Peer Review/ On-Call Services
Water Treatment Plant Improvements
South San Joaquin Irrigation District, CA

Key Personnel:

Alan Driscoll – Project Manager, Technical Review, Inspection Coordination
 Rick Noll – Technical Lead

Client Contact:

Jeff Shields, General Manager (ret.)
 Phone: (209) 652-2911
 Email: shieldjeff1@gmail.com

The South San Joaquin Irrigation District draws Sierra Nevada surface water from the Woodward Reservoir, treats it by means of the 36MGD Nick C. DeGroot Water Treatment Plant (WTP), and delivers it to the cities of Tracy, Manteca, and Lathrop via a 28-mile long, 36-inch diameter transmission main. Alan led all of our services for SSJID, which are summarized below, and then described in further detail:

- Peer Review of multiple improvements designed to optimize plant performance;
- Bidding Services to facilitate selection of a qualified contractor to construct facility improvements based on the peer review;
- Inspection and related services during construction for the improvements.
- Study of sludge drying and citric acid backwash handling alternatives;
- Permitting assistance and planning for an additional sludge drying bed or backwash storage;
- Evaluation for a membrane retrofit;

- Design of a cover to shield air compressors from inclement weather; and,
- Capacity Study of 28-mile long, 36-inch (avg) diameter transmission main, including development and calibration of a hydraulic model.

We were asked to perform a Peer Review of a design for process optimization improvements to the WTP including a day tank, associated piping, and transfer and metering pumps for the hypochlorite system; new transfer pumps and injection points for the ferric chloride coagulant; modifications to the dissolved air flotation (DAF) system; stabilization basin screen installation; sludge drying beds; drainage improvements; and instrumentation and controls. We evaluated the constructability for each, and advised modifications or wholesale changes. We demonstrated that the proposed DAF modifications would not substantially improve performance, and we recommended they not be implemented in order to save unnecessary costs. The District cancelled them.

Our performance on the Peer Review resulted in SSJID implementing a Master Services Agreement with Forsgren to provide bidding and construction services for the improvements, and for all engineering related to the potable water system.

We also evaluated options to more effectively address the lack of sludge-drying capacity associated with citric acid backwash used to clean the process membranes. We evaluated options including changing the coagulant, extending cleaning backwash recovery cleaning intervals, constructing a new basin for sludge drying or residual storage, alternative use or direct discharge of the acid, mechanical sludge dewatering, and accelerating acid stabilization. We worked with plant staff to discuss options and determine a solution that satisfied operational needs and budget constraints.

The District had concerns about the ability of its 28-mile long steel transmission pipeline to meet future contractual delivery demands without a pump station. We developed a hydraulic model of the pipeline and orchestrated a 10-person effort to record point-in-time flows and pressures at various pipeline locations. We used these results to calibrate our model and “exercise” the model under a wide range of operational conditions to estimate true pipeline capacity. Our model and analyses provided the District and its member cities a clear understanding of water delivery limitations and options.

Peer Review/Construction Services Ducks Unlimited, California

Key Personnel:

Alan Driscoll – Project Manager, Field Team Lead
Rick Noll – QA/QC

Client Contact:

Steve Carroll, DU Project Manager
Phone: (916) 717-3094
Email: s Carroll@ducks.org

The Napa-Sonoma Marshes Wildlife Area project is part of the largest wetlands restoration effort in western North America. These former tidal flats had been isolated from the natural estuary system for over 70 years while they were used to evaporate seawater to harvest salt. Over that time the natural tidal channels had silted in, and dredging would be required as part of the restoration. Due to environmental concerns, the allowable window for dredging was narrow; failing to meet the fast-track schedule would delay restoration by a full year.

Recognizing this, Ducks Unlimited asked Alan for support. He responded quickly, leading his team in performing a Peer Review of the plans and specifications to identify potential pit-falls at the same time that he mobilized a field team to the site. Alan’s field team located and staked the submerged historic tidal channels, and utilized GIS,

survey-grade and hand-held GPS technology to compare dredging plans to the actual channel locations; and utilized independent, geo-referenced imagery to identify and correct design errors, saving our client significant construction costs and delays due to avoided claims. Alan also led the Forsgren team in providing services during bidding and construction.

Peer Review/ Design Services Cortez Gold Mine, NV

Key Personnel:

Brian Gach – Peer Review, Re-design, Construction Services
Alan Driscoll – QA/QC
Jane Dela Cruz – Project Assistant

Client Contact:

Mat Spieth, Super., Capital Projects
Phone: (775) 468-4302
Email: mspieth@nevadagoldmines.com

Forsgren performed a Peer Review, and then a Redesign of a 12-mile above-ground HDPE pipeline that spanned two mountain passes and a valley. The pipeline diameter ranged from 24" to 26", and was designed to accommodate flows from 5,000 to 14,000 gpm. This project included two pump stations, two arrays of groundwater recharge basins, a pressure reducing system and distilling basin, access roads, and barriers. Forsgren's redesign reduced the estimated capital cost of the project by over five million dollars from the previous design. We assisted with permitting, and played a key role in construction management of the project.

On-Call Engineering Services Orange Vale Water Company, California

Key Personnel:

Brian Gach – Project Manager, Engineering
Liam Bailey – Engineering
Alan Driscoll – Client Service Manager, QA/QC
Jane Dela Cruz – Project Assistant

As on-call engineers, Forsgren designed the main transmission line replacement along Central Avenue, between Hickory and Hazel Avenues in Orangevale. We determined the main size suitable along Central Avenue that would provide adequate water flow in the neighborhood, and prepared plans and specifications for construction. Forsgren also prepared the current construction standard details and specifications, as well as development procedures for OVWC. Our “Developer Packet” included example drawings and specifications, rates, rules, and procedures by which to do business with the company.

On-Call Services Carmichael Water District, California

Key Personnel:

Alan Driscoll – Client Service Manager
Jason Broome – Engineering
Nick Patterson – Engineering
Rick Noll – QA/QC

Under a master agreement, Forsgren provided technical services including pipeline rehabilitation and extension. Two of those projects, (400 feet of ductile iron pipe along Whitewood Drive and 700 feet of 6-inch ductile iron pipe along Lines Lane), incorporated similar activities. We initiated field walks to identify points of connection, trees, and constructability. Utility research, title reports, and base mapping led to our designs that included utility call-outs, fire hydrants, vertical and tie-in details, individual water service connections, etc. Following approvals of our designs and cost estimates, we provided bid support and construction services. Alan led the effort to review the high-profile U.S. EPA/ Aerojet Rocketdyne groundwater flow and contaminant transport model in order to help Carmichael make better informed decisions with regard to long-term planning for its groundwater wells. In addition, we provided engineering related to Automated Transfer Switch programming and

Programmable Logic Controller for the water treatment plant.

Water Master Plan Update Calaveras Public Utility District

The Calaveras Public Utility District (CPUD) serves 4,000 customers in Calaveras County, California. Their last Water Master Plan, created prior to the current administration, was lacking the detail and rationale needed for prioritization and CIP implementation planning. Alan’s team evaluated the system hydraulic model, identifying discrepancies between measured and simulated pressures, as well as the modeled representation of the physical system. The model was revised with corrected mapping, elevations and PRV settings, bringing the model back into calibration. The revised model was used to re-establish system priorities, and to develop a “Road Map” that:

- Summarized the Master Plan observations and conclusions;
- Identified data gaps and unsupported conclusions/recommendations in the Master Plan; and
- Identified specific next steps that would enable CPUD to close the data gaps, and confidently prioritize its needed infrastructure improvements.

Water System Master Plan Douglas County, NV

Key Personnel:

Alan Driscoll – Project Manager
Rick Noll – QA/QC

Douglas County is responsible for over a dozen individual water systems that were interconnected in a reactionary way, without a unified operational or capital improvements plan. These systems were of varying ages and condition, serving water users over a wide range of elevations and pressure zones. Forsgren was contracted to “make sense” of the system. This effort included a review of as-built records followed by a hands-on field review of the capacity, condition, and

operations of each system component including transmission lines, storage, distribution, pump stations, telemetry, and controls. This information was incorporated into a water model (WaterCad) and calibrated to match actual field conditions. The model was used to identify deficiencies in the existing system and to determine the optimal approach to address future needs. Problems identified included supply limitations, lack of redundancy, excessive line velocities, size restrictions, and excessive pressure zones. We recommended specific improvements with detailed cost estimates, and prioritization based on the seriousness of the deficiencies, and the anticipated timing of future growth. In a public meeting, one of the County Supervisors held up our Master Plan and said, “this is the kind of Plan we’ve been looking for!”

Water System Master Plan City of Ripon, CA

Key Personnel:

Alan Driscoll – Project Manager
Rick Noll – QA/QC

The City of Ripon provided potable water to customers via eight active groundwater wells, two water storage tanks, and approximately 69 miles of pipelines ranging from six to 24 inches in diameter. In addition to these facilities, the City provided non-potable water for irrigation and reuse purposes. Forsgren provided a comprehensive analysis of the City's existing water infrastructure and provided recommendations for improvements to the system as well as provided a plan for future system improvements based on projected demands. The recommended improvements consisted of additional wells, installation of an interconnection to the South San Joaquin Irrigation District water supply for redundancy, four additional storage tanks, additional distribution lines, an updated water conservation program, and installing additional water meters.

On-Call Services San Juan Water District, CA

Key Personnel:

Alan Driscoll – Project Manager
Brian Gach – Engineering, Construction Services
Jane Dela Cruz – Project Assistant

Forsgren was awarded an on-call services contract with San Juan Water District to provide engineering and related services for their water system. Forsgren designed pipeline replacement projects on Auburn-Folsom and Cavitt-Stallman roads, and is currently retained by SJWD to provide services during construction. As part of this ongoing contract Forsgren is tasked with reviewing submittals, supporting the District in responding to RFIs and managing contract changes. Forsgren will prepare record drawings at the conclusion of construction.

On-Call Services California-American Water Company

Key Personnel:

Alan Driscoll – Client Service Manager
Rick Noll – QA/QC

Forsgren mobilized on 24-hour notice to provide inspection services for this water utility in response to rapidly increasing development pressures. Our performance resulted in the award of a multi-year contract under which we performed inspections for more than 50 developer and capital improvement projects. We observed and documented contractor construction work to help ensure compliance with Cal-Am standards, collected water samples and submitted for analysis, provided guidance to developers for record drawings, and provided on-site technical assistance to manage system drawings and maps. We also designed 4,000 feet of 20-inch ductile iron main through an established high-use residential area. We evaluated utilities, realigned the main, and resolved a challenging bridge crossing.

4. Rate Schedule

Our proposed Rate Schedule is included on the following page, with Rate Schedules for our proposed subconsultants on subsequent pages. Rates for other subconsultants will be included in individual task orders or negotiated separately, as appropriate.



FORSGREN ASSOCIATES, INC.
TITLE CODE RATE SCHEDULE - CALIFORNIA
01 JANUARY 2022

TITLE CODE	TITLE	HOURLY RATE*
Engineer/Scientist VII	Sr. Principal / Service Leader	265
Engineer/Scientist VI	Principal/Service Leader	245
Engineer/Scientist V	Managing Engineer/Scientist	220
Engineer/Scientist IV	Senior Engineer/Scientist	195
Engineer/Scientist III	Project Manager	170
Engineer/Scientist II	Project Engineer/Scientist	150
Engineer/Scientist I	Engineer/Scientist	130
Survey VI	Survey Manager	160
Survey V	Chief of Survey	150
Survey IV	Survey Party Chief	130
Survey III	Senior Surveyor	110
Survey II	Surveyor in Training	90
Survey I	Survey Technician	80
Drafter V	Drafting Manager	135
Drafter IV	Senior Designer	125
Drafter III	Designer III	115
Drafter II	Designer II	105
Drafter I	Designer I	95
Inspector VI	Senior Construction Manager	160
Inspector V	Construct. Mgr/Sup. Inspect.	150
Inspector IV	Project Inspector	140
Inspector III	Project Inspector	130
Inspector II	Project Inspector	120
Inspector I	Assistant Inspector	110
Clerical V	Executive Assistant	120
Clerical IV	Senior Project Assistant	110
Clerical III	Project Assistant III	100
Clerical II	Project Assistant II	90
Clerical I	Project Assistant I	80

Rates are fully-loaded with direct labor, overhead and profit.

Expert Witness Testimony, Preparation and all court time will be charged at a rate of Reimbursables and subconsultants will be charged at cost plus 15%.

Mileage will be charged at the current government rate.

A Related Project Fee (RPF) of \$5.00 will be added to each labor hour for project-specific costs related to in-house printing, photocopying, communications, computers, software, shipping, etc. Rates are subject to change.

HOURLY RATES & BILLING POLICY

Effective January 1, 2021, the following hourly rates will be charged for services rendered:

CLASSIFICATION	RATE	CLASSIFICATION	RATE
Principal	\$225.00	Licensed Surveyor	\$185.00
Project Manager	200.00	Survey Manager	165.00
Project Engineer/Designer	170.00	Office Surveyor	155.00
Planner	170.00	Survey Technician	120.00
Engineer/Designer 1	155.00	One Person Survey Crew	195.00
Engineer/Designer 2	135.00	Two Person Survey Crew	285.00
Engineer/Designer 3	125.00	Three Person Survey Crew	360.00
Cadd Operator 1	140.00		
Cadd Operator 2	125.00		
Cadd Operator 3	110.00		
Project Assistant	105.00		
Plot Plans	90.00		
Clerical/Printing/Deliveries	85.00		

All outside and subcontracted services are billed at our cost plus ten percent (10%).

All travel expenses such as lodging, meals, and transportation will be charged at cost.

Automobile mileage will be charged at the standard IRS rates, currently 56¢/mile.

Cost of mileage, normal survey stakes, and other field supplies are included in the above survey crew rates. Special type monuments will be charged at cost.

Reproduction expenses will be charged at our cost plus ten percent (10%).

Agency fees and other outside charges are to be paid directly by the Client.

Authorized overtime hours will be billed at 1.25 times the hourly rates.

Billings will be monthly. Invoices are due and payable upon presentation. Interest at the rate of 1½% per month, commencing 30 days after invoice date, will be charged on delinquent accounts.

Fees for depositions and testimony will be billed at two (2) times the hourly rate.

Cooper, Thorne & Associates, Inc. shall have the right to curtail any work on a project 30 days after invoices are due and payable, subject to five days written notice.

Hourly Rates & Billing Policy is subject to change January 1, 2022.



David R. Crosariol, President



2021 SCHEDULE OF FEES

PROFESSIONAL SERVICES

Engineering Assistant/Laboratory Technician.....	\$80/hr.
Engineering Field Technician/Special Inspector I	85/125(PW)*/hr.
Engineering Field Technician/Special Inspector II	95/135(PW)*/hr.
Engineering Field Technician/Special Inspector III/Equipment Operator	105/145(PW)*/hr.
Word Processor/Technical Editor/Draftsman	80/hr.
Research Assistant/Technical Illustrator/Senior Draftsman.....	95/hr.
Project Coordinator/GIS Specialist	105/hr.
Staff Engineer/Geologist/Scientist/Field Supervisor	120/hr.
Senior Staff Engineer/Geologist/Scientist	130/hr.
Project Engineer/Geologist/Scientist/Construction Supervisor.....	140/hr.
Senior Project Engineer/Geologist/Scientist.....	155/hr.
Senior Engineer/Geologist/Scientist/Certified Industrial Hygienist.....	170/hr.
Associate Engineer/Geologist/Scientist	200/hr.
Principal Engineer/Geologist/Scientist/Litigation Support	240/hr.
Deposition or Court Appearance	400/hr.
Attorney Fees (General)	350/hr.
Overtime (>8 to 12 hrs), Saturday, and Night Rate	1.5X Regular Hourly Rate
Overtime (>12 hrs), Sunday, and Holiday Rate	2X Regular Hourly Rate
Minimum Professional Fee.....	\$500/Project
Minimum Field Services Fee (per day or call-out).....	4 Hours

*Prevailing Wage (PW) per requirements of California Labor Code §720, et. Seq.

TRAVEL

Personnel	Regular Hourly Rate
Subsistence (Per Diem).....	\$175/day
Vehicle Mileage	0.75/mile

EQUIPMENT & ANALYTICAL TESTS

Nuclear Gauge	Included in Technician Hourly Rate	Level D PPE/Decon Rinse Equipment	\$50/day
Pick-up Truck	\$125/day	pH/Conductivity/Temperature Meter	60/day
Equipment Truck	200/day	55-gallon drum	65/ea.
Direct-Push Rig/Operator	185/225(PW)*/hr.	TPHg (EPA 8015M)	90/ea.
Direct-Push Sample Liner	10/ea.	TPHd/mo (EPA 8015M)	80/ea.
Equipment Trailer	100/day	Fuel Oxygenate Compounds (EPA 8260B)	110/ea.
Wenner 4-Pin Earth Resistivity Meter	150/day	Volatile Organic Compounds (EPA 8260B)	150/ea.
Coring Machine (concrete, asphalt, masonry).....	200/day	Semi-Volatile Organic Compounds (EPA 8270)	300/ea.
Dynamic Cone Penetrometer	250/day	CAM 17 Metals (EPA 6010B)	170/ea.
Dilatometer (DMT) Test Equipment	800/day	Single Metal (EPA 6010B)	30/ea.
Generator or Air Compressor.....	150/day	STLC or TCLP Extraction	75/ea.
GPS Unit	160/day	Soil pH (EPA 9045C)	25/ea.
Drive-Tube Sampler or Hand-Auger	40/day	Organochlorine Pesticides (EPA 8081)	125/ea.
Soil Sample Tube (Brass or Stainless)	10/ea.	Naturally Occurring Asbestos (CARB 435)	90/ea.
Water Level Indicator	40/day	Asbestos PLM	20/ea.
Battery-Powered Pump	75/day	Asbestos 1,000-pt Count	80/ea.
Photo-Ionization Meter	150/day	48-hr/24-hr Turnaround Time	60%/100% surcharge

LABORATORY TESTS

COMPACTION CURVES		SOIL AND AGGREGATE STABILITY	
4-inch mold (D1557/D698).....	\$225/ea.	Resistance Value, R-Value (D2844/CAL301).....	\$300/ea.
6-inch mold (D1557/D698).....	225/ea.	R-Value, Treated (CAL301)	325/ea.
California Impact (CAL216).....	225/ea.	California Bearing Ratio (D1883).....	175/pt.
Check Point.....	100/ea.	Stabilization Ability of Lime (C977)	180/ea.

SOIL AND AGGREGATE PROPERTIES

#200 Wash (D1140/C117)	\$90/ea.	Moisture Determination, tube sample (D2216)	\$20/ea.
Wet Sieve Analysis to #200 (D422/CAL202).....	120/ea.	Moisture Determination and Unit Weight (D2937)	40/ea.
Dry Sieve Analysis, 1.5"+ Aggregate (D6913).....	350/ea.	Atterberg Limits: Plasticity Index (D4318)	200/ea.
Hydrometer Analysis (D422)	165/ea.	Sand Equivalent (D2419/CAL217)	100/ea.
Sieve Analysis with Hydrometer (D422)	200/ea.	pH and Resistivity (CAL643)	120/ea.
Specific Gravity, Soil (T100).....	100/ea.	Sulfate Content (CAL417).....	90/ea.
Specific Gravity Coarse Aggregate (C127).....	60/ea.	Chloride Content (CAL422).....	50/ea.
Specific Gravity Fine Aggregate (C128).....	75/ea.	Organic Content (D2974).....	60/ea.
		Cut/Extract Shelby Tube	100/ea.

SHEAR STRENGTH

Unconfined Compression (D2166)	\$100/ea.
Direct Shear (D3080) (3pt)	325/ea.
Unconsolidated-Undrained Triaxial Shear (D2850).....	125/pt.
Unconsolidated-Undrained Triaxial Staged (D2850)	175/ea.
Consolidated-Undrained Triaxial Shear (D4767)	300/pt.
Consolidated-Undrained Triaxial Staged (D4767)	375/ea.
Consolidated-Drained Triaxial Shear (EM1110)	400/pt.
Consolidated-Drained Triaxial Staged (EM1110).....	500/ea.

PERMEABILITY, CONSOLIDATION AND EXPANSION

Permeability, Flexible Wall (D5084)	\$300/ea.
Permeability, Rigid Wall (D5856).....	300/ea.
Consolidation (D2435).....	60/pt.
Expansion Index (D4829/UBC 29-2).....	225/ea.
Swell/Collapse (D4546).....	165/pt.

AGGREGATE QUALITY

Sieve Analysis to #200 (C136)	\$115/ea.
L.A. Rattler Test (500 rev.) (C131).....	200/ea.
Durability Index (D3744/CAL229).....	165/ea.
Fine Aggregate Angularity (CAL 234)	125/ea.
Flat and Elongated Particles (D4791/CAL 235)	150/ea.
Percent Crushed Particles (CAL205)	150/ea.

CONCRETE / MASONRY / REINFORCING STEEL

Compressive Strength, Cast Cylinders (C39).....	\$30/ea.
Compressive Strength, Cores (C42).....	60/ea.
Flexural Strength Beam (C78/C293)	80/ea.
Splitting Tensile Test (C496).....	80/ea.
DSA Masonry Shear (DSA-207)	75/ea.
Shotcrete Panel Coring and Comp. Strength (C1140) ...	80/ea.
Rebar Tensile / Bend (up to #11/#11 and Larger)	200/250/ea.
CMU Compressive Strength (C140)	100/ea.
Compressive Strength, Grout (C1019/UBC 21-19).....	30/ea.
Compressive Strength, Mortar (C109/UBC 21-15,16) ..	30/ea.
CMU Unit Wt., Dimen., Absorption (C140)	75/ea.
Compressive Strength, Masonry Prism (C1314)	250/ea.

HOT MIX ASPHALT

Density, Hveem (D2726/CAL308)	\$110/pt.
Stabilometer Value (D1560/CAL366).....	175/pt.
Theoretical Max. Specific Gravity (D2041/CAL309)	175/ea.
Ignition/Sieve Analysis (C136/CAL202)	215/ea.
HMA Core Unit Weight (D1188/CAL308).....	60/ea.
% Asphalt, Ignition Method (D6307/CAL382).....	125/ea.
% Asphalt, Ignition Calibration (D6307/CAL382).....	400/ea.
Rice Density/% Voids (CAL367).....	285/ea.

***2X surcharge on rush turnaround for laboratory testing**

TERMS AND CONDITIONS

1. Listed are typical charges for the services most frequently performed by Geocon. Prices for unlisted services as well as special quotations for programs involving volume work will be provided upon request. Laboratory test prices shown are for laboratory work only, and include reporting of routine results not calling for comments, recommendations or conclusions.
2. Sampling and testing is conducted in substantial conformance with the latest applicable or designated specifications of the American Society for Testing and Materials, Caltrans, American Association of State Highway and Transportation Officials, or other pertinent agencies.
3. Saturday, night work, and overtime hours are charged at time and one-half; Sundays and holidays at double time. Per diem may apply when location of work dictates.
4. Equipment and materials will be billed at cost plus 15%. Outside services including subcontractors and rental of special equipment are billed at cost plus 15%. Hourly services are billed portal to portal from closest office in accordance with the stated hourly rates herein, with a minimum four-hour charge.
5. Invoices will be submitted at four-week intervals. Terms of payment are met upon presentation of invoice. Invoices become delinquent thirty (30) days from invoice date and subject to one and one-half percent (1-1/2%) service charge per month, or the maximum rate allowed by law, whichever is lower. If Client objects to all or any portion of any invoice, Client will so notify Geocon in writing within fourteen (14) calendar days of the invoice date, identify the cause of disagreement, and pay that portion of the invoice not in dispute. The parties will immediately make every effort to settle the disputed portion of the invoice. Payment on delinquent invoices will first be applied to accrued interest and then to the principal amount. All time spent and expenses incurred (including any attorney's fees and costs) in connection with collection of any delinquent amount will be paid by Client to Geocon per Geocon's current fee schedule.
6. Client and Geocon shall allocate certain of the risks so that, to the fullest extent permitted by law, Geocon's (the term "Geocon" includes Geocon's partners, officers, directors, employees, agents, affiliates, subcontractors and subconsultants) total aggregate liability to Client is *limited to the greater of \$50,000 or the total compensation received from Client by Geocon for services rendered on this project, for any and all of Client's injuries, damages, claims, losses, expenses, or claim expenses arising out of this Agreement from any cause or causes, including attorneys' fees and costs which may be awarded to the prevailing party, and Client agrees to indemnify and hold harmless Geocon from and against all liabilities in excess of the monetary limit established above.* Client and Geocon shall allocate certain of the other risks so that, to the fullest extent permitted by law, Client shall limit Geocon's total aggregate liability to all third parties, including contractors, subcontractors of all tiers, materialmen, and others involved in Client's project, as well as persons and other entities not involved in the project, to *the greater of \$100,000 or the total compensation received from Client by Geocon for services rendered on this project, for any and all injuries, damages, cause or causes, including attorneys' fees and costs which may be awarded to the prevailing party, and Client agrees to indemnify and hold harmless Geocon from and against all liabilities in excess of the monetary limit established above, including all liability incurred by Geocon for acts, errors, or omissions, pursuant to entering into agreements with third parties on behalf of Client in order to obtain access or entry onto property not owned by Client. Client agrees to notify all contractors and subcontractors of any limitation of Geocon's liability to them, and require them to abide by such limitation for damages suffered by any contractor or subcontractor arising from Geocon's actions or inactions. Neither the contractor nor any subcontractor assumes any liability for damages to others which may arise on account of Geocon's actions or inactions.*



Rincon Consultants, Inc.

Standard Fee Schedule for Environmental Sciences and Planning Services

Professional, Technical and Support Personnel*	Hourly Rate
Principal II	\$295
Director II	\$295
Principal I	\$280
Director I	\$280
Senior Supervisor II	\$245
Supervisor I	\$228
Senior Professional II	\$212
Senior Professional I	\$197
Professional IV	\$174
Professional III	\$161
Professional II	\$145
Professional I	\$128
Associate III	\$117
Associate II	\$102
Associate I	\$95
Senior GIS Specialist	\$160
GIS/CADD Specialist II	\$140
GIS/CADD Specialist I	\$125
Technical Editor	\$130
Project Accountant	\$110
Billing Specialist	\$95
Production Specialist	\$105
Clerical	\$95

*Professional classifications include environmental scientists, urban planners, biologists, geologists, marine scientists, GHG verifiers, sustainability experts, cultural resources experts, and other professionals. Expert witness services consisting of depositions or in-court testimony are charged at the hourly rate of \$375.

Reimbursable Expenses

Direct Cost	Rates
Photocopies - Black and White	\$0.20 (single-sided) & \$0.40 (double-sided)
Photocopies - Color	\$1.50 (single-sided) & \$3.00 (double-sided)
Photocopies - 11 x 17	\$0.50 (B&W) & \$3.30 (color)
Oversized Maps	\$8.00/square foot
Digital Production	\$15/disc and \$20/flash drive
Light-Duty and Passenger Vehicles*	\$88/day
4WD and Off-Road Vehicles*	\$140/day

* \$0.65/mile for mileage over 50 and for all miles incurred in employee-owned vehicles.

Other direct costs associated with the execution of a project, that are not included in the hourly rates above, are billed at cost plus 15%. These may include, but are not limited to, laboratory and drilling services, subcontractor services, authorized travel expenses, permit charges and filing fees, mailings and postage, performance bonds, sample handling and shipment, rental equipment, and vehicles other than covered by the above charges.

Annual Escalation. Standard rates subject to annual escalation. **Payment Terms.** All fees will be billed to Client monthly and shall be due and payable upon receipt or as indicated in the contract provisions for the assignment. Invoices are delinquent if not paid within ten (10) days from receipt or per the contractually required payment terms.



Rincon Consultants, Inc.

Equipment	Day Rate
Environmental Site Assessment	
Soil Vapor Extraction Monitoring Equipment	\$155
Four Gas Monitor	\$133
Flame Ionization Detector	\$107
Photo Ionization Detector	\$80
Hand Auger Sampler	\$60
Water Level Indicator, DC Purge Pump	\$45
Natural Resources Field Equipment	
UAS Drone	\$268
Spotting or Fiberoptic Scope	\$165
Pettersson Bat Ultrasound Detector/Recording Equipment	\$165
Sound Level Metering Field Package (Anemometer, Tripod and Digital Camera)	\$110
GPS (Sub-meter Accuracy)	\$65
Infrared Sensor Digital Camera or Computer Field Equipment	\$55
Scent Station	\$22
Laser Rangefinder/Altitude	\$11
Pit-fall Traps, Spotlights, Anemometer, GPS Units, Sterilized Sample Jar	\$9
Mammal Trap, Large/Small	\$1.50/\$0.50
Water and Marine Resources Equipment	
Boat (26 ft. Radon or Similar)	\$600
Boat (20 ft. Boston Whaler or Similar)	\$335
Multi Parameter Sonde (Temp, Cond, Turbidity, DO, pH) with GPS	\$165
Water Quality Equipment (DO, pH, Turbidity, Refractometer, Temperature)	\$60
Refractometer (Salinity) or Turbidity Meter	\$37
Large Block Nets	\$110
Minnow Trap	\$95
Net, Hand/Large Seine	\$13/\$55
Field Equipment Packages	
Standard Field Package (Digital Camera, GPS, Thermometer, Binoculars, Tablet, Safety Equipment, and Botanic Collecting Equipment)	\$110
Remote Field Package (Digital Camera, GPS, Thermometer, Binoculars, Tablet and Mifi, Delorme Satellite Beacon, 24-Hour Safety Phone)	\$140
Amphibian/Vernal Pool Field Package (Digital Camera, GPS, Thermometer, Decon Chlorine, Waders, Float Tube, Hand Net, Field Microscope)	\$165
Fisheries Equipment Package (Waders, Wetsuits, Dip Nets, Seine Nets, Bubblers, Buckets)	\$55
Underwater and Marine Sampling Gear (U/W Photo/Video Camera, Scuba Equipment (Tanks, BCD, Regulators, Wetsuits, etc.)	\$55/diver
Marine Field Package (PFDs – Personal Flotation Devices, 100-foot Reel Tapes with Stainless Carabiners, Pelican Floats, Underwater Slates, Thermometer, Refractometer, Anemometer, Various Field Guides)	\$55
Insurance, Hazard and Safety Fees	
L&H Dive Insurance	\$55/diver
Level C Health and Safety	\$65 person

5. Conflicts

Forsgren is not aware of any actual, apparent, direct or indirect, or potential conflicts of interest that may exist with respect to the firm, management, or employees of the firm or other persons relative to the services to be provided under the agreement for engineering services to be awarded pursuant to this RFP.

6. Additional Comments

The figure on the following page illustrates the long history Forsgren has had with the District, the large number of and wide range of projects we have completed for the District, the significant “bench depth” Forsgren has brought to bear in the execution of projects for the District, and the number of Forsgren personnel who have institutional knowledge of the District and are still a resource for the District.

Forsgren Associates services to Del Paso Manor Water District

Forsgren Projects

Period of Performance

Project Name	2011	2012	2013	2014	2015	2016	2017	2018	2019	Current staff who worked on Del Paso Projects
On-Call Services										✓ ✓
Well 6 Condition Assessment										✓ ✓
Well No. 6 Alternatives Analysis										✓ ✓
Well No. 6B - Permitting & Preliminary Design										✓ ✓
System Hydraulic Model										✓ ✓
Well No. 6 & 6B - Final Well Design										✓ ✓
Well No. 6 & 6B - Bidding Services										✓ ✓
Well No. 6 & 6B - Construction Management										✓ ✓
Well No. 6B House & Equipment - Design										✓ ✓
Well No. 6B House & Equipment - Bidding Services										✓ ✓
Well No. 6B House & Equipment - Construction Mgmt.										✓ ✓
New Water Main (Lusk & Eastern)										✓ ✓
On-Call Services										✓ ✓
Surface Water Utilization										✓ ✓
Hydraulic Modeling Workshop										✓ ✓
DPMWD & SSWD Intertie Connection										✓ ✓
On-Call Services										✓ ✓
218 Public Hearing Support										✓ ✓
Rate Study										✓ ✓
DPMWD-CWD Intertie Evaluation										✓ ✓
On-Call Services										✓ ✓
System Model Calibration & Update										✓ ✓
DPM Elementary School Evaluation										✓ ✓

* Key Team Members are shown in **BLUE**.

** Rich was a DPMWD employee during these projects.