

**GOVERNANCE COMMITTEE  
FOR THE  
MONTEREY PENINSULA WATER SUPPLY PROJECT**

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California American Water • Monterey County Board of Supervisors  
Monterey Peninsula Regional Water Authority • Monterey Peninsula Water Management District

This meeting has been noticed according to the Brown Act rules. This agenda was posted on July 15, 2016.

**Governance  
Committee Members:**

*California American  
Water*

*Robert MacLean  
Alt. – Rich Svindland*

*Monterey Peninsula  
Regional Water Authority  
Bill Kampe*

*Alt.- Ralph Rubio*

*County of Monterey  
David Potter*

*Alt. - Simon Salinas*

*Monterey Peninsula  
Water Management  
District*

*Robert S. Brower, Sr.  
Vice Chair*

*Alt. – Jeanne Byrne*

**Staff Contact:**

*David J. Stoldt, MPWMD  
Arlene Tavani, MPWMD*

**AGENDA  
REGULAR MEETING**

**Monterey Peninsula Water Supply Project  
Governance Committee**

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**Wednesday, July 20, 2016, 2:00 PM**

Monterey Peninsula Water Management District, Conference Room,  
5 Harris Court, Building G., Monterey, CA

**Call to Order/Roll Call**

**Pledge of Allegiance**

**Public Comments**

*Anyone wishing to address the Committee on matters not listed on the agenda that are within the subject jurisdiction of the Committee, may do so during Public Comments. The public may comment on any other items listed on the agenda at the time they are considered by the Committee. Please limit your comment to 3 (three) minutes.*

**Elect Governance Committee Chair and Vice Chair**

**Presentation – Public Comment will be Received**

1. Progress Report from California-American Water on the Monterey Peninsula
- P. 3 Water Supply Project Including Updates on Production from Test Slant Well; Desalination Project Design; and Design and Procurement of Conveyance Facilities

**Action Items – Public Comment will be Received**

2. Approve Committee Meeting Minutes of December 14, 2015 and February 29, P. 9 2016

*Action: The committee will consider approval of the meeting minutes.*

3. Develop Recommendation to Monterey Peninsula Water Management District on P. 21 Selection of Consultant to Conduct Value Engineering Analysis of MPWSP Pipelines and Conveyance Facilities

*Action: The Committee will make a recommendation to the Monterey Peninsula Water Management District on selection of a professional engineer to perform a value engineering analysis for the MPWSP pipelines and conveyance facilities. The selection will be based on review of proposals received from prospective consultants. If the Water Management District confirms the consultant selection, the recommendation will be submitted to California-American Water to assign the contract.*

4. Develop Recommendation to Consider Approval of Amendment No. 2 to Amended and Restated Agreement to Form the Monterey Peninsula Water Supply Project Governance Committee  
p. 89 *Action: The Committee will consider an amendment to the agreement that would allow the Water Management District to enter into a contract with a Value Engineering Consultant and receive reimbursement from Cal-Am for the cost of the study.*

**Discussion Items – Public Comment will be Received**

5. Suggest Items to be Placed on Future Agendas

**Adjournment**

After staff reports have been distributed, if additional documents are produced by the Governance Committee and provided to a majority of the committee members regarding any item on the agenda, they will be available at the Monterey Peninsula Water Management District (MPWMD) office during normal business hours, and posted on the Governance Committee website at <http://www.mpwmd.net/GovernanceCommittee/GovernanceCmte.htm>.

Documents distributed at the meeting will be made available in the same manner. Upon request, a reasonable effort will be made to provide written agenda materials in appropriate alternative formats, or disability-related modification or accommodation, including auxiliary aids or services, to enable individuals with disabilities to participate in public meetings. A reasonable effort will also be made to provide translation services upon request. Please submit a written request, including your name, mailing address, phone number and brief description of the requested materials and preferred alternative format or auxiliary aid or service by 5:00 PM on Friday, July 15, 2016. Requests should be sent to the Board Secretary, MPWMD, P.O. Box 85, Monterey, CA, 93942. You may also fax your request to the Administrative Services Division at 831-644-9560, or call 831-658-5600.

## Monterey Peninsula Water Supply Project Governance Committee

**Meeting Date:** July 20, 2016

**Presentation:** 1. **Progress Report from California-American Water on the Monterey Peninsula Water Supply Project Including Updates on Production from Test Slant Well; Desalination Project Design; and Design and Procurement of Conveyance Facilities**

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**Summary:** Attached as **Exhibit 1-A** is a summary of the progress report to be presented by California American Water at the July 20, 2016 meeting.

**Exhibits:**

**1-A** MPWSP Overview Schedule & Test Slant Well

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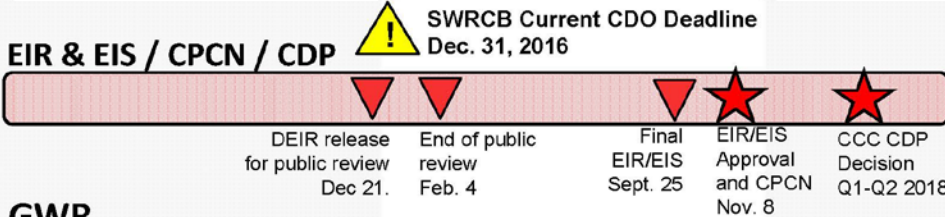


## **MPWSP Overview Schedule & Test Slant Well**

Presented to: MPWSP Governance Committee

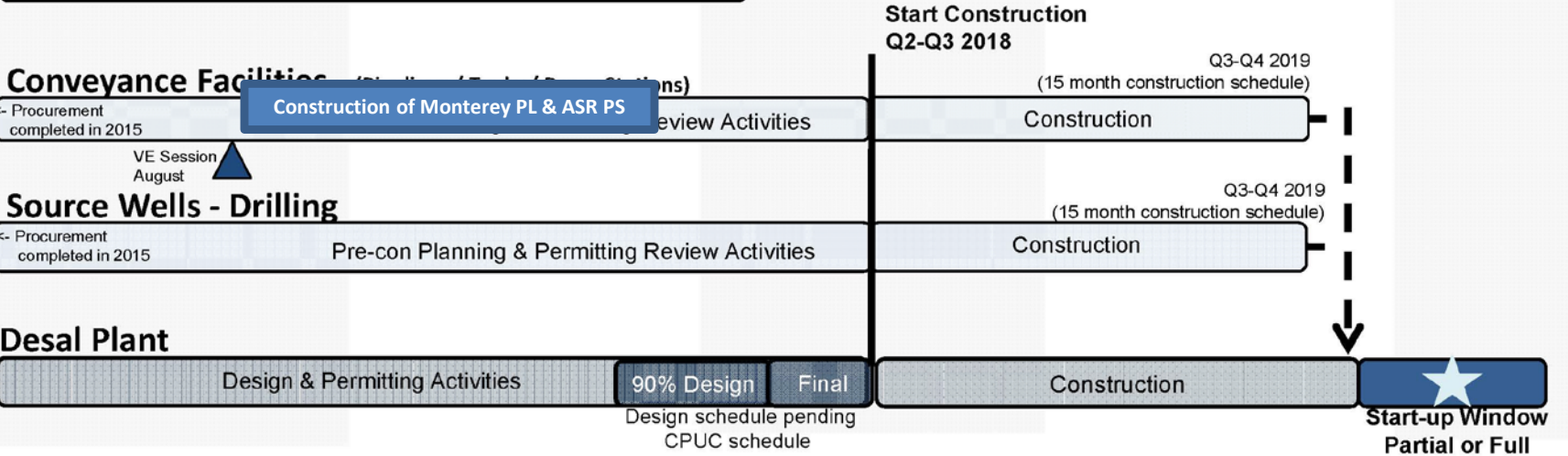
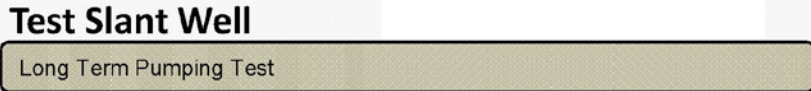
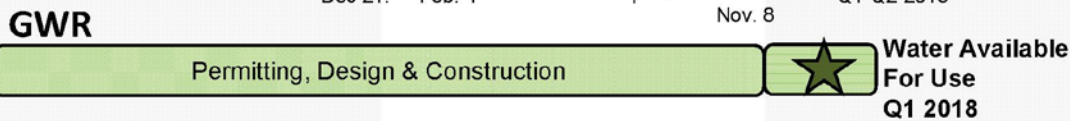
Date: July 20, 2016

# MPWSP Anticipated Schedule



On March 10, 2016, CPUC released EIR/EIS schedule changes which are reflected in this schedule.

This schedule is based on our best estimate as of 7/20/2016.



Note: The schedule is based on the information and assumptions available at time of update and is accurate to +/-6 months.

# Test Slant Well Returned to Service May 2nd

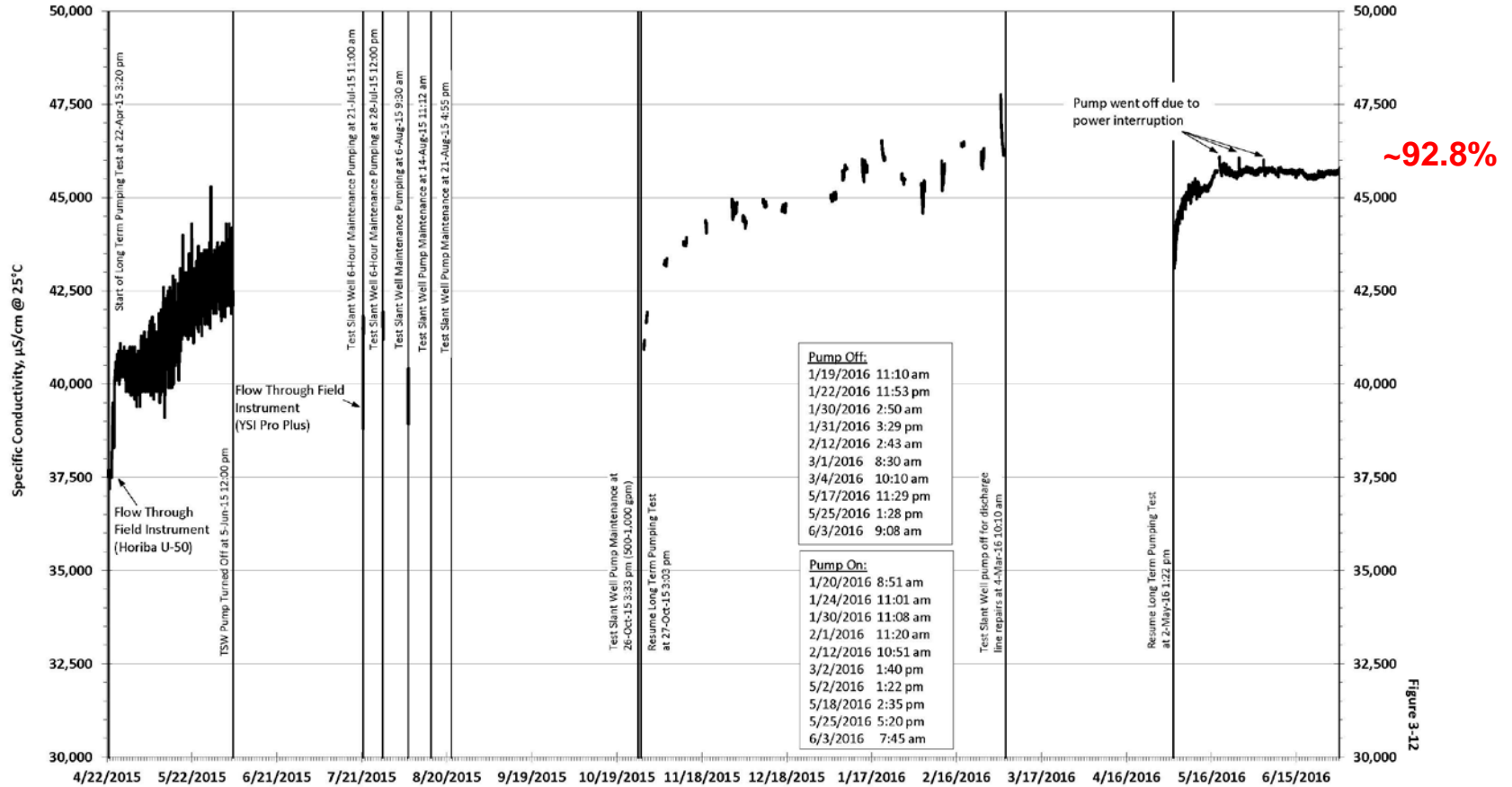


# TEST WELL SPECIFIC CONDUCTIVITY

CALIFORNIA AMERICAN WATER

Monterey Peninsula Water Supply Project  
 Test Slant Well Long Term Pumping Test  
 Monitoring Report No. 61

## Specific Conductivity in MPWSP Test Slant Well





## Monterey Peninsula Water Supply Project Governance Committee

**Meeting Date:** July 20, 2016

**Action Item:** 2. **Approve Committee Meeting Minutes of December 14, 2015 and February 29, 2016**

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**Summary:** Attached as **Exhibits 2-A and 2-B** are draft minutes of the December 14, 2015 and February 29, 2016 Governance committee meetings.

**Recommendation:** Review the minutes and consider approval.

**Exhibits:**

**2-A** Draft Minutes of December 14, 2015 Committee Meeting

**2-B** Draft Minutes of February 29, 2016 Committee Meeting

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**GOVERNANCE COMMITTEE  
FOR THE  
MONTEREY PENINSULA WATER SUPPLY PROJECT**

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California American Water • Monterey County Board of Supervisors  
Monterey Peninsula Regional Water Authority • Monterey Peninsula Water Management District

**EXHIBIT 2-A**  
**DRAFT MINUTES**  
**Regular Meeting**  
**Governance Committee**  
**for the**  
**Monterey Peninsula Water Supply Project**  
*December 16, 2015*

- Call to Order:** The meeting was called to order at 2:05 pm in the conference room of the Monterey Peninsula Water Management District offices.
- Members Present:** Bill Kampe, representative for Monterey Peninsula Regional Water Authority (alternate to Jason Burnett)  
David Potter, representative for Monterey County Board of Supervisors  
Robert MacLean, representative for California-American Water
- Members Absent:** Robert S. Brower, Sr., Monterey Peninsula Water Management District  
Jason Burnett, Monterey Peninsula Regional Water Authority
- Pledge of Allegiance:** The assembly recited the Pledge of Allegiance.
- Public Comments:** No comments were presented to the committee.

**Presentations**

1. **Progress Report from California-American Water on the Monterey Peninsula Water Supply Project Including Updates on Production from Test Slant Well; Desalination Project Design; and Design and Procurement of Conveyance Facilities**  
Ian Crooks, Engineering Manager, California-American Water (Cal-Am), presented the progress report. A summary of his presentation can be viewed on the Governance Committee web site. No comments were directed to the committee during the public comment period on this item.
  
2. **Report from California-American Water on Addressing the Possibility of Risks Associated with Storms and Sea-Level Rise**  
Crooks presented the report. A summary of his presentation can be viewed on the Governance Committee web site. No comments were directed to the committee during the public comment period on this item.

**Action Items**

3. **Review and Develop Recommendation on California American Water Notification #11 – Execution of Construction Contract for Monterey Peninsula Water Supply Project Conveyance Facilities**

Crooks provided information on Notification #11. His presentation can be viewed on the Governance Committee website.

Public Comment: **(a) David Stoldt**, General Manager, Monterey Peninsula Water Management District, asked if it would be more efficient to contract with Garney Pacific, Inc. or Monterey Peninsula Engineering (MPE) for the SVR and Brine Return Pipeline, instead of working with a third contractor, Mountain Cascade, Inc. on just one pipeline project. *MacLean responded that the cost savings achieved by contracting with Mountain Cascade, Inc. would be \$257,000 – a significant amount. Cal-Am does not anticipate any difficulties in administering the contract with Mountain Cascade, Inc.* Stoldt stated that the MPE bid for the Booster Pump Stations was half the amount proposed by other bidders. He asked if Cal-Am’s review of the MPE technical specifications met their requirements. *MacLean stated that the difference in cost between MPE and Granite/Rados was approximately \$1 million. Crooks confirmed that Cal-Am was confident in MPE’s ability to successfully complete the project, and that MPE’s knowledge of the local area offered a distinct advantage over the other bidders.* **(2) Tom Rowley**, Monterey Peninsula Taxpayers Association (MPTA), asked if construction of a reservoir for brine disposal will be added to the list of project components. *Svindland responded that \$7 million plus contingencies has been allocated to brine disposal. The settlement agreement also included \$6.9 million to address that issue. A plan for brine disposal has not yet been finalized.*

Cal-Am representatives made the following statements in response to questions from the committee members. A map of desal project facilities is available for review by the public. Cal-Am has worked with the cities of Seaside and Monterey regarding the pipeline routes. Cal-Am is also working with the Transportation Agency of Monterey County regarding the rail right-of-way. Cal-Am’s plan with regard to CAN #11 is to contract with Garney Pacific, Inc., MPE and Mountain Cascade, Inc. The contractors will participate in the value engineering study and the contracts could be modified based on the outcome of the study.

Potter offered a motion to approve the contracts with Garney Pacific, Inc., MPE and Mountain Cascade, Inc. The motion was seconded by Kampe and approved on a vote of 2 – 0 by Potter and Kampe. Brower was absent.

#### **4. Adopt Minutes of December 1, 2015 Governance Committee Meeting**

On a motion by Potter and second of Kampe, the minutes were adopted unanimously on a vote of 2 – 0 by Potter and Kampe. Brower was absent. No public comment was presented to the committee on this item.

#### **Discussion Items**

##### **5. Suggest Items to be Placed on Future Agendas**

It was proposed that in the future, the committee will review the value engineering study and other items as they arise. It was also suggested that the committee receive a report on the litigation cost incurred by local agencies related to the Monterey Peninsula Water Supply Project, particularly costs incurred due to challenges raised by Marina Coast Water District (MCWD). Committee members stated the following. (a) The ratepayers in Marina do not understand how much the litigation has cost them. (b) If that is within the charge of this committee, it would be good to report on those costs to the ratepayers in Marina. (c) This committee was established to focus on the project. Litigation has affected the test well costs.

It would be difficult to focus only on costs related to lawsuits by Marina Coast Water District. (d) The committee Chair will need to confer with counsel to determine a forum for the proposed report. It could also be presented to the Monterey Peninsula Regional Water Authority.

Public Comment: Tom Rowley, MPTA, asked if physical security for all facilities being planned has been addressed. He stated that there is potential for vandalism at the construction sites. *MacLean reported that a full security design will be prepared for future construction phases of the project, but no public presentation will be provided.*

**Adjournment:** The meeting was adjourned at approximately 2:45 pm.

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Arlene M. Tavani,  
Clerk to the MPWSP Governance Committee



**GOVERNANCE COMMITTEE  
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California American Water • Monterey County Board of Supervisors  
Monterey Peninsula Regional Water Authority • Monterey Peninsula Water Management District

**EXHIBIT 2-B**  
**DRAFT MINUTES**  
**Regular Meeting**  
**Governance Committee**  
**for the**  
**Monterey Peninsula Water Supply Project**  
*February 29, 2016*

- Call to Order:** The meeting was called to order at 1:30 pm in the conference room of the Monterey Peninsula Water Management District offices.
- Members Present:** Jason Burnett, representative for Monterey Peninsula Regional Water Authority  
Robert S. Brower, Sr., representative for Monterey Peninsula Water Management District  
David Potter, representative for Monterey County Board of Supervisors  
Richard Svindland, representative for California-American Water (alternate to Rob MacLean)
- Members Absent:** Robert MacLean, representative to California American Water
- Pledge of Allegiance:** The assembly recited the Pledge of Allegiance.
- Public Comments:** **(a) Michael Warburton**, representing the Public Trust Alliance (PTA), an intervenor before the Public Utilities Commission. Mr. Warburton stated over the past four years, he has repeatedly requested that the Governance Committee discuss the change in circumstances related to the desalination project. CEQA requires that the public have an opportunity to hear why projects are implemented using specific methodologies. So far, very little attention has been paid to the actual things that are happening. A groundwater ordinance was enacted two years ago – groundwater is not the same as it was 20 years ago. There is an obligation of county water agencies to look at what the resources are and how they might be used, not to just avoid looking at them for year, after year, after year. There has never been a better time to start a reasonable analysis of thinking about how the environment surrounding this project has changed, how the laws have changed, and how it is very different. No one is analyzing the larger context, and I hope that would happen. **(b) Tom Rowley**, representing Monterey Peninsula Taxpayers Association (MPTA), stated that on January 27, 2016, the Monterey Peninsula Regional Water Authority provided a review of cost data for various water

supply alternatives. Due to the high cost for the social and environmental benefits of the Pure Water Monterey Project, locals must lobby state officials to pay for that project

*Burnett responded that he met recently with the director of the California Public Utilities Commission (CPUC) who described actions being taken to ensure timely completion of the EIR on the Monterey Peninsula Water Supply Project desalination project. Stoldt noted that the project is eligible for \$15 million in Clean Water State Revolving Funds. Water Management District directors are in communication with federal and state legislators to expedite action on applications for grants and loans.*

## **Presentations**

### **1. Progress Report from California-American Water on the Monterey Peninsula Water Supply Project Including Updates on Production from Test Slant Well; Desalination Project Design; and Design and Procurement of Conveyance Facilities**

Ian Crooks, Engineering Manager, California-American Water (Cal-Am), presented the progress report. A summary of his presentation is on file at the Water Management District office and can be viewed on the Governance Committee web site. During discussion of this item, the following comments were made by Cal-Am representatives. Water from the test well is at 92 percent salinity, the optimum would be 96 percent. The project goal is to reach 96 percent, and the goal of the working group is to design intake wells that will produce water at 96 percent salinity. The plan is to eventually convert the test well into one of the project intake wells. Ten wells would be needed for the larger plant and seven are planned for the smaller plant – each scenario assumes that two wells would be on standby. Salinity levels measured at the test well vary throughout the day due to changes in temperature and tides. Ultimately, a well operating plan will describe how the percentage of return water will be calculated.

Public Comment: **(a) David Stoldt**, Monterey Peninsula Water Management District, asked if the test well results indicated that production from the shallow aquifer was affected by rain events. *Svindland stated that the hydrologic working group reviewed this question and that the Sand City Desalination Project wells are not affected by rainfall, so they expect that the test well would respond similarly. It is estimated that the test well draws 65 percent of water from the shallow aquifer and the remainder is from the 180 foot aquifer.* **(b) Tom Rowley**, MPTA, stated that the cost estimate for the 6.4 mgd desalination plant is \$7 million less than the cost of the 9.6 mgd plant, plus \$7 million for the new pipeline. He expressed support for a 9.6 mgd plant that would be more cost effective, considering there are only 40,000 local ratepayers to fund the project. In a large metropolitan area with a greater number of customers, the smaller project might be cost effective. **(c) George Riley** asked if Cal-Am staff could explain why the slope of incline in salinity grew more slowly after the well was re-started in October 2015. *Crooks said it could be the expected “curve affect”, which is that initially the well brought up water that had accumulated around the screens, once that water was pumped it took longer to draw more water in. Engineering the wells properly in final project design will address that issue.*



## Action Items

### 2. Adopt 2016 Committee Meeting Schedule

Burnett announced that his term as Mayor of Carmel will end in April 2016, as will his service on the Governance Committee. He thanked the Monterey Peninsula Water Management District for hosting the committee meetings and providing administrative support. Potter expressed appreciation for all Burnett had accomplished in working towards approval of a water supply solution. No public comment was directed to the committee on this item.

On a motion by Potter and second of Brower, the 2016 committee meeting schedule was approved as presented on a vote of 3 – 0 by Potter, Brower and Burnett.

### 3. Develop Process for Procurement of Consultant to Conduct Value Engineering Analysis of Conveyance Facilities

Stoldt explained that this process would be similar to that followed by the Monterey Peninsula Regional Water Authority when it hired a firm to conduct a value engineering study of the desalination facility. However, this effort would be undertaken by the Water Management District and funded by Cal-Am through a reimbursement agreement. A request for qualifications (RFQ) would be developed and provided to Cal-Am for comment. The RFQ will be distributed and responses reviewed by Governance Committee member agencies, and a recommendation will then be brought forward to the committee for approval. Stoldt estimated that a recommendation could be brought forward to the committee within 7 or 8 weeks.

Public Comment: **(a) George Riley** asked if the new Castroville pipeline would be funded by local ratepayers as part of the project costs. *Svindland responded that the Castroville pipeline will not be funded by Cal-Am ratepayers; Castroville Community Services District (CCSD) will be funding that through its process. Cal-Am could work with its contractors to negotiate a price for construction, or CCSD could independently work with the contractors to build the pipeline. Stoldt noted that the Value Engineering study would not include this pipeline because no bids have been negotiated on it. No decision has been made about ownership of the pipeline: is it part of CCSD's project or is it for Cal-Am desal return water. Crooks stated that conveyance facilities include: feedwater pipelines, distribution and transfer pipelines, CSIP pipeline, terminal reservoirs, and two pump stations.* **(b) Michael Warburton**, PTA, stated that the biggest value question was between desal and non-desal. It becomes a joke if the alternative is not even considered. It is a forgone conclusion. Does this committee feel that a Certificate of Necessity and Public Convenience (CPCN) has been completed for this project? If it is not necessary to have a desalination project, it is not necessary to plan for the conveyance facilities. I don't know if this totally assumes the CPCN has been granted already and it assumes the environmental impacts of desalination have been completely argued? This is another thing where this project is just assumed, and value engineering makes no contribution whatsoever because the decisions have been made. I hope that this committee will be aware that value engineering on a done deal is a strange exercise, and publicly it will be perceived as such.

Burnett expressed a concern that if Pure Water Monterey were to be approved before the desalination project was permitted, would Cal-Am make an investment in the critical pipelines. Svindland noted that the new Monterey pipeline through General Jim Moore Blvd. is covered under the Pure Water Monterey project EIR, so Cal-Am could begin the permitting process for that pipeline prior to approval of the desal project. Stoldt stated that the Water Management

District has determined that in the absence of desal project approval and other feasible alternatives, some of the Cal-Am only facilities related to delivery of the Pure Water Monterey water could be approved based on certification of the EIR. In addition, Pure Water Monterey facilities will convey water to the Seaside Basin and existing production wells, so that water could be leveraged.

On a motion by Brower and second of Potter, the committee authorized the Monterey Peninsula Water Management District to serve as administrator of a value engineering study of conveyance facilities. The motion was approved on a vote of 3 – 0 by Brower, Potter and Burnett.

**4. Receive Report from California-American Water on Potential Additional Savings in Capital Costs for the 6.4 MGD Project Variant and Provide Direction as to whether to Invest in Further Study of Cost Savings**

Crooks presentation on this item can be viewed at the Water Management District office and on the Governance Committee website.

Public Comment: **(a) Jim Cullem**, Monterey Peninsula Regional Water Authority, suggested that one way to reduce project costs would be to eliminate the administration building and use the space within the desal facility that would be created when three RO units are removed. The facility could be expanded at a later date. *Crooks stated that the sound level of the desalination plant would be much too loud for the addition of an administrative office in that building.* **(b) Tom Rowley**, MPTA, asked for clarification of the cost difference between the 9.6 mgd and 6.4 mgd desalination facilities. *Crooks confirmed that the cost differential between the 6.4 and 9.6 mgd plant is \$16 million.* **(c) David Stoldt**, MPWMD, stated that there are still concerns about size and cost differentials; however, the committee should not make a decision about resizing the facility. The CPUC has been advised that if the project were sized for future growth, the future water users could pay. He noted that the Office of Ratepayer Advocates is looking at some other cost saving measures. He recommended that a value engineering study on the 6.4 mgd plant should not be conducted.

Brower offered a motion that the project should proceed as planned without a value engineering study on the 6.4 mgd plant. The motion was seconded by Potter, and approved on a vote of 3 – 0 by Brower, Potter and Burnett.

**Discussion Items**

**5. Suggest Items to be Placed on Future Agendas**

Items suggested for consideration at a future meeting of the committee are the usual project updates, and the value engineering study on conveyance facilities. There was agreement among the committee members that the Water Management District will issue the RFQ without formal review and direction from the committee.

Public Comment: **(a) Tom Rowley**, MPTA, thanked Burnett for the key role he played on the committee in advancing a water supply solution. **(b) Michael Warburton**, PTA, thanked Burnett for his participation on the committee. Warburton stated that he did not know if the committee members believed that planning circumstances have not changed or what the rationalization is for not discussing this issue. He asked if Burnett knew why changed

circumstances had not been discussed. *Burnett stated that there may be a disagreement on what has changed and what the range of options are to address any change. He thanked Warburton for the suggestion.* (c) **George Riley** stated that Burnett had set the example for what leadership looks like.

**Adjournment:** The meeting was adjourned at approximately 4:25 pm.

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Arlene M. Tavani,  
Clerk to the MPWSP Governance Committee



## Monterey Peninsula Water Supply Project Governance Committee

**Meeting Date:** July 20, 2016

**Agenda Item:** 3. **Develop Recommendation to Monterey Peninsula Water Management District on Selection of Consultant to Conduct Value Engineering Analysis of MPWSP Pipelines and Conveyance Facilities**

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**Summary:** On June 1, 2016, a request for proposals for preparation of a value engineering study (**Exhibit 3-A**) for the Monterey Peninsula Water Supply Project (MPWSP) Conveyance Facilities was distributed to eight firms:

Brown & Caldwell  
Creative Solutions International  
GEI Consultants  
Hazen and Sawyer  
HDR Inc  
Kennedy Jenks  
Spire Consulting Group  
Value Management Strategies (VMS)

CH2M Hill declined before RFPS were sent.

Responses were received on June 23, 2016 from Hazen and Sawyer (in partnership with Robinson, Stafford, & Rude, Inc) and Value Management Strategies (in partnership with Tetra Tech and DCMS)

The proposals were reviewed by Monterey Peninsula Water Management District (District) staff, Monterey Peninsula Regional Water Authority (Authority) staff, and California American Water (Cal-Am) staff.

**Recommendation:** Staff recommends the Governance Committee should consider adoption of a recommendation to the District that it negotiate a contract with Hazen and Sawyer for preparation of the value engineering study. If the District confirms the consultant selection, it will contract with Hazen and Sawyer and receive reimbursement from Cal-Am for the cost of the study.

**Discussion:** Some overarching considerations in evaluating the proposals were;

- 1) Both teams of consultants were deemed competent and qualified to

perform both engineering analysis and the value engineering process and workshops;

- 2) The Hazen and Sawyer team a “mid-point review” and “post workshop” services that appeared more innovative and/or useful than the VMS team;
- 3) The Hazen and Sawyer fee proposal was more advantageous; and
- 4) The Hazen and Sawyer team was more responsive on follow-up questions.

Attached as **Exhibits 3-B and 3-C**, respectively, are the Hazen and Sawyer Proposal for Services and their cost proposal.

**Exhibits:**

- 3-A** June 1, 2016 RFP for Preparation of a Value Engineering Study
- 3-B** Hazen and Sawyer Proposal for Services
- 3-C** Hazen and Sawyer Cost proposal



June 1, 2016

To Selected Recipients

Re: California American Water Company  
 Monterey Peninsula Water Supply Project (MPWSP) Conveyance Facilities  
 Request for Proposal – Value Engineering Study

Dear Sir or Madam:

The Monterey Peninsula Water Management District (MPWMD), on behalf of the MPWSP Governance Committee, is seeking a qualified Consultant to provide Value Engineering (VE) services related to the design and construction of the conveyance facilities for a water supply project for the Monterey Peninsula. You are invited to submit a proposal for VE services for the conveyance facilities.

In general, the objectives of the value engineering services are:

- To identify potential changes to the project design or construction that would satisfy the essential functions of the project at a lower capital and/or life cycle cost;
- To identify potential changes to the project design or construction that would better accomplish the essential functions of the project and/or provide better overall value;
- To improve confidence in the effectiveness of the design and construction, i.e., to ensure the design represents the most efficient combination of cost, performance and reliability;
- To identify constructability, durability, adaptability, operability, safety, and maintenance issues;

#### Description of Conveyance Facilities

Structures and facilities that are components of the conveyance facilities portion of the project are expected to consist of the following: 1) transmission mains; 2) terminal reservoirs; and 3) booster pump stations. The following subsections describe in concept each of these facilities:

#### Transmission Mains

California American Water Company (CAW) is proposing to construct approximately twenty (20) miles of primarily 36" and 42" transmission main with supporting mains of up to 16". The 36" transmission mains will run from the desalination plant south through the County of Monterey and the cities of Marina, Seaside, Monterey and terminating in Pacific Grove. About

two miles of 42" HDPE transmission mains will run from the source water wells located in the City of Marina near the coastline to the desalination plant located near the Monterey Regional Environmental Park in North Marina. The anticipated pipeline segments along with the anticipated pipe diameters include:

<b>VE Item Number</b>	<b>Component</b>	<b>Length (LF) Approx.</b>	<b>Diameter</b>
1	Feedwater - Cemex	11,500	42"
2	Brine Discharge	3,800	36"
	Salinas Valley Return	5,700	12"
3	Transfer Pipeline	49,500	36"
4	Aquifer Storage & Recovery	5,100'	36"
	(3) ASR Extension	4,300' (ea)	16"
5	Monterey Pipeline2	35,000	36"

The feedwater pipeline is needed to convey raw water to the desalination plant from the source wells located at the CEMEX property in Marina.

The brine discharge pipeline is needed to convey brine or concentrate from the desalination plant to the headworks of the PCA's outfall, where it will mix with effluent from the PCA's regional treatment plant and be discharged to the ocean through the existing outfall diffusers.

The Salinas Valley return pipeline is an alternate routing to the Castroville Seawater Intrusion Project pond needed to convey desalinated water to the Salinas Valley Groundwater Basin.

The transfer pipeline, ASR extension pipelines, and Monterey pipeline are required to deliver desalinated (product) water from the pumps at the desalination plant into a 36-inch diameter product water pipeline to deliver water to the existing water system facilities and to deliver to and from the ASR facilities.

#### Terminal Reservoirs:

CAW is proposing to construct a terminal reservoir consisting of two (2) storage reservoirs, three (3) million gallon (MG) each for a total storage volume of six (6) MG. The terminal reservoir is located on the former Ft. Ord site. The project components include the following major elements:

<b>VE Item Number</b>	<b>Component</b>	<b>Dimensions</b>	<b>Diameter</b>
6	Terminal Reservoir - 2 tanks and related civil work and electrical work	3 MG (ea)	130'
	Inlet/Outlet Pipelines	1,700' (ea)	16"
	Drain Pipeline	900'	30"



## Booster Pump Stations:

The Booster Pump Stations component of the Project includes two (2) facilities: the Monterey Pump Station and the Valley Greens Pump Station. These facilities include the following major elements:

<b>VE Item Number</b>	<b>Component</b>	<b>Capacity (GPM)</b>
7a	Monterey Pump Station and related civil work, electrical, and piping work	6,300
7b	Valley Greens Pump Station and related civil work, electrical, and piping work	2,500

## Contracted Companies

VE Items 1, 3, and 5 were awarded to Garney Pacific, Inc.

VE Items 4, 6, and 7 were awarded to Monterey Peninsula Engineering

VE Item 2 was awarded to Mountain Cascade, Inc.

Additional information and specifications on the conveyance facilities RFPs can be found at:

<http://www.watersupplyproject.org/#!about1/c1ufc>

Please see links under the title “2. Conveyance Facilities RFP”

## Scope of Services

The work will consist of the following tasks and as detailed in Exhibit “A”, Scope of Services, attached.

It is intended that the selected VE Consultant will conduct one VE workshop to be conducted in the Monterey, California area in September 2016. The VE workshop should follow the standards of the Society of American Value Engineers (SAVE). The workshop meeting location will be announced and will be paid for by others. The VE workshop will consist of the following phases conducted over a period of three or four consecutive days:

- Information Phase
- Function Analysis Phase
- Creative Phase
- Evaluation Phase
- Development Phase
- Presentation Phase

## Required Qualifications

The VE Consultant shall provide a team leader/facilitator that is certified by SAVE International as a Certified Value Specialist (CVS) or describe why you believe a CVS is unnecessary. The team will also include multidiscipline technical specialists with appropriate qualifications such as: civil and structural engineers, water distribution engineers/operators, electrical engineer, construction cost estimator and experienced water pipeline construction superintendent/manager and any other personnel experienced in water operations and maintenance to round out the technical specialist staff. The VE Consultant shall demonstrate corporate experience pertinent to the subject matter of the VE study.

## Proposal Elements

Proposals are to consist of no more than 15 single sided pages and include the following elements:

- Cover Letter
- Table of Contents
- Understanding of the Scope of Work
- Proposed Methodology and Delivery Schedule
- Qualifications and Experience, including client references
- Brief Biographies of Key Personnel
- Fee Proposal (in separate sealed envelope)
- Other considerations

Detailed resumes and additional corporate information may be also submitted, if so desired. Note that key personnel must disclose any economic interest they have in CAW, American Water, CDM Smith, and/or the Contracted Companies named above.

The proposal should be on a lump sum basis, inclusive of per diem costs for travel and living expenses. Note that the MPWMD will utilize a Qualification Based Selection (QBS) process in procuring professional services. Accordingly, the fee proposal is to be provided in a separate sealed envelope submitted with the technical proposal, and will not be considered in the selection of the best proposal.

Proposals should be submitted by 4:00 p.m. on Thursday, June 23, 2016. Three (3) hard copies and three (3) copies on electronic media in PDF format shall be addressed and sent to:

Monterey Peninsula Water Management District (MPWMD)  
5 Harris Court, Building G  
Monterey, CA 93940  
Attention: General Manager

Thank you for your cooperation. If you have any questions or comments concerning the project scope of services, please contact me at 831-658-5651 or dstoldt@mpwmd.net

Very truly yours,



David J. Stoldt  
General Manager

EXHIBITS:

A- Scope of Work for Value Engineering Study

B- Sample Contract for Professional Services

cc: Bill Kampe - President MPRWA  
Jim Cullem – Executive Director, MPRWA  
I. Crooks –CAW  
R. Svindland - CAW

## EXHIBIT "A"

### SCOPE OF SERVICES FOR VALUE ENGINEERING STUDY

The Value Engineering (VE) Consultant will provide the following services in accordance with this scope of work.

#### **CONSULTANT VE STUDY TEAM**

The Value Engineering Consultant will provide the VE study team members identified below:

- VE Team Leader/Facilitator                      Provided by VE Consultant
- Civil Engineer                                      Provided by VE Consultant
- Process / Hydraulics Design Engineer        Provided by VE Consultant & CAW
- Construction Cost Estimator                    Provided by VE Consultant & CAW
- Construction Superintendent                  Provided by VE Consultant & CAW
- Water Distribution Operations personnel      Provided by VE Consultant & CAW
- Water Distribution Maintenance personnel    Provided by VE Consultant & CAW

All other team members will be provided by the Governance Committee (GC) and/or California American Water (CAW), at no cost to the VE Consultant. The VE Consultant will communicate directly with the MPWMD Contract Manager, the GC Project Manager, the California American Water Project Manager, Contracted Companies, and with all other study team members as needed relative to scheduling, pre-workshop, workshop and post workshop activities.

#### **PRE-WORKSHOP ACTIVITIES**

The VE Consultant will perform pre-workshop activities to include those tasks which must be accomplished in order for the study team to be able to efficiently and effectively perform in the workshop. These activities will consist of:

- Scheduling value engineering study tasks,
- Scheduling and coordination with VE study team members
- Assisting the GC and CAW with scheduling VE study participants
- Coordination of the necessary project documentation of the project for distribution by the GC and CAW to study team members
- Document review by VE Consultant-supplied team members
- Preparation of cost, energy, life cycle costs, etc. to the extent that the information needed for their preparation is available.

CAW and the GC will distribute the project documents and materials to be studied to the VE study team members at least five (5) working days prior to the workshop start. All team members are expected to review the project documents and material prior to the start of the workshop.

## **WORKSHOP**

The VE Consultant will conduct a multi-day value engineering workshop using the six-step job plan that is consistent with the best management practices recognized by SAVE. The workshop will include an Information Phase, a Function Analysis Phase, a Creative Phase, and Evaluation Phase a Development Phase and a Presentation Phase. A site visit for the team members will be conducted on the first day of the workshop.

The workshop will be initiated by presentations from the GC and CAW representatives, who will describe the objectives of the study and any constraints that will be placed on the study team. The designers will explain specifically how the design accomplishes MPRWA and CAW's objectives and the details of that design.

The workshop will include a detailed function analysis of the major project elements. The team will generate a list of ideas for project improvement followed by an evaluation of those ideas. This evaluation will include input from key GC and CAW decision makers before proceeding with development of recommendations. On the last day of the workshop, a presentation of the recommendations will be provided to CAW, key representatives of the design team, and the GC.

The workshop will be held at a location within the California American Water service area and will be announced at a later date. The cost of providing the workshop meeting facilities and all other costs associated with the meeting facilities will not be borne by the consultant.

To ensure that the study team has complete information about the project criteria, CAW will provide, at a minimum, key personnel from both CAW and the design team for the first day and last day presentations.

## **POST WORKSHOP**

The VE Consultant will conduct a four-hour post-workshop Decision/Implementation Meeting at a location to be announced following receipt by the study team of the written design responses to the Preliminary Report. The purpose of the Decision/Implementation Meeting is to assist the GC and CAW in making decisions regarding acceptance or rejection of the individual value proposals. Attendees will consist of GC representatives, key CAW staff, key designer staff and the VE study team leader.

## **SCHEDULE**

The work will be performed in accordance with the following schedule:

Pre-Study Activities	Upon receipt of a signed contract and notice to proceed
Workshop	September ____, 2016
Preliminary VE Study Report	Three (3) days after completion of the Workshop
Decision/implementation Meeting	On a date to be determined by the GC, CAW, VE Consultant and designer
Final VE Study Report	Fourteen (14) days after receipt of Comments on the draft report

## **DELIVERABLES**

The VE study effort will include the following deliverables, all which are related to the results of the workshop:

- Study Team Presentation Handout
- Preliminary VE Study Report
- Final VE Study Report

The Preliminary VE Report will be prepared in the Value Engineering Consultant report format, and will be a compilation of the handwritten products developed in the workshop.

The purpose of this draft report is to give the GC, CAW and other reviewers the opportunity to check the final VE Study report prior to final issuance.

The Final VE Study Report is the final documentation of the VE Study. The report is a finalized version of the Draft Report including the incorporation of GC and CAW comments. The submittal of the final report concludes the Scope of Work.

The VE Consultant will provide the GC with two (2) electronic copies (CD-ROM) and the following number of hard copies of each report:

- |                                  |           |
|----------------------------------|-----------|
| • Preliminary VE Study Report    | 6 copies  |
| • Draft of Final VE Study Report | 6 copies  |
| • Final VE Study Report          | 6 copies. |

**EXHIBIT "B"**

**FORM OF CONTRACT FOR PROFESSIONAL SERVICES**

**Agreement for Consultant Support Services**

**THIS AGREEMENT** is executed this \_\_\_ day of \_\_\_\_\_, by and between the Monterey Peninsula Water Management District, a municipal corporation, hereinafter called "District", and \_\_\_\_\_, hereinafter called "Consultant".

**IT IS HEREBY MUTUALLY AGREED AS FOLLOWS:**

1. Scope. Consultant hereby agrees to provide to the District, as the scope of services under this Agreement, Value Engineering Services as described on the following attachment: Scope of Services for Value Engineering Study (attached hereto as Exhibit "A").

2. Timely Work. Consultant shall perform all tasks in a timely fashion, as set forth more specifically in paragraph 3 below. Failure to so perform is hereby deemed a material breach of this Agreement, and District may terminate this Agreement with no further liability hereunder, or may agree in writing with Consultant to an extension of time.

3. Term. The work under this Agreement shall commence no later than August 1, 2016 and shall be completed by November 30, 2016, unless District grants a written extension of time as forth in paragraph 2 above.

4. Compensation. District agrees to pay and Consultant agrees to accept as full and fair consideration for the performance of this Agreement, a lump-sum payment as set forth in Consultant's Proposal (Exhibit C), in a total amount of \_\_\_\_\_ (\$\_\_\_\_\_). Compensation under this Agreement shall become due and payable 30 days after District's approval of Consultant's submission of a written invoice to the District General Manager. Written invoices shall include a copy of timesheets or invoices from sub-consultants. The payment of any compensation to Consultant hereunder shall be contingent upon performance of the terms and conditions of this Agreement to the satisfaction of the District. If District determines that the work set forth in the written invoice has not been performed in accordance with the terms of this Agreement, District shall not be responsible for payment until such time as the work has been satisfactorily performed.

5. Additional Services. In the event that District should request services identified in Exhibit C, or for additional services not covered by the terms of this Agreement, said services will be provided by Consultant and paid for by District only after a fee for said services has been agreed upon between Consultant and the District General Manager, only after the District General Manager provides written authorization for the additional work.

6. Meet and Confer. Consultant agrees to meet and confer with District or its agents or employees with regard to services as set forth herein as may be required by District to insure timely and adequate performance of this Agreement.

7. Indemnification. Consultant hereby agrees to the following indemnification clause:

To the fullest extent permitted by law (including, without limitation, California Civil Code Sections 2782 and 2782.6), Consultant shall defend (with legal counsel reasonably acceptable to the District), indemnify and hold harmless the District and its officers, designated agents, departments, officials, representatives and employees (collectively "Indemnitees") from and against claims, loss, cost, damage, injury expense and liability (including incidental and consequential damages, court costs, reasonable attorneys' fees, litigation expenses and fees of expert consultants or expert witnesses incurred in connection therewith and costs of investigation) to the extent they arise out of, pertain to, or relate to, the negligence, recklessness, or willful misconduct of Consultant, any Subconsultant, anyone directly or indirectly employed by them, or anyone that they control (collectively "Liabilities"). Such obligations to defend, hold harmless and indemnify any Indemnitee shall not apply to the extent that such Liabilities are caused in part by the negligence, or willful misconduct of such Indemnitee.

Notwithstanding the provisions of the above paragraph, Consultant agrees to indemnify and hold harmless the District from and against any and all claims, demands, defense costs, liability, expense, or damages arising out of or in connection with damage to or loss of any property belonging to Consultant or Consultant's employees, contractors, representatives, patrons, guests or invitees.

Consultant further agrees to indemnify District for damage to or loss of District property to the proportionate extent they arise out of Consultant's negligent performance of the work associated with this agreement or to the proportionate extent they arise out of any negligent act or omission of Consultant or any of Consultant's employees, agents, contractors, representatives, patrons, guests or invitees; excepting such damage or loss arising out of the negligence of the District.

8. Insurance. Consultant shall submit and maintain in full force all insurance as described herein. Without altering or limiting Consultant's duty to indemnify, Consultant shall maintain in effect throughout the term of this Agreement a policy or policies of insurance with the following minimum limits of liability:

Commercial general liability insurance including but not limited to premises, personal injuries, bodily injuries, products, and completed operations, with a combined single limit of not less than \$1,000,000 per occurrence and \$2,000,000 in the aggregate.

Professional Liability Insurance: Consultant shall maintain in effect throughout the term of this Agreement professional liability insurance with limits of not less than \$1,000,000 per claim and \$2,000,000 in the aggregate. Consultant will either maintain or cause to be maintained professional liability coverage in full force or obtain extended reporting (tail) coverage (with the same liability limits) for at least three years following District's acceptance of the work.

Commercial automobile liability insurance covering all automobiles, including owned, leased, non-owned, and hired automobiles, used in providing services under this Agreement, with a combined single limit of not less than \$1,000,000 per occurrence.



Workers' Compensation Insurance: If Consultant employs others in the performance of this Agreement, Consultant shall maintain workers' compensation insurance in accordance with California Labor Code section 3700 and with a minimum of \$100,000 per occurrence for employer's liability.

Other Insurance Requirements

- A. All insurance required under this Agreement must be written by an insurance company either:
- admitted to do business in California with a current A.M. Best rating of no less than A:VI;
  - or
  - an insurance company with a current A.M. Best rating of no less than A:VII.

Exception may be made for the State Compensation Insurance Fund when not specifically rated.

- B. Each insurance policy required by this agreement shall be endorsed to state that Monterey Peninsula Water Management District shall be given notice in writing at least thirty days in advance of any cancellation thereof, except 10-day notice for nonpayment of the premium.
- C. The general liability and auto policies shall:
- Provide an endorsement naming the District, its officers, officials, and employees as additional insureds under an ISO CG 20 10 07 04 or ISO 20 37 07 04 or their equivalent.
  - Provide that such insurance is primary and non-contributing insurance to any insurance or self-insurance maintained by the District.
  - Contain a "Separation of Insureds" provision substantially equivalent to that used in the ISO form CG 00 01 10 01 or their equivalent.
  - Provide for a waiver of any subrogation rights against the District via an ISO CG 24 01 10 93 or its equivalent.
- D. Prior to the start of work under this Agreement, Consultant shall file certificates of insurance and endorsements evidencing the coverage required by this agreement with the District. Consultant shall file a new or amended certificate of insurance promptly after any change is made in any insurance policy which would alter the information on the certificate then on file.
- E. Neither the insurance requirements hereunder, nor acceptance or approval of Consultant's insurance, nor whether any claims are covered under any insurance, shall in any way modify or change Consultant's obligations under the indemnification clause in this Agreement, which shall continue in full force and effect. Notwithstanding the insurance requirements contained herein,

Consultant is financially liable for its indemnity obligations under this Agreement.

- F. Any deductibles or self-insured retentions must be declared to and approved by the District. At the option of the District, either: the insured shall reduce or eliminate such deductibles or self-insured retentions as respects the District, its officers, officials, employees and volunteers; or Consultant shall provide a financial guarantee satisfactory to the District guaranteeing payment of losses and related investigations, claim administration, and defense expenses.

9. Ownership of Work. Upon completion of the work under this Agreement, ownership, and title to all materials and deliverables produced as part of this Agreement will automatically be vested in the District and no further agreement will be necessary to transfer ownership to District.

10. Licensing. Consultant represents as follows: that it is experienced in the professional services and a specialist in the work performed under this Agreement; is duly organized, existing and in good standing under applicable state law; and is properly licensed and/or certified to perform the work specified under this Agreement, including but not limited to possession of a current City of Monterey business license, and will only employ persons and sub-consultants with all required licenses and certifications.

11. Substitution of Consultant Personnel. The key personnel of Consultant or any sub-consultants listed in Consultant's proposal and assigned to perform the work under this Agreement may not be substituted with or replaced by other personnel or sub-consultants without the advance written consent of District.

12. Termination. District may terminate this Agreement upon ten days' written notice. The amount of damages, if any, as a result of such termination may be decided by negotiations between the parties or before a court of competent jurisdiction.

13. Agency. In performing the services specified under this Agreement, Consultant is hereby deemed to be an independent Consultant and not an agent or employee of District.

14. Entire Agreement. This Agreement constitutes the entire Agreement between the parties hereto and supersedes any and all prior agreements, whether oral or written, relating to the subject matter thereof. Any modification of this Agreement will be effective only if it is in writing signed by both parties hereto.

15. Validity. If any provision in this Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions will continue in full force without being impaired or invalidated in any way.

16. Assignment of Interest. The duties under this Agreement shall not be assignable, delegable, or transferable without the prior written consent of District. Any such purported assignment, delegation, or transfer shall constitute a material breach of this Agreement upon which District may terminate this Agreement and be entitled to damages.

17. Conflict of Interest. Consultant hereby certifies that it does not now have, nor shall it acquire, any financial or business interest that would conflict with the performance of services under this Agreement.

18. Counterparts. This Agreement may be executed in multiple originals, each of which is deemed to be an original, and may be signed in counterparts.

19. Laws. Consultant agrees that in the performance of this Agreement it will reasonably comply with all applicable State, Federal and local laws and regulations. This Agreement shall be governed by and construed in accordance with the laws of the State of California and the City of Monterey.

20. Venue. Should either party to this agreement bring legal action against the other (formal judicial proceeding, mediation, or arbitration) the venue for the matter shall be Monterey County, California.

IN WITNESS WHEREOF, this Agreement is entered into by the parties hereto on the day and year first above written in Monterey, California.

DISTRICT

CONSULTANT

\_\_\_\_\_  
General Manager

\_\_\_\_\_  
Consultant Name



# Hazen



## Proposal for Monterey Peninsula Water Supply Project Conveyance Facilities - Value Engineering Study

June 23, 2016

June 23, 2016

David Stoldt  
General Manager  
Monterey Peninsula Water Management District  
5 Harris Court – Bldg G  
Monterey, CA 93940

**Re: California American Water Company – Monterey Peninsula Water Supply Project (MPWSP)  
Conveyance Facilities –Request for Proposal – Value Engineering Study**

Dear Mr. Stoldt:

Hazen and Sawyer (Hazen) is pleased to present this Proposal to assist the MPWMD with the value engineering services for the Monterey Peninsula Water Supply Project (MPWSP) Conveyance Facilities. We are excited at the prospect of being a part of the challenging MPWSP to solve the local water supply and provide an environmental mitigation solution in Monterey and the surrounding area. The project is a complex system of slant well intake system, seawater supply pipeline, desalination plant, brine line, Salinas Valley pipeline, ASR Pipelines and treated water conveyance pipelines, pump stations and the terminal reservoirs.

***Our knowledge and prior Cost Savings ideas and work will provide substantial value to the MPWSP!***

Hazen is a leader in providing innovative solutions for water projects to clients throughout the Country and in California. This expertise, combined with our direct technical experience associated with prior review of the MPWSP, positions us well to quickly and efficiently review the conveyance projects and will provide the best value to the MPWSP. Our general approach to assisting the MPWMD consists of the following key strategies:

- **Assemble a Diverse Team of Experts to Meet the MPWSP Conveyance Project Needs.** Hazen has assembled a diverse team of experts that can provide the type of innovative thinking that will be required to ensure the developed solutions will provide the best value to the MPWMD. Our team includes world renowned experts in Value Engineering, conveyance and seawater process and design. We have included on our team Don Stafford, who as a Certified Value Specialist has participated and facilitated over 400 Value Engineering or Peer Review workshops during his career with approximately 100 being water and or wastewater facilities. Our Project Manager, Kevin Alexander is a known membrane expert who has participated with Don on multiple VE Studies. He has direct recent experience helping MRWPCA with evaluation of cost saving ideas for the overall MPWSP.
- **Work as Part of an Integrated Team with MPWMD and CAW.** Hazen recognizes the importance of working as part of an integrated team with MPWMD, CWA and other MPWSP stakeholders. Given the number and complexity of the projects, the need for a collegial and collaborative approach will be an important element of success. Our culture promotes

collaboration and we have learned that philosophy is a key element of successful Value Engineering services. When providing Value Engineering services we are always conscientious of working with other consultants who have strong ownership in their design. Sometimes VE recommendations can be perceived as criticism of a design so particular care is exercised to ensure the VE recommendations are seen as opportunities.

- Leveraging Familiarity and Knowledge of MPWSP Conveyance Projects, Our Team Covers the Full Range of Value Engineering Services.** Based on our understanding of the MPWSP Hazen has assembled a team familiar with Value Engineering services and with all aspects of conveyance design, operations, maintenance and safety. Our team members bring direct relevant experience with similar agencies in the Bay Area and throughout the country. Our Project Manager, VE Facilitator and other key team members all have recent, relevant experience both locally and around the world with similar facilities.
- A Team with a History of Working Together.** Our team both individually and collectively has a strong working relationship that is founded on previous experience working together. This long history provides us with seamless integration and a more cohesive Value Engineering session.
- Our Nationwide Experience Brings New Ideas, Innovation, and Cost-Savings.** Our team of experts will be able to leverage their experience on other projects nationally to bring new ideas and cost-savings measures to the MPWSP. Our Value Engineering team members on average save approximately 4 times the cost of the actual Value Engineering fees and for large projects we far exceed this value. On average our team brings forward over 200 relevant comments from each workshop. The value that we bring to the MPWSP is our ability to develop relevant cost-savings and identify potential challenges or issues on each project.
- Depth and Breadth of Our Team Addresses All Areas of a Project.** We understand that this project is unique and there are limited firms with desalination conveyance experience which requires specialized expertise and technical disciplines. Therefore, our team has been assembled to include both the breadth of skills asked for in the RFP with support from our depth of technical resources to handle all aspects of the project.
- Ensure the Commitment of Key/Lead Resources.** Our commitment to the MPWMD is we will ensure that our key staff are committed to working on this VE study.

**Established Working Relationships of Firm Staff**

Sub consultant	Role	Worked with the Hazen Staff
RSRI	VE Facilitation	✓
Jerry Cole	Local Knowledge and Design	✓
Dennis Van Kirk	Expert Cost Estimator	✓

The Hazen team offers proven value engineering expertise; exceptional technical strength; and the full range of engineering, operations and construction specialists that will make us an outstanding addition to the project. We appreciate this opportunity to submit our proposal and look forward to the opportunity to work with you.

Sincerely,

Kevin Alexander  
 Vice President and Project Manager

## **Table of Contents**

- 1 Understanding of the Scope of Work
- 2 Proposed Methodology and Delivery Schedule
- 3 Qualifications and Experience
- 4 Key Personnel
- 5 Fee Proposal (Separate Envelope)

Appendix 1: Resumes



# Section 1: Understanding of the Scope of Work



**Section No. 1**

# Understanding of the Scope of Work

*Our knowledge and understanding of the Monterey Peninsula Water Supply Project (MPWSP) will allow our team to develop defensible ideas with the purpose of adding real value to the project.*

## Defining the MPWSWP

The California American Water (CAW) is the water supply agency serving the Monterey Peninsula and is the agency developing the Monterey Peninsula Water Supply Project (MPWSP). The project is being developed in response to legal decisions affecting the available water for municipal uses in the Carmel River and the Seaside Groundwater Basin. The project is intended to reduce pressure on those stressed water supplies which have both been effected by local demand and the current drought. The MPWSP is a challenging and exciting water supply solution that provides significant environmental, social and resource benefit to the community.

The Monterey Peninsula Water Supply Project is defined by the following major elements:

- Slant Wells and pumps
- Raw Water Transmission Pipeline- The raw water transmission line will run from the CEMEX property to the Desalination Plant.
- Concentrate disposal transmission pipeline – The concentrate line will run from the desalination plant to the outfall at the MRWPCA regional water reclamation plant.
- Salinas Valley return pipeline – The pipeline will take product water to an infiltration pond for recharge into the Castroville Seawater Intrusion Project for protection and supply of the Salinas Valley Groundwater Basin.
- Desalination Plant (Not part of the VE Study)
- Product Water Conveyance Pipelines- The transmission mains will run from the desalination plant south through the County of Monterey and the cities of Marina, Seaside, Monterey and terminating in Pacific Grove.
- Terminal Reservoir and Pump Stations – The two (2) reservoirs located at the former Ft. Ord site will receive desalinated water for storage and equalization prior to being pumped to the communities.
- Monterey Transmission Pipeline – The pipeline will distribute water to Monterey.
- Aquifer Storage and Recovery (ASR) pipelines – Three (3) pipelines will transmit water to existing aquifer storage and recovery facilities for further aquifer recharge and recovery.

The following table is a further description of all of the components of the project with approximate pipe lengths and number of facilities. This list represents what the Value Engineering team will review from the bid documents and information provided for each component of the project.

VE Item Number	Description	Component Length (LF) or Number of Components	Diameter(inches)/ Capacity(gpm)	Contractors
1	Feedwater – Cemex	11,500'	42"	Garney Pacific, Inc.
2	Brine Discharge	3,800'	36"	Mountain Cascade, Inc.
2	Salinas Valley Return	5,700'	12"	Mountain Cascade, Inc.
3	Transfer Pipeline	49,500'	36"	Garney Pacific, Inc.

1008-192

VE Item Number	Description	Component Length (LF) or Number of Components	Diameter(inches)/ Capacity(gpm)	Contractors
4	Aquifer Storage & Recovery	5,100'	36"	Monterey Peninsula Engineering
4	ASR Extensions – 3 pipeline	4,300' (each)	16"	Monterey Peninsula Engineering
5	Monterey Pipeline	35,000'	36"	Garney Pacific, Inc.
6	Terminal Reservoirs - tanks and related civil work and electrical work	2 Tanks	3 Million Gallons (each)	Monterey Peninsula Engineering
6	Terminal Reservoir Inlet/ Outlet Piping	1700' (each)	16"	Monterey Peninsula Engineering
7a	Monterey Pump Station and related civil work, electrical and piping work	1 pump station	6300 gpm	Monterey Peninsula Engineering
7b	Valley Greens Pump Station and Related civil work, electrical and piping work	1 pump station	2500 gpm	Monterey Peninsula Engineering

The listed transmission, pump stations and reference projects have all been bid to the contractors in the local area.

## VE Project Objective

Our understanding is that this project for MPWMD as part of the governance committee for the MPWSP would like to identify potential changes to the project design or construction that could allow the project and components of the project to meet primary functions of supplying water to the region but at a lower capital and lifecycle costs or at a better overall value to the communities. As part of the project, the VE team is to work with MPMWD to evaluate and provide input on the constructability, durability of the design, adaptability of the project, operability, safety, and maintenance issues.

Our approach to conducting this value engineering study will be consistent with the standards of SAVE International®, EPA, the State of California, and ASTM for conducting value engineering. To maximize the effectiveness of the process for MPWMD and CAW, we have made some significant improvements to the details of the process. These improvements result in a better understanding of the fundamental issues for our VE Team and functions of the project, thus producing what we know will be higher quality VE recommendations that are more useful to the MPWMD, CAW and the designer. Our focus is on an efficient VE process itself, resulting in less time spent on decision-making in the

process, and more time spent in producing good recommendations for CAW and MPWMD’s use.

Our approach is founded on the development of a strict adherence to an “optimized workshop” format. This approach enhances VE team productivity and ensures that all of the work of the team will be completed on time. A unique aspect of our approach is the intense, focused management of the workshop time and activities. We stay on schedule to ensure we deliver results in a planned timely manner.

Furthermore, our study will target the best long-term value, not the greatest short-term savings, by using the most appropriate of several available approaches to Life Cycle Cost (LCC) analysis. Our approach examines the combined initial and O&M cost impacts when developing VE recommendations. Thus, our VE recommendations seek to obtain the best value for the dollar expended, and routinely include such issues as operability, maintainability, operations during construction, aesthetic issues, impacts on neighbors, security and safety, impacts to the environment, staffing, constructability, public and political acceptance.

*Our VE recommendations seek to obtain the best value for the dollar expended*

# Section 2: Proposed Methodology and Delivery Schedule



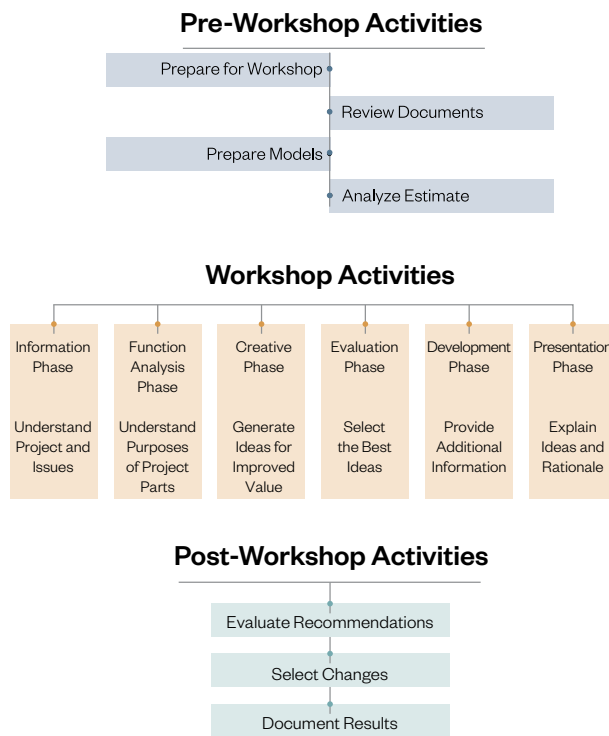
Section No. 2

# Proposed Methodology and Delivery Schedule

*Our proven process for delivering VE studies will find capital and O&M savings for the Monterey Peninsula Water Supply Project (MPWSP).*

## The VE Process

For our projects, we use a systematic approach called the Job Plan in conducting VE studies. The Job Plan functions as a road map through the VE process, ensuring that all of the needed steps in the process are performed in the optimal fashion for maximum MPWMD and CAW benefit.



The figure above illustrates our Job Plan. As can be seen from the diagram, the VE process takes place in three major groups of activities: pre-workshop, workshop, and post-workshop.

### 1. Pre-Workshop

During the pre-workshop period our VE team will conduct several activities designed to make the team’s use of the workshop time most efficient by creating formats, identifying design standards for the area and

identifying all prior documentation for use by the VE Team. In addition, for this project because it has been completely designed our estimator will review the over-all project budget and the bids to ensure the VE recommendations will be prepared on a common cost basis with the estimates and bids, so that any cost savings identified are truly representative of the VE changes, rather than representing differences in estimating.

We are proposing to prepare capital cost, O&M cost and Life Cycle cost models, as appropriate, for each part of the VE study.

### 2. Workshop

As noted previously, for the optimized workshop we use the SAVE International® standard 6-step process. This six-step process is an expansion of the historical 5-step process initially used by the US Army Corps of Engineer for the past several decades, modified to put greater emphasis on analysis of the project’s critical functions for success. Our approach to each of the six steps as identified in the RFP is described in the following sections including a description of our optimization to each step.

#### 2.1.1 Information Phase

In the Information Phase, our VE team learns firsthand, the goals and objectives of MPWSP and the project designer’s approach to accomplishing them. This phase continues the process of educating the VE team in understanding the project that began during the pre-workshop review of project documents.

We believe that a thorough VE team understanding of the project, the project issues and CAW and MPMWD and designer concerns is critical to the development of usable VE recommendations. Thus we place heavy emphasis on ensuring during this phase of the process

that 1) the VE team asks questions and 2) all questions are clearly and completely answered by CAW and MPMWD and the designer. Unless the VE team truly understands the project, the true potential of the VE process to identify usable VE recommendations is reduced.

We are therefore recommending that the VE team members take a tour of where the proposed pipelines and pump stations will be installed on the first day of the workshop.

### 2.1.2 Function Analysis Phase

During the Function Analysis Phase, the VE team uses one or more of several function analysis tools to analyze the project. The VE team will review the objectives of the overall project and will further analyze the functions of the key elements of the project. The team leader leads the team through intensive discussions of the possible functions of the project elements until they have a clear and precise understanding of the true purposes of the project components. Unlike some VE processes where only a single function analysis method is used, our team members are well versed in several function analysis methods, enabling them to select the analytical approach best suited to your project. This could include a mission statement analysis methodology, a mind-mapping exercise, Tabular Function Analysis or any of several Function Analysis System Technique (FAST) methods.

Our team leaders also ensure that two other goals are accomplished during the function analysis phase:

1. The VE team is molded from a group of individuals into a high-energy, cohesive team prior to the creative phase, to ensure optimal effectiveness of the creative idea generation, and
2. The ideas for project value improvement that are typically generated during a well-managed function analysis effort are identified and captured for inclusion in the subsequent creative phase.

The first of these is a particularly important issue, for, if the “team-work environment” has not been completely and successfully formed in the function analysis phase, the effectiveness of the creative phase will

suffer significantly due to reduced creativity on the part of one or more team members.

The best function analysis tools for each VE study of each project will be selected by the VE team leader and project manager during the pre-workshop preparation period, based on the information available at the time.

### 2.1.3 Creative Phase

During the creative phase the team participates in the most exciting and vibrant part of the workshop – generating new ideas. Again, we have a number of techniques for stimulating the generation of ideas for project improvement, and the most appropriate is selected for the project. The most commonly used is the very consistently effective “brainstorming” technique. The brainstorming technique is very effective and efficient in generating ideas from a group of the typical VE team size and is quite effective in reducing negative thinking, which is very inhibitory to goals of this step in the VE process. Using augmentation techniques to improve the effectiveness of the brainstorming activity, our teams usually generate from 150 to over 300 ideas.

During this part of the VE process, the team goes well beyond traditional design solutions, to identify unusual and innovative approaches, without regard to their ultimate acceptability. This ensures that all possible answers, no matter how ridiculous they may initially appear, have been identified. This is important, because sometimes an apparently impractical idea, when modified, becomes the seed of a wonderfully practical idea that would otherwise have been overlooked.

### 2.1.4 Evaluation Phase

Once all of the ideas have been identified and tabulated, the team must select the best of them for development into full-fledged VE recommendations. As with the other steps in the process, we utilize a number of evaluation tools to accomplish this step in the process. We select the one with the best applicability for the type of project, based on a number of factors, including the level of documentation of the selection process needed, the time available for the evaluation, the number of ideas which must be considered, and the production capability of your VE team. Again, one of our strengths

is we utilize a number of ways of conducting this phase of the VE process, with increased effectiveness in the overall process.

An analysis of the functions of the various phases of the VE process led our team to conclude several years ago that a more efficient method was needed to accomplish this workshop phase than was then available. Accordingly, we have developed a very time-efficient method of idea evaluation to minimize the time spent in this phase and make more time available for development of additional VE recommendations. This method is a combination of a voting methodology and exception-based consensus discussion. The voting process is used to make the initial screening of ideas, and can be done efficiently, even with a very large number of ideas.

Following the voting, the team discusses the idea-selection decisions made in the voting process to determine, by exception, whether changes should be made to the initial decisions about which ideas to recommend to the owner. This second step ensures that the knowledge that may be unique to each individual team member is considered fully in the idea evaluation process.

Use of this new evaluation process can cut the time required by other evaluation methods in half, making the additional time available for developing more VE recommendations.

### 2.1.5 Mid-Point Review

In important additional step in our approach after the evaluation phase is complete, we invite CAW and MPMWD and designer to review the initial list of recommendations with our VE Team Leader. They are asked to identify any ideas that are “fatally flawed”. This reduces the chance that the VE team will spend valuable time working on recommendations that, because of unique CAW, MPMWD or designer knowledge, have no potential for success. The result is that the recommendations that are developed by the VE team have a much higher likelihood of acceptance. At this time, CAW and MPMWD and designer are also given the opportunity to identify other ideas for further VE team consideration, which had not been selected by the VE team as recommendations. This check also provides CAW and MPMWD and designer with a preliminary look at the ideas that will be presented at the end of the

workshop to help determine which staff members should attend the VE presentation. This activity is conducted by the VE team leader, CAW and MPMWD and designer representatives in parallel with the beginning of the recommendation development effort by the VE team members, so no productive time is lost by the team.

### 2.1.6 Development Phase

As with the other phases of the VE process, there are several approaches to conducting the development phase. Selection of the technique is based on the specific project needs. The general approach followed in all cases, however, is the development of justification, design calculations, illustrations, and cost information for the selected ideas. This information enables CAW and MPMWD and designer staffs to decide whether the VE recommendation has sufficient promise for their project to warrant inclusion into the design.

We always conducts this process in a combined team environment, rather than allowing individual team members to return to their offices for this work. This continuation of the “teamwork” approach ensures that all aspects of a concept will be developed and included in the VE recommendation through the interaction of all of the disciplines represented on the team.

Our approach to presenting the VE recommendations involves the development of each idea as a separate recommendation, to provide a “shopping list” of potential cost savings and project improvements from which the owner and designer can select their optimal combination.

### 2.1.7 Presentation Phase

In the last VE workshop phase, our VE team will present the workshop results to CAW and MPMWD and to the designer. The team members will present the recommendations they developed during the workshop, and will provide CAW and MPMWD and the designer the opportunity to ask questions to ensure your understanding of the concepts that generated the recommendations. This permits a first-hand discussion with the idea developer to improve understanding of each recommendation. This last step in the workshop process is not a debate of the acceptability of the VE ideas, but rather a continuing exchange of perspectives.

The VE team cost estimator also presents the results of the examination of the project budget and details of the estimate at this time. The cost estimator’s review provides a second opinion on the adequacy of the estimated project cost to either validate the project budget, or identify suggested changes.

Because VE recommendations can sometimes be perceived as criticisms of the design, particular care is exercised ensure that the VE recommendations are presented as opportunities for improving the design performance, for the mutual benefit of CAW and MPMWD and the designer, rather than as criticism of the design. The talents of our team leaders are very important in this workshop phase, because they ensure a productive environment for the initial consideration of the VE recommendations and minimize defensiveness on the part of the designer.

### 3. Post-Workshop

We are mindful that staying on schedule is important, therefore, to speed the review process, we will provide CAW and MPMWD with a preliminary report that includes all of the work produced in the workshop within three working days of workshop completion. CAW and MPMWD and designer can quickly begin their review of the VE recommendations, thus shortening the time for decision-making regarding acceptance.

Additional post workshop activities consist of coordinating and facilitating CAW and MPMWD’s deci-

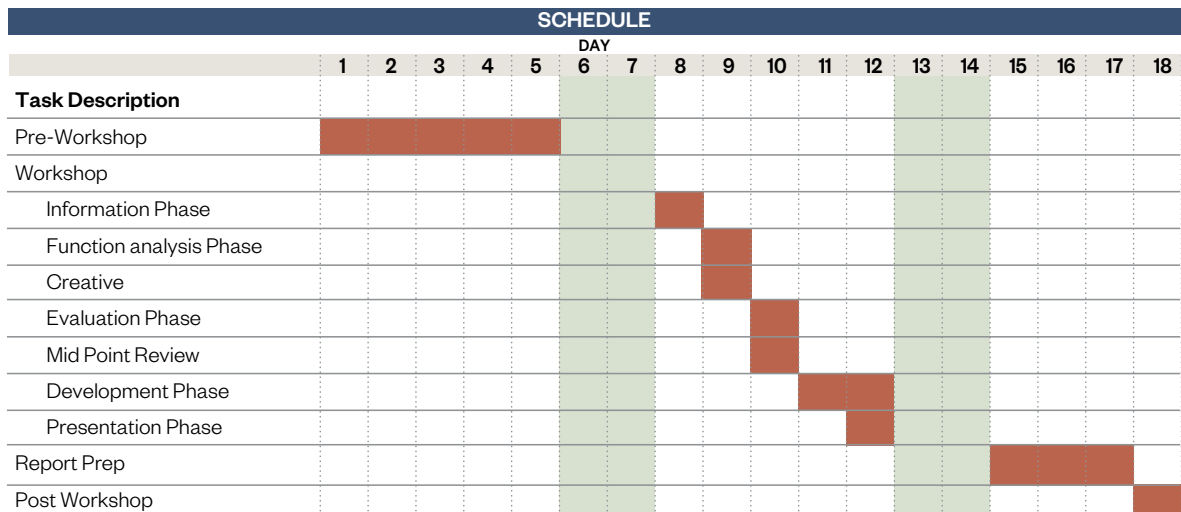
sion-making process, and documenting the complete Value Engineering process. This interactive feature of our post-workshop process ensures that good VE recommendations are not lost through lack of understanding, personal preferences, insufficient involvement of all appropriate staff in the decision-making.

Our experience indicates that with a written designer response and a decision-making meeting that includes VE team representation, substantial additional savings will be realized from the VE study. Without both of these steps, designer reluctance to make changes, lack of a thorough understanding of the full consequences of the VE recommendations, and the lack of an open forum for CAW and MPMWD to hear all sides of the issues raised by the VE recommendations can result in lost opportunities. Therefore, our proposed approach includes a plan for a written response to be provided by the designer, and discussions of the decisions on the VE recommendations in a decision-making meeting that includes representatives from the CAW, MPWMD, the designer and the VE team.

Our decision-making steps ensure maximum information to CAW and MPMWD to enable the best possible decision. The reports provide documentation of the VE study and recommendation acceptance for later review to confirm the inclusion of the desired changes in the design, and to document the work effort.

## Proposed VE Team Schedule

Our proposed schedule is shown in the following simple format. The schedule will encompass approximately 3 weeks of effort to complete all of the tasks and workshop efforts.



1008-102



# Section 3: Qualifications and Experience



Section 3: Qualifications  
and Experience

**Section No. 3**

# Qualifications and Experience

*Hazen is a nationally-recognized environmental engineering and consulting firm, specializing in the engineering and management of wastewater collection, treatment, and disposal; recycled water treatment and distribution; and water supply, distribution, and treatment.*

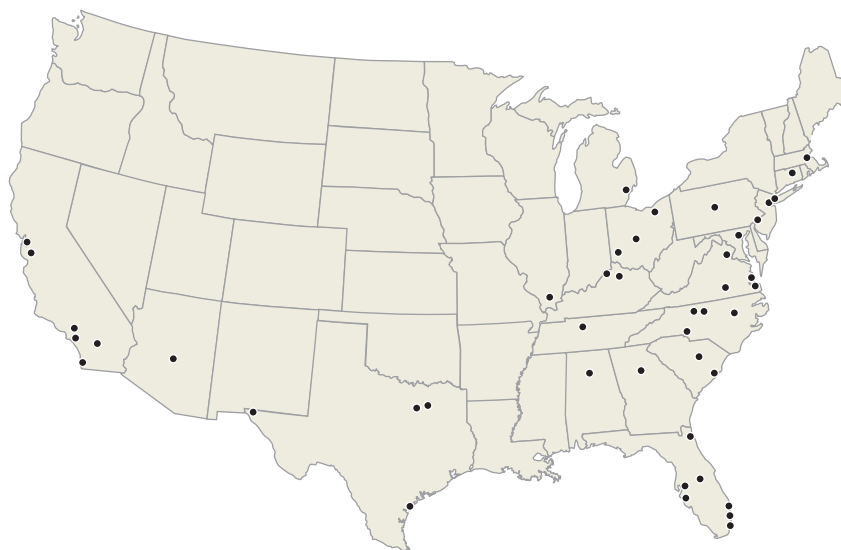
Since our founding in 1951, the firm has developed a reputation for the technical, quality, and timeliness of our work. Currently, we have over 900 professionals and support staff in 46 offices with 6 offices in California.

Hazen has a strong focus in planning, design, startup, and operation and maintenance of water treatment and distribution/conveyance systems. We have a west coast team that has extensive desalination experience working on treatment and distribution of desalinated water. We inherently consider water quality, safety and O&M concerns from the outset of a project. We are able to do this because our key team members bring a working background in operations, having worked at water treatment plants including desalination treatment plants similar to MPWSP. We are always focused on solutions that provide efficient operations and low maintenance.

Our key subconsultant, RSRI, was selected based on their expertise, working relationship with Hazen team members, and familiarity with the area and with large water treatment and conveyance systems.

RSRI's experience in Value Engineering reaches back to 1981, providing clients with 35 years of experience in optimizing projects and conducting Value Engineering studies to improve the cost effectiveness of capital projects.

The MPWMD Value Engineering Services contract requires a wide range of skills to address different aspects of the project that may be included under the scope of these services. Hazen has selected a talented team for this contract with specialists in the areas of desalinated water treatment, pipeline and pump stations, reservoirs, value engineering facilitation, cost estimating, and construction.



- Alabama**  
Birmingham
- Arizona**  
Tempe
- California**  
Irvine  
Palm Desert  
San Diego  
San Francisco  
San Jose  
Los Angeles
- Connecticut**  
Rocky Hill
- Florida**  
Boca Raton  
Coral Gables  
Hollywood  
Jacksonville  
Orlando  
Sarasota  
Tampa
- Georgia**  
Atlanta
- Illinois**  
Marion
- Kentucky**  
Lexington  
Louisville
- Maryland**  
Baltimore
- Massachusetts**  
Boston
- Michigan**  
Detroit
- New Jersey**  
Iselin
- New York**  
New York
- North Carolina**  
Charlotte  
Greensboro  
Raleigh  
Winston-Salem
- Ohio**  
Cincinnati  
Columbus  
Northeast
- Pennsylvania**  
Philadelphia  
State College
- South Carolina**  
Charleston  
Columbia
- Tennessee**  
Nashville
- Texas**  
Corpus Christi  
Dallas  
El Paso  
Fort Worth  
Houston
- Virginia**  
Fairfax  
Newport News  
Richmond  
Virginia Beach

1008-192

## Value Engineering Projects

### Ridgewood View Park Reservoir & Pump Station – Beaverton, OR

**Reference** Mike Britch, Tualatin Valley Water District, 503-701-1343, mike.britch@tvwd.org

VE study of a project to construct a new 7 MG, cast in place, concrete, finished water reservoir at the location currently occupied by the 5 million gallon Hyde Park Reservoir, which is in poor condition and is currently not in use. Additionally, the project will construct a new 11 mgd integrated pump station, interconnecting piping and fluoridation facilities. Estimated construction cost is approximately \$27 million. Owner-accepted VE alternatives totaled \$3.64 million in net life cycle cost savings.

### IPL Pipeline – Tarrant Regional Water District – Ft. Worth, TX

**Reference** Ed Weaver, Tarrant Regional Water District, 817-720-4255, ed.weaver@trwd.com

Eight separate VE Team studies on elements of a \$2.2 billion, 105 mile long, new raw water pipeline system serving the Dallas-Ft. Worth area were conducted. Project elements included more than 100 miles of 84-108-inch raw water pipeline; three new raw water pump stations, ranging in capacity from 150-277 mgd; and three booster pump stations ranging in capacity from 200-350 mgd; along with associated balancing reservoirs, short and long tunnels, corrosion control facilities and chemical feed facilities. Owner-accepted savings from the VE studies were in excess of \$50 million.

### DC Water Blue Plains Advanced Wastewater Treatment Plant, Facility Improvements

**Reference** Rouben Derminassian, DC Water, 202-787-2372

DC Water operates the Blue Plains Advanced Wastewater Treatment Plant (AWTP) which is the largest advanced wastewater treatment plant in the world with a capacity of 384 mgd and a peak capacity of 1,076 mgd. It has a design peak hour treatment capacity of 555 mgd. The facility employs high level treatment to meet or surpass regulatory requirements for wastewater treatment. The liquid process includes primary clarification, 2-stage biological treatment (aeration basins and clarifiers), enhanced nitrogen removal denitrification reactors, post aeration, filtration and chlorine disinfection. The solids process includes gravity thickening of primary sludge, dissolved air flotation thickening of WAS, thermal hydrolysis pre-treatment, mesophilic anaerobic digestion, belt filter press dewatering, gas turbine combined heat and power and anammox filtrate treatment.

A number of these facilities and processes have been upgraded or implemented in the recent years to support the migration to enhanced nitrogen removal (ENR) and achieving a final effluent total nitrogen concentration of 3.0 mg/L. As these facilities have been in the design process, Hazen was retained by DC Water to perform Value Engineering services on several of the upgrades to ensure that the projects are delivered to result in the highest value for DC Water. A description of some of these Value Engineering studies follows.

#### Enhanced Nutrient Removal (South) Improvements

The heart of this project was the construction of a large denitrification reactor with a total volume of approximately 37 million gallons. Secondary effluent conveyance from the nitrification reactors, post aeration basins and conversion of existing nitrification sedimentation basins to denitrification sedimentation basins were the other key elements of the project. The cost estimate for the project prior to the Value Engineering study was approximately \$295 million. Over the 5-day VE workshop, the Value Engineering team fully developed 14 VE alternatives and 7 design suggestions for consideration by DC Water and the design team.

**Enhanced Nutrient Removal (North) Improvements**

This project was to perform improvements and modifications on the first stage biological process to support extended service life and improve the aeration system to support continued operation of these facilities as the AWTP migrates to an Enhanced Nutrient Removal facility. Significant work was required on very large centrifugal blowers to rehabilitate them for continued service and a large portion of the estimated \$51 million construction cost (prior to the Value Engineering study) was related to aeration system improvements. Over the 4-day VE workshop the Value Engineering team fully developed 10 VE alternative and 13 design suggestions for consideration by DC Water and the design team.

**Gravity Thickener Upgrades (Phase II)**

This project was to perform improvements and modifications to the existing gravity thickeners to support the biosolids processing improvements that were planned (and have now been implemented) to convert the facility to thermal hydrolysis pretreatment and mesophilic anaerobic digestion. Significant considerations for mechanical and structural rehabilitation as well as odor control via cover system selection were included in the project. The cost estimate for the project prior to the Value Engineering study was approximately \$16 million. Over the 4-day VE workshop, the Value Engineering team fully developed 17 VE alternatives and 19 design suggestions for consideration by DC Water and the design team.

**Filtrate Treatment Facility**

The conversion to thermal hydrolysis and anaerobic digestion biosolids treatment results in a dewatering sidestream rich in nitrogen and phosphorus that has the potential to significantly impact the ability of the AWTP to meet the target effluent total nitrogen concentration of 3.0 mg/L. The proposed process was a system that could function in either a nitrification-denitrification configuration or an anammox (DEMON) configuration. Pretreatment of the filtrate prior to the anammox process through a combination of physical/chemical treatment and dilution is planned to help mitigate potential toxicity of the sidestream to the biological process of the filtrate treatment facility. The cost estimate for the project prior to the Value Engineering study was approximately \$63

# Section 4: Key Personnel



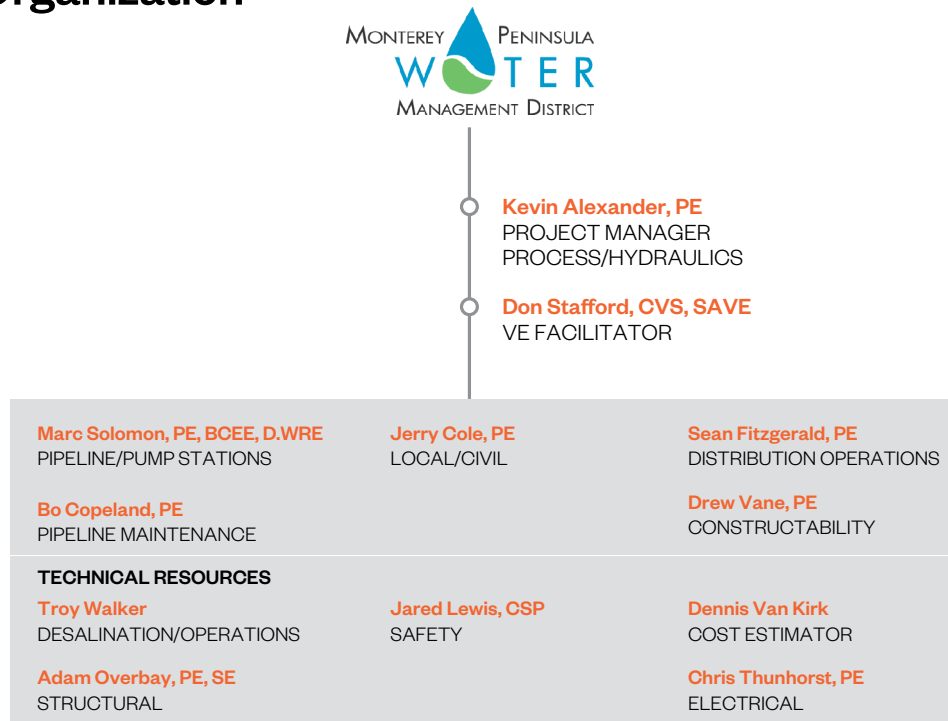
Section 4: Key Personnel

**Section No. 4**

# Key Personnel

*Our team is built to address all aspects of the MPWSP Transmission Projects allowing us to find the most savings and value. Our VE team is made up of the core disciplines and are supported by Technical Resources that address other valuable aspects of the Project.*

## Team Organization



## Team Biographies

### Kevin Alexander, PE

#### Project Manager

Mr. Alexander is Vice President and Senior Project Manager for Hazen with an extensive background in desalination projects and system operations. He has spent the entirety of his career working on large desalination projects for brackish groundwater, brackish wastewater and seawater. His understanding of these types of projects including the many project specific consideration necessary to address this specific type of water treatment and treatment operations will be valuable to the MPWSP. He has participated in all aspects of these types of projects from planning, design, construction and operations. His most recent work was directly related to evaluating potential savings associated with the MPWSP. His familiarity with the project will provide valuable time savings in guiding and managing the VE team. He is a team leader with a team building style that garners trust from team members and clients.

## **Don Stafford, CVS, SAVE**

### **VE Facilitator**

Mr. Stafford is a founding partner in Robinson, Stafford & Rude, Inc. (RSRI), currently serving the firm as President and as a Senior Project Manager. His career includes nearly 50 years of experience in the planning, management, design, value engineering (VE) and construction of public and private capital projects across North America. For 30+ years, he has been managing and leading value engineering studies. His experience includes more than 400 VE studies on a very wide variety of project types, including water and wastewater conveyance, including large pipeline projects; storage and treatment facilities; drainage facilities; and transportation facilities. He has conducted VE studies on projects and programs with capital costs ranging from a few hundred thousand dollars to \$2 billion.

## **Jerry Cole, PE, BCEE**

### **Civil/Local Knowledge**

Mr. Cole has over 35 years of civil engineering experience on projects from conceptual planning, design, construction management, and project and program management. He has provided services on water supply and treatment; wastewater collection, treatment, disposal and reuse management for municipal, foreign, commercial, and industrial clients. He has in-depth experience in development and implementation of water projects in an around Monterey and will provide valuable insight into the challenges of implementing projects and potential value engineering ideas. He has worked for various agencies in the area and understands how projects move forward.

## **Dennis Van Kirk, CET**

### **Cost Estimating**

Mr. Van Kirk is a has over 50 years of professional experience in project cost management services including cost estimating, change order analysis, value engineering, and constructability reviews. He has extensive experience in estimating through all aspects of projects from conceptual planning and design through construction and closeout. He has one of the broadest backgrounds in project estimating including pump stations, pipelines, tunnels, treatment plants, power plants, bridges, railroads, transportation systems,

aviation complexes, marine structures and outfalls, manufacturing plants, power generation and transmission facilities, solid waste disposal facilities, laboratories, office buildings, schools, medical facilities, landfills, and underground utilities. He will brings a wealth of knowledge on cost estimating and understands how to evaluate and integrate local conditions into his estimates.

## **Sean Fitzgerald, PE**

### **Distribution Operations**

Mr. FitzGerald has over 24 years of conveyance experience. He has worked on large wastewater collection systems as well as large distribution systems. He serves as Hazen's Conveyance Practice Leader. His has extensive experience in all stages of collection system planning, operation and detailed design. He has led numerous master planning projects including evaluations for wet weather capacity involving complex hydraulic modeling. Sean has also helped clients develop cost-effective CMOM programs including condition assessment and cleaning as well as overall Asset Management.

## **Drew Vane, PE**

### **Conveyance/Constructability**

Mr. Vane serves as a project manager and technical designer for sanitary sewers, force mains and water mains and the associated construction administration. His experience also includes resident inspection and construction administration for wastewater treatment plant projects; design and studies for pump stations and collection systems; hydraulic computer modeling; and regulatory permit applications. Mr. Vane also serves as the primary technical resource for Horizontal Directional Drilled Pipe (HDD) pipe projects corporate-wide.

## **Bo Copeland, PE**

### **Pipeline Maintenance**

Mr. Copeland is an expert in water and wastewater conveyance systems, including engineering services from planning through construction, operations engineering, condition assessment, and other issues related to operation and maintenance of these systems.

**Jared Lewis, CSP****Safety**

Mr. Lewis is Hazen's corporate safety and risk management leader. He is a safety specialist with professional experience in developing, implementing and monitoring risk-based programs and projects to identify, assess and mitigate any operational risk while maintaining a balance between risk mitigation and operational efficiency. His strength is in assessing project safety and operational safety for projects during design to ensure Owners and Operators understand the daily risks that will be present while conducting routine job.

**Adam Overbay, PE, SE****Structural**

Mr. Overbay is the lead structural engineer for Hazen's West Region. Mr. Overbay specializes in structural design of water and wastewater treatment and pumping facilities. His experience includes reinforced and prestressed concrete, structural steel, and reinforced masonry structures. He is experienced in computer modeling and analysis of structural systems and condition assessments of reinforced concrete, steel, and wood structures. Mr. Overbay is involved in design and construction of alternative delivery projects and understands how quickly ideas need to be turned into design.

**Chris Thunhorst, PE****Electrical**

Mr. Thunhorst is a registered Electrical and Instrumentation Engineer with over 17 years of experience providing power supply solutions and control system solutions to water and wastewater facilities including treatment plants and associated water distribution and wastewater collection systems. He has participated in value engineering studies as part of teams for various alternative delivery projects. His ability to quickly identify electrical and control system solutions and define the project needs will be valuable to the VE team.

**Troy Walker****Desalination/Operations**

Mr. Walker is the corporate Membrane Technology Lead and is one of Hazen's most experienced operations experts. He has over 20 years' experience in the planning, design, construction and operations management of advanced water reuse and seawater desalination facilities. His experience with membrane plants began in 1994, where he was involved in the commissioning of the first ever application of microfiltration and reverse osmosis together for reuse of municipal effluent at the Eraring Power Station in Australia. Since that time he has designed, constructed, commissioned and operated multiple advanced reuse and desalination facilities. He was previously the lead technical manager for Veolia in Australia where he managed the operations of the Sydney Desalination Plant, the Gold Coast Desalination Plant and the operations of the Western Corridor Project which included three advanced water treatment plants for indirect potable reuse. His value to the team will be in evaluating ideas from a desalination plant operations perspective.

**Marc Solomon, PE, BCEE, D.WRE****Pipeline/Pump Stations**

Mr. Solomon has more than 30 years of experience as an accomplished designer and project manager on a wide range of water, water reuse and wastewater projects. His career has been focused on water projects with extensive experience on large pump station and pipelines in California and around the world. He has delivered on challenging projects like the Geysers Recharge project for the City of Santa Rosa which included large diameter pipe with a wide range of high pressure pump stations. He is also credited with designing one of the largest pump stations in the world in Singapore. His roll-up-the-sleeves style and good interpersonal skills allows Marc to develop trust within teams and with clients.



# Appendix 1: Resumes





## Kevin Alexander, PE

### Vice President

*Mr. Alexander is a Vice President and Senior Project Manager with over 20 years of extensive experience in the planning, design, construction and operation of large water, wastewater and reclaimed water treatment programs.*

#### Education

B.S. Civil Engineering, Missouri University of Science and Technology (Previously University of Missouri at Rolla)

#### Certification/License

Professional Engineer: CA, AZ, ID, OK, TX, WA

#### Areas of Expertise

- Project Management
- Project Delivery
- Microfiltration
- Reverse Osmosis
- Drinking Water
- Wastewater
- Water Reclamation
- Concentrate Treatment

#### Professional Activities

AWWA, AZWA, AMTA

CA-NV AWWA

CA Water Reuse Association

WaterReuse Association

WEF

#### Technical Publications

Author of more than 30 technical presentations and publications.

He is a known expert in designing cutting edge membrant treatment technologies from membrane filtration and reverse osmosis for brackish and seawater desalination. He has participated in over 15 value engineering studies and has developed cost models for membrane treatment plant capital and O&M costs to allow for rapid project life cycle cost evaluations. He has participated in the startup and operations support of large programs. He has experience with many different project delivery methods including: design-bid-build, CM at risk, alliance contracting, design-build and design-build-operate.

#### **City of Signal Hill – Design Build Project for a NF Treatment Plant for Well No. 9, Signal Hill, California**

As part of the Filanc DB Team, Mr. Alexander is the Design Project Manager responsible for the process, civil, electrical, structural and mechanical design of the NF plant from the well pump through the treatment process and into the distribution system. Project pursuit required completion of value engineering, constructability and pricing of a 60 percent design to allow for development of a GMP for a 2.0 MGD NF treatment plant for color removal. Project cost proposal is under review.

#### **Monterey Regional Water Pollution Control Agency – MPWSP and GWR Cost Evaluation Study, Monterey, California**

As Project Manager, Mr. Alexander was the lead evaluator performing a cost study of the Desalination and Groundwater Replenishment System projects. The project included development of savings options and a review of capital costs, bids and unit pricing.

#### **City of Santa Barbara – Design-Build-Operate (DBO) Services For Reactivation and Operation of the Charles Meyer Desalination Plant, Santa Barbara, California**

As part of the Acciona/Filanc DBO Team, Mr. Alexander was the Design Project Manager responsible for the civil, electrical, structural and mechanical design of the desalination plant from the open ocean intake through the treatment process. Project required a 60 percent design to

## Exhibit 3-B

allow for development of is a 2.9 MGD seawater desalination plant that is expandable to an ultimate capacity of 8.9 MGD. Project was not awarded to the Team.

### **Coachella Valley Water District – Water Supply Treatment for Hexavalent Chromium, Coachella Valley Water District, Palm Desert, CA**

As Principle In Charge and Technical Advisor to the project. Mr. Alexander is providing assistance with reviewing project deliverables for the design of 31 wellhead treatment projects, 10 plus miles of pipeline and Ion Exchange treatment processes and a central ion exchange regeneration facility.

### **West Basin Municipal Water District – Seawater Desalination Demonstration Facility Decommissioning, Redondo Beach, California**

As Project Manager, Mr. Alexander is leading the project for decommissioning of the 110 GPM seawater desalination system. A major effort includes finding a buyer or research organization for purchasing the used equipment to maximize value to the Client.

### **Sand City, Seawater Desalination Facility Planning and Design Build Document Development, Sand City, California, Project Engineer**

Assisted with the development of a 300 GPM Seawater RO system treating wedge water between brackish groundwater and seawater for potable use. Assisted with permitting of the facility as a groundwater under the direct influence of surface water and with development of the design build documents.

### **Veolia Water Services- Australia, Adalaide Desalination Project-Add Water Alliance, 36 MGD, Project Tendering Design, Adalaide, Australia, Project Manager**

Managed a team and provided quality control of design and construction documents, performed RO membrane projection and developed energy calculations for 20 years of operation scenario for the entire desalination plant under various turndown capacities and seawater conditions..

### **Veolia Water Services-Australia, Wonthaggi Seawater Desalination Project- Bass Water Alliance, 108 MGD, Melbourne, Australia, Project Manager**

Managed the team to assist with the development and operation of a seawater pilot system. Assisted with preparation and review of computer based RO membrane projections to develop a comprehensive energy consumption model for the guarantees for a 30 years plant operation to ensure the design met the energy, carbon footprint and cost objectives.

### **City Of Scottsdale, Pump Station 68 Retrofit, Scottsdale, Arizona, Project Manager**

Assisted with development of detailed mechanical plans and specifications for a 525 gpm pump station retrofit project. The project converted horizontal pumps to vertical drypit pumps to allow the pump station to meet current electrical codes. Project was delivered as a design build project.

### **City Of Scottsdale, Hualapai Drive 24 inch Pipeline, Scottsdale, Arizona, Project Engineer for Black & Veatch**

Developed design plans and specifications for a 0.5 mile pipeline in Hualapai Drive. The pipeline was design and installed to carry reclaimed water in the RWDS system. Responsibilities included design and engineering support during construction.

Exhibit 3-B



*BS, Civil Engineering  
Georgia Tech*

*Registrations/Certifications*

*Professional Engineer –  
FL, GA, NJ, OR, TX, WA,  
VA*

*Certified Value Specialist -  
Life Certified*

*CTM, Toastmasters  
International*

*SAVE, International, -  
Fellow, former VP  
Education, Director,  
Certification Board  
Member*

*American Society of Civil  
Engineers - Member*

*Water Environment  
Federation – Member*

**Years Experience – 48**

Don Stafford is a founding partner in Robinson, Stafford & Rude, Inc. (RSRI), currently serving the firm as President and as a Senior Project Manager.

Don’s career includes nearly 50 years of experience in the planning, management, design, value engineering (VE) and construction of public and private capital projects across North America.

For 30+ years, he has been managing and leading value engineering studies. His experience includes more than 400 VE studies on a very wide variety of project types. Complementing his VE experience is 16 years of additional experience in planning, management, design and construction of civil works projects.

His education includes a degree in civil engineering from Georgia Tech and advanced training in value engineering. He is a registered civil engineer in seven states and a Life-Certified, Certified Value Specialist (the highest level of certification in VE).

Don’s employment experience has included working for public agencies (owners), designers, value engineers and contractors, providing him with an unusually broad range of perspectives on capital project issues. His design and project management experience includes many water, wastewater and drainage facilities.

Don’s VE study experience includes roads and bridges; water and wastewater conveyance, including large pipeline projects; storage and treatment facilities; and drainage facilities. He has conducted VE studies on projects and programs with capital costs ranging from a few hundred thousand dollars to \$2 billion.

He is particularly adept at conducting VE studies on water and wastewater facilities, with extensive experience in this arena as an owner, designer and VE specialist.

The true measure of Don’s capability as a value professional, however, is his record of savings for his clients on past VE studies. Studies he has led have averaged owner-accepted savings in excess of four times the VE industry average. Examples of his experience follow:

***Red River Valley Water Supply Project - Garrison Diversion Conservancy District - Bismarck, ND*** VE study of the large pipeline project that is being constructed to transfer water from the Missouri River Basin to the Sheyenne and Red River basins to provide supplemental water during drought conditions in the Sheyenne and Red River basins. The entire project will include an intake structure on the McClusky Canal, a 122 CFS water treatment plant, a 122 CFS pump station, a 122-mile, 66-inch diameter pipeline, a flow control structure and an outlet structure into the Sheyenne River. **Owner-accepted savings totaled over \$30 million on this \$438 million project.**

***Integrated Pipeline (IPL) Project VE Study #1 - Tarrant Regional Water District (TRWD) - Fort Worth, TX*** VE study of the joint TRWD-Dallas IPL project, at the end of the planning stage (0% Design). The \$1.3 billion project consists of a 350 MGD raw water transmission pipeline system from Lake Palestine to Lake Benbrook with connections to Cedar Creek Reservoir, Richland Chambers Reservoir, and a Dallas delivery point, collectively constituting approximately 180 miles of pipeline and six pump stations. This is the first of three workshops to be conducted for the IPL Project. **After the first workshop, VE team recommendations resulted in Owner-accepted savings totaling over \$278 million.**

***IPL pipeline – 60% Design, Tarrant Regional Water District – Ft Worth, TX*** – Co-led a VE study of a large raw water pipeline serving the Dallas and Ft Worth, TX area, consisting of 23 miles of 84-inch, 13 miles of 96-inch and 69 miles of 108-inch pipe, 30 short tunnels and a five-mile, 14-foot diameter deep tunnel, along with valves, surge control and cathodic protection facilities. **Owner-accepted capital cost savings totaled approximately \$46 million.**

***TRWD IPL Booster Pump Stations - Tarrant Regional Water District, Ft. Worth, TX*** VE study of three separate booster pump stations at 30% design completion. The booster stations will increase system pressure in the new IPL raw water system being constructed by TRWD. Each booster station also includes a large earthen balancing reservoir to address surge and changes in flow rates. The stations have capacities of 350 mgd, 350 mgd and 200 mgd respectively, with build-out capacity to over 1,000 mgd for the first two station and 400 mgd for the third. **Owner-accepted life cycle cost savings totaled in excess of \$35 million.**

***San Diego River Outfall Tunnel – City of San Diego -San Diego, CA*** VE study of a planned twelve-foot diameter deep rock tunnel to connect the new treated effluent conveyance system for the City’s new North City Water Reclamation Plant to the existing Point Loma effluent discharge system.

***Point Loma Parallel Outfall – City of San Diego - San Diego, CA*** VE study of the planned one mile long twelve-foot diameter parallel outfall tunnel for the Point Loma Wastewater Treatment Plant, to be built under the sea bed in the Pacific Ocean.

**Washington Park Reservoir Improvements Project – Portland Water Bureau – Portland, OR** – VE study of a project to replace two, 120-year old open, concrete lined reservoirs, located in a major City park, with a new, cast in place, covered concrete 14 million gallon underground reservoir. The project includes updating of piping, valves and metering facilities, as well as construction of extensive public amenities, including reflecting ponds, a cascade, walkways and landscaping. The reservoir site is located at the base of a historical landslide that is still slowly moving. Also included are repairs to 120-year old historical features of the original reservoir facilities. The estimated construction cost is approximately \$101 million. The project will be delivered using a Construction Manager/General Contractor (CMGC) approach.

**JCCI Intake Pump Station – 60% Design – Tarrant Regional Water District – Ft Worth, TX** – Co-led a VE study of a 277 mgd raw water pump station, withdrawing water from the Cedar Creek Reservoir and pumping the flows into the new IPL pipeline. The station will have seven identical pumps, withdrawing water through six slotted fish screens. Pumps will be driven by VFD-controlled, water-cooled 4160 volt motors. A chemical addition facility will also be constructed to introduce chloramines for control of invasive species in the pipeline, and to introduce sodium hydroxide for pH control. The estimated construction cost is approximately \$78 million. **Owner-accepted net life cycle cost savings totaled approximately \$700,000.**

**JB3 Pump Station – 60% Design – Tarrant Regional Water District – Ft Worth, TX** – Co-led a VE study of a raw water booster pump station with an initial capacity of 350 mgd, and a total build-out capacity of 1,050 mgd. The JB3 site includes two 40 MG earthen embankment, balancing reservoir cells. The total build-out reservoir capacity is planned for 160 MGD. The estimated construction cost is approximately \$121 million. **Owner-accepted life cycle cost savings totaled approximately \$6.3 million**

**Ridgewood View Park Reservoir and Pump Station – Tualatin Valley Water District – Beaverton, OR** – VE study of a project to construct a new 7 MG, cast in place, concrete, finished water reservoir at the location currently occupied by the 5 million gallon Hyde Park Reservoir, which is in poor condition and is currently not in use. Additionally, the project will construct a new 11 mgd integrated pump station, interconnecting piping and fluoridation facilities. Estimated construction cost is approximately \$27 million. **Owner-accepted VE alternatives totaled \$3.64 million in net life cycle cost savings.**

**TRWD IPL Lake Pump Stations - Tarrant Regional Water District, Ft. Worth, TX** VE study of three separate raw water intake pump stations at 30% design completion. The three pump stations will withdraw raw water from the Cedar Creek, Richland Chambers and Lake Palestine Reservoirs, and have capacities of 277 mgd, 250 mgd and 150 mgd, respectively. All three use multiple, variable speed, vertical turbine pumps. **Owner-accepted savings totaled \$10.9 million.**

**Bend Water Treatment Plant – Bend, OR** VE study of proposed improvements to the existing water intake facility to add fish screens, a fish ladder and replace the existing building; construction of a new 10-mile long raw water transmission main; construction of a hydropower facility and construction of a 13.6 mgd membrane filtration plant. The treatment processes will include rapid mix and flocculation tanks, plate settlers and membrane filtration facilities. **Owner implemented VE alternatives resulted in \$2.9 million is accepted life cycle cost savings.**

**City of Saint John Water System Improvements- City of Saint John - Saint John, NB, Canada** Three VE studies of a proposed \$200+ million improvement program for the Saint John Water System. The program includes construction of improvements to the reservoir intakes, a new 100 megaliter per day conventional filtration plant, and extensive replacements and repairs to the transmission and distribution system, as well as additional booster pump stations, storage tanks, and system and customer meter installations. The water system provides both potable and industrial quality water to the entire City. The VE studies reviewed supply, treatment and system configuration; plant design capacity and process selection; and a qualitative risk assessment comparing alternative program delivery scenarios including public-private partnership options. **Owner-accepted savings resulting from the VE studies will exceed \$30 million.**

**Hillview Reservoir Cover – New York City OMB - New York, NY** VE study of a proposed \$500 million concrete cover for New York City's 90-acre, 900 million gallon Hillview water reservoir that serves as the balancing reservoir for the City's Catskill and Delaware watersheds. The reservoir has two basins separated by a concrete dividing wall. The proposed cover will use pre-cast concrete components, a concrete topping and a roof system. The proposed roof system will consist of water-resistant concrete, waterproof membrane, and a multi-layered green roof system, consisting of native plants, succulents and sedum. An architecturally finished concrete ring wall extending around the reservoir perimeter will, along with columns in the reservoir, provide the structural support for the cover.

**City of Columbus Upground Reservoir – City of Columbus - Columbus, OH** VE study of the City of Columbus Upground Reservoir project reviewed at 90% design completion consisting of construction of a new 9.3 billion gallon above grade raw water reservoir, an inflatable dam on the Scioto River, a raw water pump station and a 72-inch pipeline from the pump station to the new reservoir. This new reservoir is the first of three above-grade reservoirs to be constructed by the city to increase the safe yield of the Scioto River basin. The new system will also provide additional water for the Delaware Water Company (Delco) for a new water treatment plant to built downstream of the reservoirs. **Owner-accepted savings total \$1.8 million.**



## **Marc S. Solomon, PE, BCEE, D.WRE** **Vice President**

*Mr. Solomon is an accomplished project manager on a wide range of wastewater projects. Marc's broad project experience has exposed him to all phases of project planning, design, system modeling, system controls, construction management, and operational reliability. In addition, Marc has a Value Engineering certification from the US Army Corps of Engineers and has conducted and participated in numerous VE Peer Review sessions.*

### **Education**

BS, Civil Engineering, Duke University, North Carolina

MS, Public Health, Tulane University, Louisiana

### **Certification/License**

Professional Engineer: CA, LA, OH, OR, PA, WA

Water Treatment Plant Operator

Water Distribution System Operator

AAEE Board Certified Environmental Engineer

ASCE Diplomat, Water Resource Engineer

Value Engineering Certification

### **Areas of Expertise**

- Managing complex wastewater and recycled water projects
- Design of wastewater process, headworks, and pump stations
- O&M consulting
- Workshop Facilitation using Multi-criteria Decision Analysis
- Value Engineering and Peer Review Facilitation

### **Experience**

- 33 total years
- 3 years with Hazen

### **Peer Review-Secondary Clarifier Study and Design, San Francisco Public Utilities Commission, Southeast WWTP, SF, CA**

The SFPUC Southeast WWTP (SEP) is a 57-mgd high purity oxygen activated sludge facility. The sixteen 120-ft diameter secondary clarifiers are at the end their useful lives and require replacement. Rather than replace in-kind, SFPUC opted to pursue a modern clarifier design to serve the facility for the next 40 years. To support the secondary clarifier design, Mr. Solomon was project manager for the peer review phase. Process, structural, mechanical, and electrical reviews were performed for preliminary and final design.

### **Carlsbad Desalination Facility, Poseidon Water, San Diego, CA**

Principal-in-Charge for the study, design, and construction of a 50-mgd desalination plant and transmission system for Poseidon Water. When completed the plant will be the largest seawater desalination plant in the Western Hemisphere.

### **Peer Review-Disinfection Improvements, City of Santa Rosa, Laguna Treatment Plant, Santa Rosa, CA**

Marc was project manager and facilitated all peer review workshops for this project. The City of Santa Rosa owns and operates the Laguna Treatment Plant (LTP), which uses UV as its primary disinfection process. The facility produces disinfected tertiary recycled water, as defined by Title 22. The existing LTP UV system was recently re-rated from a capacity of 67-mgd, with redundancy, to a capacity of 48.5-mgd with redundancy. This creates a potential disinfection system capacity deficiency under some wet weather conditions. Additionally the existing Trojan 4000

**Professional Activities**

Water Environment Federation  
 American Water Works Association  
 American Society of Civil Engineers  
 American Academy of Environmental Engineers  
 WaterReuse Association

**Selected Publications**

Contributing Author, "WEF MOP8, Design of Municipal Wastewater Treatment Plants, Centrifuge Dewatering"  
 Contributing Author, "WEF MOP11, Operation of Municipal Wastewater Treatment Plants"  
 Author, "Soil Filter Beds: The West Coast Experience, WEF"  
 Co-author, Bringing Recycled Water to Town - The City of Santa Rosa's Urban Reuse Project"  
 Co-author, "Video and Sonar Inspection Guides Coronado Transbay Force Main Rehabilitation"  
 Co-author, "Recycled Water-The Chile Experience"

system was installed in 1997 and is nearing the end of its useful life. These events triggered the need to upgrade the disinfection system in order to ensure that the LTP has adequate disinfection capacity under all flow rates.

**Main Wastewater Treatment Plant, East Bay Municipal Utility District, Oakland, CA**

Project manager for the investigation of struvite formation at the District's Main WWTP. Struvite is a complex mineral precipitate and has reduced the District's dewatering capacity and has caused maintenance concerns. As part of the study Marc is leading workshops with engineering, operations, maintenance, laboratory, and management staff using the multi-criteria decision analysis.

**EBMUD Secondary Clarifier Analysis, Oakland, CA**

Principal and QA Engineer for the analysis and model development of EBMUD's secondary clarifiers. Tasks include working with EBMUD staff to perform pilot and full-scale stress testing and development of a model of the secondary clarifiers. Other operational enhancements include dye studies for optimized flow splits and investigation of Nocardioform froth control at the plant.

**Main WWTP Headworks, East Bay Municipal Utility District, Oakland, CA**

Marc's diverse experience also includes influent pump and effluent pump station design. As Project Manager Marc provided design for the rehabilitation of the Influent and Effluent Pump Stations at EBMUD's Main WWTP with a design capacity of 425-mgd.

**Shitzutou Pumping Station and Headworks, Taiwan Housing and Urban Development Bureau, Taipei, Taiwan**

Marc was Project Manager for the design of the world's largest (at the time) raw wastewater pump station with a design capacity of 1,200-mgd for Taiwan Housing and Urban Development Bureau, Republic of China.

**Laguna Wastewater Treatment Plant, Combined Heat and Power Facility, City of Santa Rosa, CA**

Project Manager for the evaluation of various cogeneration technologies, air permitting, pre-design and design of a new 4.4-MW cogeneration facility that included new ARES internal combustion engines and extensive air permitting for the new facility.

**Town of Windsor Phosphorus Elimination Study, Windsor, CA**

Project Manager for the Plant Phosphorus Elimination Study to analyze potential process upgrades to meet Regional Water Quality Control Board 0 mg/l effluent phosphorus limits and anticipated future flows and loads. Extensive negotiations with the regional board to develop an accelerated schedule that would phosphorus discharge while also minimizing risk of violation for the Town. Economic and non-economic factors were weighed in the business case evaluation of phosphorus removal alternatives.

## T. Gerald Cole, P.E., BCEE

*Consulting Engineer –Water Supply and Recycled Management*

### Education

M.S. in Civil Engineering,  
University of Notre Dame  
  
B.S. in Civil Engineering,  
University of Notre Dame

Mr. Cole has extensive conceptual planning, design, construction management, and project and program management experience spanning over 35 years of professional service to municipal, foreign, commercial, and industrial clients. Projects include water supply and treatment; wastewater collection, treatment, disposal and reuse management. He has in-depth experience in development and implementation of recycled water systems and technical direction and quality control for major projects.

### Registration

Registered Civil Engineer:  
California, #19784

*Selected Water Supply Projects in Monterey County*

**Independent Consultant, Groundwater Replenishment (GWR) Project, Monterey Regional Water Pollution Control Agency (MRWPCA), California.** Mr. Cole developed concept designs and construction cost estimates for the proposed Product Water Conveyance

component of the GWR Project. Developed and analyzed two alternative alignments, including pump stations, pipelines and special structures. Conducted preliminary hydraulic analyses for various pipeline capacities. Analyzed electrical power requirements and construction techniques. Interfaced with Project Team members, including several independent consultants. Interacted directly with the CEQA consultant during preparation of the Project EIR. Prepared and submitted several technical memos.

### Honors/Awards

Board Certified Environmental  
Engineer (BCEE) - American  
Academy of Environmental  
Engineers & Scientists

Sigma Xi

**Independent Consultant, Aboveground Recycled Water Storage Project, Monterey Regional Water Pollution Control Agency (MRWPCA), California.** Mr. Cole developed concept design and construction cost estimates for the proposed Aboveground Recycled

Water Storage Project for winter storage of tertiary treated recycled water. The conceptual design of the storage reservoir was developed for capacity of 600 acre-feet (AF) of tertiary treated recycled water. Tertiary water quality data were evaluated and a reservoir mixing system was included to circulate the stored water, along with chemical feed systems

to maintain water quality, and reservoir lining system to prevent leakage. A Technical Memo was prepared that described the Project components and the estimated construction cost of \$30 million.

**Project Manager, Groundwater Replenishment (GWR) Project, Monterey Regional Water Pollution Control Agency (MRWPCA), California.** Served as Project Manager for CDM for early phase of conceptual planning of the Groundwater Replenishment Project for Monterey Regional Water Pollution Control Agency, which would provide up to 3,500 AFY of MF/RO/UVOX recycled water to recharge the Seaside Groundwater Basin.

**Principal-in-Charge and Project Manager, Pebble Beach-Carmel Recycled Water Project, California.** Served as Principal-in-Charge and Project Manager for Parsons Engineering-Science for the planning, design and construction management of the Pebble Beach-Carmel Recycled Water Project, which provides recycled water to the seven golf courses within Pebble Beach. In



## Exhibit 3-B

addition to a tertiary treatment plant the project also includes a distribution system consisting of a 1,400 gpm high-service pump station, 5 miles of pipelines, 2.5 mg steel storage tank, and a 2 mgd potable water booster pump station for emergency make-up water to the recycled water distribution system. *The project won the Project of the Year Award from the WateReuse Association.*

**Principal-in-Charge and Project Director, Regional Wastewater Program, Monterey Regional Water Pollution Control Agency, California.** Principal-in-Charge and Project Director Parsons Engineering-Science for Monterey Regional Water Pollution Control Agency's (MRWPCA) \$120 million Regional Wastewater Program, including planning, design and construction. The MRWPCA Project includes 30 miles of large diameter interceptors, 7 pump stations, 2-mile ocean outfall and a 20 mgd secondary (TF/AS) treatment plant. Served as Project Director for the concept development, planning, design and construction and operations of MRWPCA's demonstration project for irrigation of unprocessed food crops in the lower Salinas Valley. This project, after full-scale development, supplies approximately 14,000 AFY of Title-22 recycled water to 12,000 acres of food crops for irrigation.

**Principal-in-Charge and Project Manager, Recycled Water Treatment Plant Design, DSRSD, California.** Served as Principal-in-Charge and Project Manager for the design of the DSRSD \$18 million Recycled Water Treatment Plant, which produces Title 22 recycled water for unrestricted irrigation to over 300 customers in the Dublin, San Ramon, Danville area. During the construction phase, he served as Project Manager for CDM for the development of a System-Wide Operations Plan for the \$70 million DERWA Recycled Water Program, which will ultimately deliver up to 16.5 mgd of recycled water to over 500 customers. The DERWA RW system includes 8 pump stations ranging in size from 300 gpm up to 7,000 gpm. The back-bone distribution system consists of approximately 25 miles of pipelines, ranging in size from 18 to 30 inches diameter & six reservoirs. The Operations Plan included strategies for moving water throughout five pressure zones while meeting customers' demands and maintaining water quality requirements throughout the recycled water distribution system. The operating strategies were designed to be implemented by the District's SCADA system.

### *Value Engineering Projects*

Salt Lake City, UT WWTP, 2 studies

City of Everett, WA, Wastewater pump stations and interceptors

City of Las Vegas, NV WWTP

Orange County Sanitation Districts, CA Five-mile wastewater interceptor

### *Professional Affiliations*

American Water Works Association, Life Member

WateReuse Association

American Academy of Environmental Engineers & Scientists

## STATEMENT OF QUALIFICATIONS

Dennis E. Van Kirk, C.E.T.

VK Tech Services

*Mr. Van Kirk has over 50 years of professional experience in project cost management services including cost estimating, change order analysis, value engineering, and constructability reviews. He has extensive experience in all CSI Specification Divisions, ranging from conceptual planning and design through construction and closeout. Projects include pump stations, pipelines, tunnels, treatment plants, power plants, bridges, railroads, transportation systems, aviation complexes, marine structures and outfalls, manufacturing plants, power generation and transmission facilities, solid waste disposal facilities, laboratories, office buildings, schools, medical facilities, landfills, and underground utilities. His experience includes renovations, remodels, demolition, historic preservation, conversions, additions, hazardous materials remediation, and new construction.*

**Education:**

*Diploma, Liberal Arts, Yakima Valley College, Washington, 1962*

**Certification/Registration:**

*Certified, Engineering Technician, Architectural Engineering Technology, National Institute for Certification in Engineering Technologies, (NICET) 1972*

*King County SCS Certification No. 760*

*Washington State Veteran's Affairs (Veteran-Owned Business) Certification No. 42338AB2*

*Disabled Veteran-Owned Business (SDVOB)(U.S. Dept. of Veteran's Affairs)*

**Professional Affiliations:**

*Honorary Life Member, Association for the Advancement of Cost Engineering (ACEI). President, Oregon Section, 2009-2011.*

*Society of American Value Engineers (SAVE)*

**COST ESTIMATING (Not All-Inclusive)****Water/Wastewater:**

*–Kelso, WA, Mint Farm Regional Water Supply Project estimate review. Client: Kennedy-Jenks. 2011*

*–Confidential. Mississippi River Lock and Dam No. 1 Fish Deterrence Array 95% Design Submittal Estimate. Client: Smith-Root/Pinnell-Busch. 2013.*

*–King County, WA. North Sammamish Diversion Project Conceptual and Pre-design level estimates. Included Alternative pipeline route selection estimates and alternatives to modifications at the North Creek and York Pump Station sites. Client: Gray and Osborne. 2015.*

*–City of Portland, OR, BES, Columbia Boulevard Wastewater Treatment Plant Wash Water Pipeline Replacement Project. Predesign estimates for alternative selection. Alternatives included replacing pipe in place in an existing tunnel, Installing new pipeline in the tunnel, and rehabilitating the existing piping in the tunnel. Client: Tetra-Tech, 2015.*

*–Lake Oswego/Tigard Water Partnership West Linn WTP Expansion Cost Estimate review. Client: Brown & Caldwell/Pinnell-Busch. 2011*

*– Lake Oswego/Tigard Water Partnership 30% and 60% Raw Water and Finished Water Pipeline estimate Reviews. Client: Brown & Caldwell/Kennedy-Jenks. 2012*

*-Lake Oswego/Tigard Water Partnership Raw Water and Finish Water Pipelines (24" – 42"). Pre-Design Estimates. Client: Pinnell Busch/Brown & Caldwell. 2010*

*-Lake Oswego Influent Sewer Lake Down project. Final Engineer's Estimate. Client: Pinnell Busch/Brown & Caldwell. 2010*

*- City of Everett, Washington WTP Clearwell No. 2 Estimate review. (Carollo). 2008*

*- Tualatin Valley Water District – Proposed Pipelines and River Intake – Alternatives up to 96". (Carollo). 2007*

*- City of Eugene, Oregon – WWTP Expansion (Carollo). 2007*

*- King County, WA – Brightwater WWTP Recycled Water Facilities (Carollo). 2008*

*-Salem, OR WWTP Expansion, including riverine outfall. (Carollo).*

- Cost estimator for proposed digester rehabilitation at the Hyperion Wastewater plant in Los Angeles, California. Work included replacement of interconnecting pipelines in galleries beneath the digesters, and rehabilitation/replacement of ferric*

## STATEMENT OF QUALIFICATIONS

Dennis Van Kirk, C.E.T.

VK Tech Services

chloride systems. (CH2M Hill). Estimating work included a field survey of existing conditions and conceptual cost estimates. (CH2M Hill)

- Lead estimator and estimate reviewer on the City of Portland, Oregon, Bureau of Environmental Services CSCC project. Major project elements included a large-diameter tunnel for combined sewer overflow (CSO) conveyance and storage. (C3MG)
- Lead cost estimator for the Portland, Oregon, West Side CSO Project 35-percent design. Project included a large-diameter tunnel, vertical shafts, and a large, deep pumping station on Swan Island. (C3MG)
- Lead estimator for the 5 Denny Way CSO projects in Seattle, Washington. Work included a large diameter tunnel, pumping stations, marine outfall, conveyance lines and a major CSO control facility. For the same client, the Henderson CSO Projects, consisting of pipelines, large diameter tunnel and pumping facilities. (C3MG)
- Cost estimator on the city of Portland, Oregon, Bureau of Environmental Services Columbia Boulevard Wet Weather Pump Station project. Estimating work included conceptual, budgetary and final estimates; value engineering team participation; and cost support. (C3MG)
- Lead cost estimator for the West Point Municipal Wastewater Plant, King County, Washington. This large plant had construction costs in excess of \$200 million. Major site work issues included poor soil conditions and restricted access. Estimating work included conceptual estimates, value engineering team participation and cost support, budgetary estimates, final estimates, and change order estimates. (CH2M Hill)
- Cost estimator for the base infrastructure facilities at the Kodiak, Alaska, Coast Guard Base. Projects included water transmission and wastewater conveyance pipelines, pump stations, a water treatment facility at Buskin Lake, a wastewater treatment plant, and a marine outfall. Estimating work included

conceptual, budgetary, final, and change order estimates. (CH2M Hill)

- Cost estimator for conceptual and budget level estimates for selecting alternatives on the proposed replacement of AC sewer lines in lake Washington at the North end of Mercer Island. (C3MG)
  - Cost estimator for a municipal wastewater plant and conveyance system for Bremerton, Washington. The project consisted of the wastewater plant, pump stations and pipelines, and a marine undercrossing of Port Washington Narrows. Estimating work included conceptual, budgetary, final, and change order estimates. (CH2M Hill)
  - Cost estimator on the Post Point Wastewater Treatment Plant in Anacortes, Washington. The project included demolition of existing facilities and the construction of conveyance pipelines and an influent pumping station. Estimating work included conceptual, budgetary, and final estimates. (CH2M Hill)
  - Cost estimator for the F.E. Weymouth Water Treatment Facility at LaVerne, CA. This is a proposed new WTP. Budgetary and final engineer's estimates included Site Preparation, Yard & Process Piping, Ozone System, Caustic Soda Tank Farm, Sulfuric Acid Tank Farm, Hydrogen Peroxide Tank Farm, Sodium Hypochlorite Tank farm, Liquid Oxygen Tank Farm, and Gaseous Chlorine Facilities. (Carollo, 2007).
  - Cost estimator for the Marine Park Water Reclamation Facility in Vancouver, Washington. Major project features included an influent pump station, a screening/grit handling facility, primary and secondary clarifiers, aeration basins, auxiliary power generation, and operator laboratory facilities. Estimating work included conceptual, budgetary, and final estimates. (CH2M Hill) 24M, 1993.
- TRANSPORTATION:**
- Cost estimator for the Sound Transit Link Operations and Maintenance Facility, Tacoma, WA. Project included a new one-story 10,775 SF Maintenance Building for the daily and routine

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## STATEMENT OF QUALIFICATIONS

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VK Tech Services

inspection, maintenance, repairs and cleaning of Sound Transit's light rail vehicles. Project included demolition of existing warehouse buildings, on-site utilities and installation of piling supports for the new structure. The Building is a high-bay pre-engineered metal structure of 8,648 SF with an eave height of 31 feet. Equipment includes a 7.5 ton bridge crane, a car service and jacking pit in the floor, and a 2,300 SF low-bay area with offices. (Waterleaf Architecture/LTK/C3MG 1999-2000).

**Value Engineering Team Member:**

- Brightwater Wastewater Treatment Plant, King County, Washington. Included checking and validation of the Engineer's Estimate. (Carollo/RSRI)
- Washington Park Reservoir VE Study. City of Portland, OR Water Bureau. Included checking and validation of the Engineer's Estimate. (Carollo/RSRI)
- Tualatin Valley Water District, Ridgewood View Reservoir and Pump Station. 2013. Included checking and validation of the Engineer's Estimate. (AECOM/RSRI).
- Murray CSO Project, King County, WA. 2012. Included checking and validation of the Engineer's Estimate. (Kennedy Jenks/RSRI/VKTS)
- Dublin, OH Water Plant Expansion Project, Columbus, OH. 2012. Included checking and validation of the Engineer's Estimate. (CH2M Hill/RSRI/VKTS)
- North Beach CSO Project, King County, WA. 2012. Included checking and validation of the Engineer's Estimate. (Kennedy Jenks/RSRI/VKTS)
- Nanaimo, B.C., South Fork WTP, 2012. Included checking and validation of the Engineer's Estimate. (RSRI/VKTS)
- Nanaimo, B.C., South Fork WTP, 2011. Included checking and validation of the Engineer's Estimate. (RSRI/VKTS)
- Bend, OR Surface Water Improvements, 2011. Included checking and validation of the Engineer's Estimate. (RSRI/VKTS)
- Temecula, CA EMWD Plant Expansion, 2010. Included checking and validation of the Engineer's Estimate. (RSRI/VKTS)
- Mason County Belfair Wastewater Treatment Plant 2009. Included checking and validation of the Engineer's Estimate. (RSRI/VKTS)
- Cleveland, Ohio CSO Control Facility, 2010. Included checking and validation of the Engineer's Estimate. (RSRI/VKTS)
- Skokomish-Mason County HPC Management Facilities, 2010. Included checking and validation of the Engineer's Estimate. (RSRI/VKTS)
- City of Pendleton, OR WWTP Phase 1 Upgrades, 2009. Included checking and validation of the Engineer's Estimate. (RHA/VKTS)
- City of Eugene, OR MWMC Tertiary Filtration Project, 2009. Included checking and validation of the Engineer's Estimate. (RHA/VKTS)
- City of Portland, OR Fanno Creek Basin Pump Station Surge Analysis VE. Included checking and validation of the Engineer's Estimate. 2009 (RSR/VKTS)
- Bull Run Water Intertie, Portland, Oregon. Included checking and validation of the Engineer's Estimate.
- Bull Run Intake Towers, Portland, Oregon, 2010. Included checking and validation of the Engineer's Estimate. (RSRI/VKTS)
- Tarrant Regional Water District, IPL Project, Fort Worth, TX. (180 Miles of 108" Dia. Pipeline), 2010 (30%) and 2013 (60%). Included checking and validation of the Engineer's Estimate. (RSRI/VKTS)
- Tarrant Regional Water District, IPL Project, Fort Worth, TX. (Intake Pump Stations), 2012 & 2013. Included checking and validation of the Engineer's Estimate. (RSRI/VKTS)

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## STATEMENT OF QUALIFICATIONS

Dennis Van Kirk, C.E.T.

VK Tech Services

- Tarrant Regional Water District, IPL Project, Fort Worth, TX. (Booster Pump Stations and Reservoirs), 2012 (30%) and 2013 (60%). Included checking and validation of the Engineer's Estimate. (HATH/VKTS)
- Columbia Boulevard 125 MGD Influent Pump Station, Portland, Oregon. Included checking and validation of the Engineer's Estimate.
- City of Portland Wellfield Improvements, Portland, Oregon. Included checking and validation of the Engineer's Estimate.
- Wet Weather Pump Station, Portland, Oregon. Included checking and validation of the Engineer's Estimate.
- Ankeny Pump Station, Portland, Oregon. Included checking and validation of the Engineer's Estimate.
- Grant's Pass Master Plan Liquids Stream, Grant's Pass, Oregon. Included checking and validation of the Engineer's Estimate.
- Grant's Pass Master Plan Solids Stream, Grant's Pass, Oregon. Included checking and validation of the Engineer's Estimate.
- U.V. Sterilization Process, LOTT Plant, Lacey, Washington. Included checking and validation of the Engineer's Estimate.
- West Point Wastewater Treatment Plant, King County, WA. Included checking and validation of the Engineer's Estimate. 1984 (RSR)
- Kenmore Interceptor, King County, WA. Included checking and validation of the Engineer's Estimate. 1984 (RSR)
- Kennewick Wastewater Treatment Plant Upgrades, Kennewick, Washington. Included checking and validation of the Engineer's Estimate. (RSR)
- Newport, Oregon Wastewater Treatment Plant. Included checking and validation of the Engineer's Estimate. (RSR)

- North Creek Pump Station, King County, Washington. Included checking and validation of the Engineer's Estimate. (RSR)
- York Pump Station Upgrade, King County, WA. Included checking and validation of the engineer's Estimate. (U.S. Cost/D/ Hamilton).
- Tualatin Valley Water District (TVWD), Willamette Water Supply Program (WWSP Program). The study, based on PDR documents, included a transmission system consisting of over 30 miles of large diameter pipelines. (Included checking and validation of the Engineer's Estimate. (RSR).

**Awards:**

Charles V. Keane Award for Distinguished Service, Association for the Advancement of Cost Engineering International, 1995

Excellence in Publications Award, Association for the Advancement of Cost Engineering International, (AAACEI) 1983

AAACEI Honorary Life Membership Award, 2009.

**Publications/Presentations:**

Van Kirk, D. "The Unknown Cost Engineer," Cover, *Cost Engineering Magazine*. Volume 25, No. 4. July 1983.

Van Kirk, D. "Cost Estimating Standards," Carollo Internal Document, 2002

Van Kirk, D. "Cost Estimating in a Fluctuating Market" AWPCA Annual Meeting, Mesa, AZ. 2006, JTAC/AWWA, Denver, CO, 2007.

Van Kirk, D. "Introduction to Cost Estimating" 0.3 CEU's. 2005, Carollo CTEC Course No. 3.

Van Kirk, D. "Why Change Orders Cost More," Carollo Internal Document, 2005.

Van Kirk, D., "Contingency - What is it? How Much Should You Use?," Carollo Internal Document, 2004

Van Kirk, D. "Talking to Vendors," Carollo Internal Document, 2003.

STATEMENT OF QUALIFICATIONS

Dennis Van Kirk, C.E.T.

VK Tech Services

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**Employment History:**

2008-Present: VK Tech Services. Sole Proprietor and Cost Estimator.

2002-2008: Carollo Engineers, Portland, OR. Firmwide Director of Cost Estimating.

1996-2002: C3 Management Group, Kirkland WA. Senior Cost Estimator and Portland, OR Office Manager.

1993-1996: Public Service, Indiana (PSI Energy). Senior Cost Estimator

1969-1993: CH2M Hill. Senior Cost Estimator

1968-1969: U.S. Army, Vietnam

1961-1968: College, Alaska Division of Buildings, various architectural and engineering firms. Draftsman and Engineering Technician

1960-1961: Federal Bureau of Public Roads, Juneau, Alaska. Engineering Technician.

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## Sean FitzGerald, PE

### Vice President

*Sean FitzGerald has 25 years of collection system and distribution system experience and serves as Hazen’s Conveyance Practice Leader. He has extensive experience in all stages of collection and distribution system planning, operation and detailed design.*

#### Education

MSEE, University of Cincinnati,  
1994

BSCE, University of Cincinnati,  
1992

#### Certification/License

Professional Engineer: OH, KY,  
NY, TX

NASSCO PACP Certification

BAM-I Asset Management  
Certification

#### Areas of Expertise

- Hydraulic Analysis
- Pipe and Pump Station Design
- Sewer and Water Master Planning
- Sewer and Force Main Assessment and Rehabilitation

#### Experience

- 24 total years
- 10 years with Hazen

#### Professional Activities

Water Environment Federation  
- Collection System Committee

Ohio Water Environment  
Association - Collection System  
Committee

American Waterworks  
Association

North American Society for  
Trenchless Technology

He has led numerous master planning projects including projects involving complex hydraulic modeling and growth projections.

Sean is a long-standing member of the Water Environment Federation Collection System Committee where he served as Vice Chair and co-authored two of the leading Manuals of Practice, including FD-6 Exiting Sewer Evaluation and Rehabilitation and FD-17 Prevention and Control of Sewer System Overflows.

#### City of Fairborn, Ohio Master Plan – Fairborn, OH

Technical lead for the City of Fairborn Sanitary Sewer Master Plan. The project included a detailed assessment of current and future collection system and wastewater treatment plant capacity for the City of Fairborn, Ohio.

#### Greater Cincinnati Water Works Main Replacement Program

Project Manager for the evaluation and assessment of GCWW’s main replacement program. The data was analyzed using a powerful analytics software called Tableau which was able to show definitive patterns in breaks and is allowing GCWW to better target its target main replacements.

#### Sanitation District No. 1 Asset Renewal Rate Study

Project Manager for the Asset Renewal Rate Study as part of SD1’s Asset Management program. The study developed a sanitary sewer asset renewal rate in terms of funding for the next 10-20 years based on available condition data for the 1,700 mile system.

#### City of Miamisburg, OH Collection System Master Plan

Mr. FitzGerald was the technical lead for the development of a capacity assessment and improvements plan for the Miamisburg, Ohio collection system. Hazen and Sawyer conducted a flow monitoring program and developed a detailed collection system model which was then used to assess collection system capacity issues and to develop improvements to eliminate the SSOs and address future growth. The master plan also included a detailed condition assessment of the sewer system.

**Sanitation District No. 1 of Northern Kentucky – Eastern Regional System Master Plan**

Deputy Project Manager for the Eastern Regional System Master Plan. The Master Plan included the development of a detailed, calibrated collection system model using Infoworks software and the development of a 50-year plan to address overflows and planned growth in the area.

**Butler County Department of Environmental Services (BCDES) – Sewer System Master Plan**

Project Manager for the BCDES sewer system Master Plan. The project included a recalibration of a County-wide model. The models were used to size and analyze system improvements to address wet weather issues and growth through ultimate development conditions.

**Mason OH – Water Distribution Master Plan**

Served as Deputy Project Manager for the Master Plans of the fastest growth City in the state and is projected to double in size within the planning period.

**Miamisburg OH – Water System Master Plan**

Served as Technical Advisor for the development and calibration of a detailed hydraulic model of the City's distribution system to analyze the current performance of the system and to determine and analyze future improvements necessary to address growth.

**South Bend IN Water Master Plan**

Served as Project Engineer for the development and calibration of a distribution system model using EPANET. The model was also used to evaluate system deficiencies, and to develop, plan, and prioritize the system improvements over a 20-year period for a system that serves over 300,000 people.

**Butler County Water and Sewer – Water Master Plan**

Mr. Fitzgerald was Project Manager for detailed modeling and planning for one of the fastest growing communities in the state of Ohio. The planning component was complicated by the fact that the County purchases all of its water from outside sources. The Master Plan included a detailed evaluation of future water supply as well as the planning for distribution and storage facilities through build-out. One key tool used for this Master Plan was genetic algorithms for optimization. The hydraulic modeling software InfoWater was used along with an integral optimization package. Future condition models were developed for every five years and optimization models were run to find the most cost-effective means to meet system demands. Projected optimization improvement for each planning year were evaluated, compared and coordinated to develop a cost-effective overall capital improvement plan through the next 20 years.

**Jefferson County Department of Environmental Services, AL – Asset Management Program**

Mr. FitzGerald is the technical lead for the development and implementation of a comprehensive Asset Management program for JCDES. The program includes the development of a prioritized condition assessment and O&M program with the goal of addressing overflows, many of which are related to O&M issues. The project also includes the development and implementation of Asset Management decision support software tools that will enable the County to better manage its operations and to better target collection system spending. In addition the program includes CIP support, financial information system support, and implementation support for their CityWorks CMMS system.





## **Andrew Vane, PE**

**Associate**

*Mr. Vane serves as a project manager and technical designer for sanitary sewers, force mains and water mains and the associated construction administration.*

### **Education**

BSCE, Clemson University, 1991

### **Certification/License**

Professional Engineer: NJ, NC, SC

### **Areas of Expertise**

- Water, Sewer and Force Main Design and Construction Administration
- Soil Erosion and Sediment Control Design
- Water Line Hydraulic Computer Modeling
- Wastewater Treatment Plant Construction Administration and Inspection
- Wastewater Pumping Station Construction Administration

### **Experience**

- 24 total years
- 16 years with Hazen

### **South Fork Improvements Program, City/County Utilities Commission, Winston-Salem, NC**

Mr. Vane was lead gravity sewer designer for the replacement and parallel installation of new large diameter gravity sewer outfalls. This project was split into two contracts. Contract No. 1 involved replacement of existing 36" diameter RCP gravity sewer and manholes with new 54" diameter FRP and DIP gravity sewer along the South Fork Muddy Creek. Mr. Vane performed all preliminary design, pipe material technical memorandum, cost estimates, detailed design, and assisted the Owner with the bid process. This project also included coordination of eliminating a 15-mgd pumping station along the proposed sewer alignment. Contract No. 2 involved replacement of existing 30" diameter and smaller RCP gravity outfalls sewers with new 42" diameter through 15" diameter gravity sewers upstream of Contract No. 1. This project included elimination of existing diversion structures and a flow restriction, the open-cut of the pipe beneath an existing railroad trestle, and a diversion box to force the new outfall sewer to be used as a relief sewer during high flow periods. Mr. Vane coordinated all efforts to complete the processes of environmental permitting, state highway encroachment permissions, obtaining private easements, railroad encroachment, and erosion control and sediment control design and permitting.

### **Taggart Creek Outfall Replacement, Charlotte Water, Charlotte, NC**

Mr. Vane served as lead designer and project manager, to replace 21,000LF of aged and failing gravity sewer outfall measuring 24" through 15" in diameter with new 42" diameter sewer. This project followed Taggart Creek and cross controlled-access highways within the City limits. A portion of this project was accelerated and constructed to allow for the completion of construction of a federal public housing project. Mr. Vane coordinated all efforts to complete the processes of environmental permitting including co-authoring the EA Study, state highway encroachment permissions, obtaining private easements, railroad encroachment, high pressure gas line encroachment, and erosion control and sediment control

**Grove Creek WWTP Effluent Force Main, Renewable Water Resources, Mauldin, SC**

Mr. Vane served as Pipeline Design Task Leader for the Grove Creek WWTP Effluent Force Main Project. This project consisted of 12,380 LF of 18/20-inch-diameter force mains, 470 LF of 42-inch-diameter outfall with an 11-part effluent diffuser, and a cascade aerator to increase dissolved oxygen prior to discharge into the Saluda River. This project also included several jack-and-bore crossings of roadways, creeks and CSX railroad (330 LF of 48-inch casing) and parallel 300-LF directional drilled crossings of the Saluda River. Mr. Vane coordinated all environmental permitting on this project.

**Harleyville Reach Water Transmission Mains, Lake Marion Regional Water System, Santee, SC**

Mr. Vane served as lead designer and construction administrator for the design, permitting and construction of 34,800 LF of 16" diameter water transmission mains. This project included a 6,800 LF crossing of Four Hole Swamp using Horizontal Directional Drilled (HDD) methods as a single pull, five jack and bore crossings of state highways and Interstate 26, wetlands crossings, a packaged dual master meter station, installation of PRV's and altitude valves at two existing tank sites, and tie-ins to existing water distribution systems. Mr. Vane oversaw all hydraulic modeling, preliminary design, and final design of this project including construction cost estimates, technical specifications, and coordination with multiple Counties and the US Army Corps of Engineers Charleston District office. This project also included aerial and ground survey, development of easement plats, SCDOT encroachment permits, SCDHEC Stormwater design and permitting, obtaining an encroachment from CSX Transportation (railroad), a cultural resources study, and other related permitting activities. (\$7.5 M) (2014)

**Arrowood/Sulkirk Road Water Transmission Lines, Charlotte-Mecklenburg Utilities, Charlotte, NC**

Mr. Vane served as Lead Designer and Project Manager for the replacement of 11,500 LF of 24" diameter PCCP water transmission mains. This project was divided into two phases. 5,500 LF of existing 24" water transmission mains was replaced in a major collector roadway for Interstate traffic. 6,000 LF of existing 24" water transmission mains was replaced in an older affluent section of Charlotte along heavily travelled roadways. This project included development of a 40+ phase traffic control plan, coordination with CATS transit system and existing planned intersection improvements, aerial and ground surveying, SUE, geotechnical investigation, and NCDENR Land Quality permitting.

**Bear Cut Water Line Replacement, Miami-Dade Water & Sewer Department, Miami, FL**

Lead designer for the new dual Horizontal Directional Drilled (HDD) water lines adjacent to the West Bridge and Bear Cut between the City of Miami and Key Biscayne, Florida. Mr. Vane designed both HDD crossings for this design-build project. The crossings consisted of 16" diameter HDPE pipe pulled 1,700 LF across the West Bridge crossing and 2,800 LF long 16" diameter HDPE pulled across Bear Cut. The Bear Cut crossing included both vertical and horizontal curves in the pipe to avoid wetlands areas and active traffic roadways. The design included horizontal and vertical layout, design calculations of required stresses, strains, pull strengths, collapse pressures, and other critical aspects of both drills. Upon completion of the drills, Mr. Vane verified the as-built information to ensure the adequate safety factors were achieved post-construction.

**Lake Marion Regional Water System, Santee, SC**

Chief Design Engineer and Project Manager for the Lake Marion Regional Water System which consists of 12-through 36-inch water transmission mains totaling 50+ miles in length in six counties northwest of Charleston, SC. Mr. Vane is currently Project Manager on this project with Santee Cooper Power Company, the U.S. Army Corps of Engineers in Charleston, and various sub-consultants. This project is under various phases of design and construction with approximately 25% of the planned transmission mains installed. Total construction cost is estimated to be over \$50M.



## **Jared M. Lewis, CSP**

### **Safety Compliance**

#### **Education**

Bachelor of Science, Business Management, St. John's University, Queens, NY

#### **Certification/License**

Certified Safety Professional BCSP  
Associate Safety Professional BSCP  
OSHA 510 for Construction  
OSHA 500 Authorized trainer  
RCRA Hazardous Waste Training  
National Traffic Incident Responder Training  
2012 MTA Chairman's Safety Award for FSTC project  
Licensed NYS DOL Asbestos Supervisor  
National Safety Council AED/CPR Instructor  
FDNY Certified Construction Site Fire Safety Manager  
NYC DOB 4-hour Scaffold Course  
UMDNJ Systems of Safety Focus-Four Hazard Categories  
30-hour OSHA Safety Course  
40 hour HAZWOPER  
7.5 Globally Harmonized System of Classification and labeling of Chemicals  
40 hour NYC DOB Site Safety Manager Course  
The Practicing Institute of Engineering, Inc. Soft Ground Tunneling Seminar  
NYCT QA/QC Master Workshop  
NYCT Core Analyst training program  
LIRR/NYCT/MNR/Amtrak railroad safety training

*Mr. Lewis is a safety and risk professional experienced in developing, implementing and monitoring risk-based programs to identify, assess and mitigate any operational risk while maintaining a balance between risk mitigation and operational efficiency. He has an excellent background in vendor management, employee development, and customer relations. Mr. Lewis will review the safety plan and make sure Hazen staff are up to date on the necessary certifications and protocol and provide quality control for all safety designs as appropriate.*

#### **MTA NYC Transit, New York, NY**

General Superintendent, Safety and Environmental Management.

- Oversee labor relations and worker's compensation claims.
- Management of operations staff and union personnel
- Implement review adherence of safety and environmental management systems
- Participated in corporate mission statement and goals safety committee
- Direct Emergency Management and Fire Safety programs is in compliance with applicable regulations
- Investigate accidents in thorough manner, following corporate protocol.
- Audit and report all work-place violence and communicate with proper authorities.
- Oversee collective bargaining agreements and follow through on all aspects.
- Train staff to make sure that safety and environmental regulations are understood and in compliance.

**Areas of Expertise**

- Safety Inspection
- Code Compliance
- Strategic Planning/Analysis
- Records Management
- Risk Management
- Budget Analysis
- Corporate Governance
- Site Security
- Plant Operations

**Experience**

- 15 total years
- 1 year with Hazen

**MTA Bridges and Tunnels, New York, NY**

**Safety Engineer**

- Managed and directed consultant safety staff.
- Oversaw contract payment verification and reconciliation.
- Participated in contractor/consultant selection committees.
- Developed contract specifications and in-house safety management procedures.
- Reviewed designs and assessed the construction feasibility of proposed projects.
- Investigated all accidents in thorough manner.
- Developed and implemented engineering and operations/maintenance staff safety training.
- Analyzed and worked to improve labor relations through dialogue and communications.
- Oversaw risk management and loss control analysis.
- Selected as member of MTA Bridges and Tunnels Safety Committee.
- Reviewed and approved contractor safe work plans and accident prevention programs.
- Reviewed and updated emergency evacuation plans and Site Security Plans.
- Performed threat and infrastructure vulnerability risk assessments.

**MTA Capital Construction, New York, NY**

**Safety Specialist**

- Managed contractor safety engineers and labor force.
- Chaired multi-employer Fulton Center Safety Committee.
- Analyzed real and potential hazards and created mitigation plan.
- Coordinated safe working practices and procedures between government and private entities.
- Performed safety audits and conducted incident investigations as needed.
- Counter-terrorism and site security assessments.
- Served as lead rail construction inspector.
- Created detailed project reports for the Federal Transit Administration.



## **Adam Overbay, PE, SE**

### **Senior Associate**

*Mr. Overbay is the structural discipline lead for Hazen’s West Region. Mr. Overbay specializes in the design of buildings, tanks, and the supporting structures for water and wastewater treatment facilities. His experience includes the design of reinforced and prestressed concrete, structural steel, reinforced masonry structures, and temporary structures. He has led condition assessments of existing infrastructure and assists with structural construction administration.*

#### **Education**

BSCE, North Carolina State University, 1996

MCE, North Carolina State University, 1997

#### **Certification/License**

Professional Engineer: CA, AZ, DE, FL, GA, IN, IA, NY, NC, PA, SC, TN, VA

Structural Engineer: CA, IL

#### **Areas of Expertise**

- Structural Design and Analysis of Sanitary, Industrial, and Architectural Structures
- Structural Construction Administration
- Inspection and Evaluation of Existing Structures

#### **Experience**

- 20 total years
- 18 years with Hazen

#### **Professional Activities**

American Concrete Institute

American Institute of Steel Construction

International Concrete Repair Institute

ACI Committee 350,  
Environmental Engineering  
Concrete Structures - Associate  
Member

American Society of Civil  
Engineers

#### **Chromium 6 Water Treatment Facilities, Coachella Valley Water District, Coachella, CA**

Mr. Overbay served as the Structural Engineer of Record on the design team for the Coachella Valley Water District Chromium 6 Water Treatment Facilities Project. The project included a new 200’x300’ Central Resin Regeneration Facility, over 20 well sites with multiple structures on each site, and 2 central treatment sites with below grade reinforced concrete tanks and masonry superstructures. Mr. Overbay’s responsibilities involved leading the structural design effort and coordinating the structural work with the process requirements and the aggressive design schedule. Structural tasks included design of a reinforced concrete frame building, metal and load bearing masonry buildings, below grade reinforced concrete hydraulic structures, and equipment foundations.

#### **City of Signal Hill – Wellhead No. 9 NF Treatment System, Signal Hill, CA**

Mr. Overbay served as the Structural Engineer of Record for the design of the Signal Hill nanofiltration treatment facility. The facility consists of multiple structures including metal buildings, metal canopies, and mat foundations for equipment. This project required close coordination with the design-build team to meet an aggressive schedule.

#### **Oxygen Plant Demolition at Plant No. 2, for Orange County Sanitation District, CA**

Responsible for all aspects of structural design for the Oxygen Plant Demolition at Plant No. 2 for Orange County Sanitation District. The project included demolition of existing structural supports for the main

air compressors and restoration of the structural floors for reuse as a maintenance facility. Portions of the existing structural supports were incorporated into the new flooring design to facilitate construction and reduce demolition costs.

**Government Cut Utility Relocation Project, Miami-Dade Water and Sewer Department, Miami, FL**

Mr. Overbay served as the Lead Structural Engineer for this design-build project. The project included the design of vertical secant pile shafts installed to facilitate tunneling under Government Cut at the harbor of Miami. The three shafts (two 100-foot and one 70-foot) consisted of overlapping unreinforced 42-inch-diameter secant piles that were further strengthened by the addition of a corrugated metal liner. Most noteworthy is the combination of unreinforced secant piles and a corrugated steel liner to construct a shaft to an unprecedented depth of 100 feet. This project also included the design of sheet pile coffercells and a structural steel working platform located in Government Cut. The aggressive design schedule and extensive coordination with the partnering firm and subconsultants presented unique design challenges.

**Muddy Creek WWTP Clarifier Upgrades, City/County Utility Commission, Winston-Salem, NC**

Mr. Overbay served as the Lead Structural Engineer for design and drafting for the project. The project included a cast-in-place 1.65-mg concrete clarifier, a prefabricated metal storage building, two prefabricated concrete buildings, a cast-in-place concrete flow distribution structure, modifications to the primary clarifiers, conversion of a pair of sludge wet wells into pipe galleries, and coating of four existing steel digester covers. Mr. Overbay conducted condition assessments of the digester covers and recommended repairs and coatings to extend service life.

**Northwest WTP Expansion, Brunswick County, NC**

Mr. Overbay served as Structural Engineer for the expansion of the WTP. The project included the addition of a 253 foot diameter prestressed concrete clearwell, a reinforced concrete framed chemical storage building, and a reinforced concrete pipe and containment vault. Mr. Overbay was also involved in the construction administration for the facility.

**Avenue V Pumping Station Upgrade, NYCDEP, New York, NY**

Mr. Overbay served as the Lead Structural Engineer for the design and drafting for the pump station upgrade. The project included a condition assessment, rehabilitation, and seismic retrofit of a 90-year-old historic Pump Station and tie-ins to brick-lined sewers. The structural repairs involved installing a reinforced concrete frame within the existing brick masonry superstructure to provide ductility to meet current building code requirements for seismic design. The project also included construction of a temporary bypass pumping structure, wet well, generator building and electrical building.

**Irwin Creek WWTP Improvements and Upgrades, Charlotte-Mecklenburg Utilities, Charlotte, NC**

Led the structural design for the upgrade to the Irwin Creek WWTP. This effort involved directing the work of assistant engineers and designers and coordinating with other disciplines. The project included the evaluation and rehabilitation of multiple structures, some of which are approximately 80 years old. Our design included the renovation of an existing masonry structure to provide additional access points and to update the process structure to house personnel facilities. Also included was the upgrade of multiple aeration basins with new air piping and air pipe supports.

**Indio Water Authority Cr6 Treatment Facilities, Indio, CA**

Structural Engineer of Record for the design of the treatment facilities for three 3200 gpm wells. The project included the design of equipment support and assistance during construction to meet a demanding schedule.



## **Christopher Thunhorst, PE**

### **Senior Associate**

*Mr. Thunhorst is a Senior Associate in the firm's Irvine office and he serves as Hazen's Electrical and Instrumentation Group Leader for the West Region. Mr. Thunhorst has over 15 years of experience in electrical engineering for building systems, water and wastewater treatment facilities, and pumping stations associated with water distribution and wastewater collection systems.*

#### **Education**

BSEE, North Carolina State University, 2005

AAS, Asheville-Buncombe Technical Community College, 2001

#### **Certification/License**

Professional Engineer: OH, KY, TN, IN, PA

#### **Areas of Expertise**

- Medium and Low Voltage Power Distribution
- Standby Power Systems
- Control Systems
- Process Instrumentation
- SCADA Systems

#### **Experience**

- 15 total years
- 8 years with Hazen

#### **Professional Activities**

Instrumentation, Systems, and Automation Society

International Association of Electrical Inspectors

#### **Well #9 Water Treatment Plant, Signal Hill, CA**

Lead Electrical Engineer for the design of a nano-filtration water treatment plant with a treatment capacity of 2 MGD. The design includes a new well pump, cartridge filter pre-treatment, two NF treatment trains, chemical feed systems, product water tank, product water pumps, non-recoverable waste system, clean in place system, and an operations/training building. The electrical design also includes a 600kW diesel standby power generator. Construction of the Well #9 WTP is scheduled to be complete in June of 2016.

#### **Carson Regional WRF Plant Improvements – Carson, CA**

Lead Electrical Engineer for the plant improvements project including design of a new 2 MGD tertiary-MBR, a 2.64 MGD microfiltration system, modifications to the potable water service, and a new standby power system to supply backup power to the RO product pumps and limited tMBR loads. Design of the plant improvements are scheduled to be complete in September 2016.

#### **Muncie WTF Phase 1 Improvements Project – Indiana American Water Company, Muncie, IN**

Lead Electrical Engineer for the Muncie WTF Phase 1 Improvements Project design which included a new electrical service, new standby power system including a 1,000 kW, 480V generator, new High Service Pump Station, new Clearwell, and chemical feed system modifications.

**Richard Miller Treatment Plant – Greater Cincinnati Water Works:**

Electrical Engineer for the Richard Miller Treatment Plant Generator Project which included the installation of a new 1,000kW, 4,160V standby generator to supply backup power to the Filter Building. The project also included modifications to the existing medium voltage switchgear and new paralleling controls to allow closed transition transfer and soft loading capabilities.

**Richmond Road Station WTP Plant Improvements – Kentucky American Water Company, Lexington, KY**

Technical Advisor for the design of improvements to the 25-MGD water treatment plant. Improvements include a new filter building to replace the existing filter building, a new chlorine contact basin and a new backwash pump station. The project is currently under construction and will be constructed using a construction manager at risk.

**Pierce-Union-Batavia WTP – Clermont County, OH**

Electrical Engineer for the study and design of water plant improvements and wellfield rehabilitation for the 15 MGD Pierce-Union-Batavia groundwater treatment plant. Project includes new filter media, new field instruments, new and rehabilitated wells in a floodplain and associated electrical and I&C work.

**Bob McEwen WTP – Clermont County, OH**

Electrical Engineer for the plant improvements project including a new 18 MGD, 10 minute EBCT GAC facility with intermediate lift pumps, modifications to several chemical systems including gas chlorine, coagulant, polymer and sodium hydroxide. The project also included a new instrumentation and control system for the new GAC facility, as well as replacement of the existing Distributed Control System (DCS) for the entire plant with a non-proprietary PC/PLC based system.

**Cornell PS and Irwin-Simpson PS – Greater Cincinnati Water Works**

Electrical Engineer for the pump station generator project which included the installation of two new 480V generators, 500kW and 450kW respectively, at the Cornell and Irwin-Simpson Pump Stations. The scope of this project also included the installation of new service entrance switchboards and automatic transfer switches.

**Glendale WTP – Village of Glendale, OH**

Electrical Engineer for the Phase 2 water treatment plant improvements project. Improvements included installation of VFDs on lime softening mixers, replacement of lime feed silo, installation of new chemical feed system, modifications to well pumps, SCADA system improvements, and a new Laboratory.

**Bogan Road PS – Buford, GA**

Electrical Designer for the Water Pump Station upgrades increasing the pumping capacity to 7500 gpm. Upgrades include expanding the existing Building, replacing the existing Booster Pumps, relocating the existing Pump Controls, and replacing the existing Electrical Distribution Equipment.

**Eastside Pump Station – Miamisburg, OH**

Technical Advisor for the design of a new 15 MGD dry well / wet well pump station. Station will include two (2) mechanical fine screens and compactors, a separate electrical room, ventilation and emergency generator. Station will house four (4) sanitary pumps, three (3) capable of delivering 15 MGD to the Water Reclamation Facility via the two existing force mains. Two (2) additional pumps will be used to deliver flow in excess of 15 MGD to the Equalization Basin. The 1.3 MG Equalization basin will be constructed below grade in the park just west of the new pump station.





## Troy Walker

### Senior Associate

*Mr. Walker is the corporate Membrane Technology lead for Hazen. Mr. Walker has over 20 years' experience with Membrane Treatment Systems including seawater desalination systems and water recycling.*

#### Education

BE, Chemical Engineering, University of New South Wales, Australia, 1990-1994; Graduate of CO-OP Scholarship Program.

#### Certification/License

MIE (Aust)

#### Areas of Expertise

- Seawater Desalination
- Reverse Osmosis
- Microfiltration
- Membrane Bioreactor
- Membrane Procurement
- Delivery of Operation of Membrane Facilities
- Plant Startup

#### Experience

- 22 total years
- 3 years with Hazen

#### Professional Activities

AWWA – Membrane Process Committee

AWWA – Membrane Systems Subcommittee

American Membrane Technology Association

Water Reuse Foundation

South West Membrane Operators Association

#### Carlsbad Desalination Plant

Provided a detailed review at mechanical completion of the Carlsbad SWRO Desalination Plant in San Diego, California. This included detailed review of seawater reverse osmosis system, energy recovery devices, pretreatment and post treatment systems.

#### Confidential Desalination Plant – External to the United States

Technical review of restart requirements including water quality safety for a large seawater desalination plant following plant damage from a natural storm event. Included a review of the water quality safety plan and practical requirements for membrane testing.

#### City of Beverly Hills – RO Plant Operations Optimization and Restart

Operations support for a 2 MGD groundwater reverse osmosis treatment plant. This work included development of operating plants, operational monitoring, standard operating procedures, membrane selection and procurement and plant restart from long term shutdown.

#### West Basin Municipal Water District - Carson Plant

Project manager for complete design of a 2.0 mgd tertiary membrane biore-actor (tMBR) and a 2.64 mgd microfiltration (MF) system and ancillary processes at the Carson Regional Water Recycling Facility. These will upgrade the existing 5.0 mgd MF - Reverse Osmosis (RO) train and the 0.9 mgd biological aerated filtration (BAF) treatment train originally installed for nitrification.

#### Coachella Valley Water District – Chromium Treatment Options Study

Provision of preliminary design and technical options for chromium removal for numerous groundwater sites in the Coachella Valley. This involved an evaluation of options for mobile ion exchange systems, centralized ion exchange resin regeneration and operations implications. Detailed development of Theory of Operations reviewing operating philosophy and staffing approaches for the future facilities. Review of detailed design.

**City of Santa Monica – Reverse Osmosis Treatment Plant Optimization**

Provision of expert technical advice and planning to troubleshoot and significantly improve the performance of the City's 8 MGD reverse osmosis facility. This included an economical design and retrofit to ameliorate severe membrane fouling.

**Wateruse Research Foundation (WRRF) Direct Potable Reuse Research Projects**

Mr. Walker is the Principal Investigator for two key, operationally focused projects as a part of the WRRF Direct Potable Reuse Initiative. WRRF 13-03 "Critical Control Point Assessment to Quantify Robustness and Reliability of Multiple Treatment Barriers of a DPR Scheme" uses the principles of Hazard Analysis and Critical Control Points (HACCP), a safety methodology widely used in food manufacturing and production, to manage microbiological and chemical hazards and ensure the safety of recycled water. This project engaged multiple indirect and direct potable reuse facilities worldwide, and used their operational and maintenance data to provide statistical evidence of process effectiveness. It also provided practical operational response procedures for integration into DPR operating plans. WRRF 13-13 "Development of Operation and Maintenance Plan and Training and Certification Framework for Direct Potable Reuse (DPR) Systems" is aimed at developing the key requirements for operations, maintenance and importantly capturing the training and certification requirements to underpin the skills and knowledge for operations teams that are engaged in direct potable reuse schemes.

**Experience Prior to Hazen****Gold Coast Desalination Plant, Queensland, Australia**

Technical oversight for the Gold Coast desalination plant in Queensland Australia, supporting the operations team on review of operational reporting, environmental compliance oversight and membrane performance monitoring. Responsible for the development of Water Quality Safety and Management Plan, using the critical control point methodology, to ensure safety of water quality. This included both performance of membrane systems as well as post treatment to minimize corrosion and ensure safety of water in distribution systems.

**Western Corridor Recycled Water Scheme, Brisbane, Australia**

Led the technical operations team for a \$2 billion dollar advanced recycled water scheme in Brisbane, Australia. The scheme provided highly purified recycled water to two coal fired power stations in addition to availability for indirect potable reuse. Provided detailed design review during design phase, commissioning support and managed transition from commissioning to long term operations. Mr Walker took a lead role in the water quality management for the project, including extensive collaboration with power stations to optimize and increase cooling water cycles, manage limitations with cooling water blowdown and identify impacts to power station high purity water boiler treatment circuits.

**Kwinana Water Reclamation Plant, Perth Australia**

Completed detailed design, construction support, commissioning and transfer to operations of a 4 MGD advanced membrane recycled water plant near Perth, Australia. This plant provided highly purified water from recycled municipal effluent to a range of industries including titanium oxide manufacturing, oil fired power station, oil refining and bulk chemical industries.

**Wollongong Water Reclamation Plant, Australia**

Completed detailed design, construction support, commissioning and transfer to operations of a 5 MGD advanced membrane recycled water plant south of Sydney, Australia. This plant provided highly purified recycled water from municipal effluent to a steel manufacturing plant.



## Robert L. “Bo” Copeland Jr., PE Associate

*Mr. Copeland is an expert in water and wastewater conveyance systems, including engineering services from planning through construction, operations engineering, condition assessment, and other issues related to operation and maintenance of these systems.*

### Education

BSCHEM E, University of Illinois at Urbana-Champaign, 1993

### Certification/License

Professional Engineer: OH

### Areas of Expertise

- Water Transmission and Distribution Systems
- Gravity Collection Systems and Force Mains
- Pump Stations
- Hydraulic and Surge Modeling
- Condition Assessment of Pump Stations and Pipelines
- Asset Management

### Experience

- 23 total years
- 9 years with Hazen

### Professional Activities

Water Environment Federation

American Water Works Association

AWWA – Ohio Section Distribution Committee

Ohio Rural Water Association

**Water Main Replacement Program Data Management Evaluation and Effectiveness Evaluation, Greater Cincinnati Water Works, OH**  
Reviewed current procedures, data types, and tools used in conducting the organization’s water main replacement program. Evaluated available data management and decision support software/database tools and developed recommendations for implementation. Compiled and analyzed 30-years of water main failure records to determine failure rates for various pipe cohorts, identify key risk factors that affect the likelihood of failure, and evaluate the effectiveness of the organization’s ongoing water main replacement program. GIS, spreadsheets, databases, and visual analytics software were used in this evaluation.

### **Standard Specifications for Water Main Construction, Indiana-American Water Company, Inc, Greenwood, IN**

Technical Lead for development of new standard technical specifications for all aspects of water main construction for projects throughout the State of Indiana. The specifications developed under this work have been successfully used on over 200 projects in the first year.

### **Distribution System Water Quality Modeling, Clermont County Water Resources Division, OH**

Updated hydraulic model of distribution system to support water quality modeling, & evaluated water age & DBP concentrations. Evaluated operational methodologies & system improvements to remedy areas of high water age & high DBPs, while also reducing treatment costs by maximizing groundwater vs. surface water supplies.

### **Water System Supply and Pumping Capacity Evaluation, Butler County Water and Sewer Department, Hamilton, OH**

Project manager, technical leader, and modeler. Coordinated and assisted with field capacity testing of wholesale supply connections, compiled and analyzed resulting data, performed hydraulic modeling, and prepared report summarizing supply, pumping and distribution system capacities that resulted in a capacity re-rating from 23.9 to 43.47 mgd by Ohio EPA.

### **Selected Publications and Presentations**

"Evaluation of Water Main Replacement Program Helps Greater Cincinnati Water Works Achieve Asset Management Goals", Copeland, B., Weinle, J. and Calder, B., Straight From the Tap, Kentucky/Tennessee Section AWWA, Winter/Spring 2015 (also Ohio Section AWWA Newsletter, Spring 2015).

"Flow Woes: Effects and Solutions for Low Velocities in Force Mains", Copeland, B. and O'Rourke, S., Water Environment and Technology, Water Environment Federation, February 2014.

"Development of a Phased Water Master Plan Using Optimization", Speight, V. L. and Copeland Jr., R. L., ASCE WDSA, Cincinnati, OH, 2006.

### **Wastewater Collection System and Treatment Facilities Capital Assets Valuation, Sanitation District No. 1, KY**

Developed inventory & valuations of all sanitary & combined sewer system capital assets, including WWTPs & entire collection system. Project approach used condition data, where available, to help determine remaining useful life & values of collection system assets.

### **Wastewater Collection System Trouble Call Standard Operating Procedures, Sanitation District No. 1, KY**

Developed standard operating procedures & flow charts for the District's response to & follow-up from wastewater collection system trouble calls.

### **Continuous Sewer Assessment Program Failure Analysis, Sanitation District No. 1, KY**

Project manager and technical lead for evaluation of historical collection system failures (i.e. overflows, backups in buildings, and sinkholes) and inspections data to correlate failures to previously-observed defects, assess time-to-failure for various defects, compare condition score to remaining useful life, assess return frequency of blockages, and related analysis.

### **Pump Station Force Main and ARV Preventative Maintenance Program, Sanitation District No. 1, KY**

Condition assessment & testing of 10 priority pump stations, field location of 76 miles of force main, condition assessment of 25 miles of priority force main (incl. 6 miles of leak detection on 6" – 48" force mains), condition assessment of 179 air valves, surge modeling of 7 pump station/force main systems, odor & corrosion survey at approximately 120 pump stations & respective force main discharges, CCTV inspection of 40 miles of gravity sewer, inspection of approximately 297 manholes, & development of a preventative maintenance program for pump stations, force mains & air valves.

### **Butler County Department of Environmental Services (1995 – 2007)**

Prior to joining Hazen and Sawyer in 2007, Mr. Copeland worked for 12 years as an engineer for Butler County Department of Environmental Services (BCDES), a medium-sized water and wastewater utility in southwest Ohio. During his tenure at Butler County, he coordinated with management, engineering, accounting, customer service, operations and maintenance staff on nearly all aspects of the organization's operations. He worked particularly closely with distribution system and pump station operations and maintenance personnel in the process of managing over 20 design and construction projects, planning system improvements and extensions, and ongoing engineering support for day-to-day operation and maintenance of the distribution system and pump stations.



**Hazen**

Hazen and Sawyer  
2880 Zanker Road, Suite 203 • San Jose, CA, 95134



June 23, 2016

David Stoldt  
General Manager  
Monterey Peninsula Water Management District  
5 Harris Court – Bldg G  
Monterey, CA 93940

**Re: California American Water Company – Monterey Peninsula Water Supply Project (MPWSP)  
Conveyance Facilities –Request for Proposal – Value Engineering Study – Fee Estimate**

Dear Mr. Stoldt:

We are excited to have the opportunity to propose on the Monterey Peninsula Water Supply Project (MPWSP) Conveyance Facilities – Value Engineering Study. We have assembled a core team that understands the project and is ready to work to find value for the constituents and stakeholders in the Monterey Area.


Attached, please find the fee estimate for our efforts to deliver a high quality and focused Value Engineering Project.

If you have any questions regarding the proposal or the fee estimate, please feel free to give me a call at (760) 525-3281.

Sincerely,

Kevin Alexander  
Vice President and Project Manager

***Our knowledge and prior Cost Savings ideas and work will provide substantial value to the MPWSP!***

Monterey Peninsula Water Management District Monterey Peninsula Water Supply Project - Conveyance VE Study Fee Estimate Rev 0, June 21, 2016											
Task	Role	K. Alexander	D. Stafford	S. Fitzgerald	A. Vane	B Copeland	D. Van Kirk	G. Cole	VE Assist	Clerical	Total Hours
		PM-Process Hydraulics	VE Lead	Operations	Construction	Maintenance	Cost	Civil	VE Assist	Admin	
<b>Hourly Rates</b>		\$235	\$235	\$211	\$172	\$185	\$170	\$170	\$100	\$85	
<b>1 Project Management</b>		2.5	5	0	0	0	0	0	5	4	16.5
1.1 Project Management		0.5	1								1.5
1.2 Coordination		1	2								3
1.3 Invoicing		1	2						5	4	12
<b>2 Pre-Workshop</b>		2	14	8	8	8	8	8	12	8	76
2.1 Review Existing Drawings, bids, documents		2	7	8	8	8	8	8	5	8	62
2.2 Prepare format and documents			7						7		14
<b>3 Workshop</b>		40	40	40	40	40	40	40	48	0	328
3.1 Day 1		8	8	8	8	8	8	8	10		66
3.2 Day 2		8	8	8	8	8	8	8	10		
3.3 Day 3		8	8	8	8	8	8	8	10		66
3.4 Day 4		8	8	8	8	8	8	8	10		66
3.5 Day 5		8	8	8	8	8	8	8	8		64
<b>4 Post Workshop</b>		8	37	0	0	0	0	0	46	0	91
4.1 Final Report		4	29						46		79
4.2 Meeting		4	8								12
Hours		52.5	96	48	48	48	48	48	111	12	511.5
Labor		\$ 12,338	\$ 22,560	\$ 10,138	\$ 8,268	\$ 8,892	\$ 8,160	\$ 8,160	\$ 11,100	\$ 1,020	\$ 90,635
Project Expenses		1600	4150	2000	1700	1700	1600	1100	4150	0	\$ 18,000
<b>Total</b>											<b>\$ 108,635</b>



**Monterey Peninsula Water Supply Project Governance Committee**

**Meeting Date:** July 20, 2016

**Action Item:** 4. **Develop Recommendation to Consider Approval of Amendment 2 to Amended and Restated Agreement to Form the Monterey Peninsula Water Supply Governance Committee**

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**Summary:** The revision under consideration if approved is to allow the Water Management District to enter into a contract with a Value Engineering Consultant for the MPWSP conveyance facilities and receive reimbursement from Cal-Am for the cost of the study.

**Recommendation:** It is recommended the Governance Committee approved the proposed Amendment 2 and request its members approve and adopt the amendment at their earliest convenience.

**Exhibits:**

**4-A** Proposed Amendment – Clean Version

**4-B** Proposed Amendment - Redline



## EXHIBIT 4-A

### SECOND AMENDMENT TO THE AMENDED AND RESTATED AGREEMENT TO FORM THE MONTEREY PENINSULA WATER SUPPLY PROJECT GOVERNANCE COMMITTEE

**THIS SECOND AMENDMENT** (“**Second Amendment**”), dated July 20, 2016, supplements and modifies the terms and conditions of that certain **Amended and Restated Agreement to Form The Monterey Peninsula Water Supply Project Governance Committee**, dated November 5, 2013 (“**Agreement**”), by and between the **MONTEREY PENINSULA REGIONAL WATER AUTHORITY** (“**MPRWA**”), the **MONTEREY PENINSULA WATER MANAGEMENT DISTRICT** (“**MPWMD**”), the **COUNTY OF MONTEREY**, and the **CALIFORNIA-AMERICAN WATER COMPANY** (“**Cal-Am**”) (collectively, the “**Parties**”), as amended by Amendment dated April 30, 2016. The Parties agree to further amend the Agreement as set forth below.

1. Section II.R., defining the term “Value Engineer,” is deleted in its entirety and replaced with the following:

R. Value Engineer. The professional engineer(s) to be retained by MPRWA or MPWMD upon the selection of the Governance Committee to perform a value engineering analysis for one or more components of the Desalination Project, excluding the Source Water Infrastructure, to potentially lower the costs of, or maximize the value of, the Desalination Project to Cal-Am’s ratepayers, including matters concerning the cost effectiveness, performance, reliability, quality, safety, durability, effectiveness, or other desirable characteristics of the Desalination Project. A value engineering analysis will not be performed on the Source Water Infrastructure.

2. Section V.D., Category A, Paragraph 1., concerning the selection of the Value Engineer, is deleted in its entirety and replaced with the following:

1. The Governance Committee shall select, and shall request that the MPRWA or MPWMD retain, a Value Engineer(s) to facilitate and report on the proposed value engineering for one or more components of the Desalination Project. In selecting the Value Engineer(s), the Governance Committee shall consider any recommended engineer submitted by any member of the Governance Committee. This matter shall be ripe for decision for the Desalination Infrastructure component before Cal-Am accepts the 30% Design from the contractor retained for the design of the Desalination Infrastructure, and at any other time that Cal-Am advises a Value Engineer should be retained for any other infrastructure constructed as a component of the Desalination Project. Cal-Am shall reimburse the MPRWA or the MPWMD respectively for all payments made by MPRWA or MPWMD to the Value Engineer for expenses reasonably incurred in the Value Engineer’s performance of the value engineering services for the Desalination Project up to, but not to exceed, two hundred forty thousand dollars (\$240,000). Cal-Am shall make such reimbursement payments within 60 days following Cal-Am’s receipt of a valid invoice, with supporting documentation, from MPRWA or MPWMD.

3. All provisions of the Agreement other than the provisions expressly amended above are unaltered by this Second Amendment.

4. This Second Amendment may be executed in two or more counterparts, each of which shall be deemed and original, but all of which together shall constitute one and the same instrument.

**IN WITNESS WHEREOF**, the Parties have executed this Second Amendment as of the date first stated above.

California-American Water Company

By: \_\_\_\_\_  
Robert MacLean,  
President

Monterey Peninsula Regional Water Authority

By: \_\_\_\_\_  
Bill Kampe  
Interim President

Agreed as to form:

By: \_\_\_\_\_  
Donald Freeman  
General Counsel

Monterey Peninsula Water Management District

By: \_\_\_\_\_  
Jeanne Byrne  
Chair

Agreed as to form:

By: \_\_\_\_\_  
David Laredo  
General Counsel

County of Monterey

By: \_\_\_\_\_  
Jane Parker  
Chair of the Board of Supervisors

Agreed as to form:

By: \_\_\_\_\_  
Charles McKee  
County Counsel

## EXHIBIT 4-B

### **SECOND AMENDMENT TO THE AMENDED AND RESTATED AGREEMENT TO FORM THE MONTEREY PENINSULA WATER SUPPLY PROJECT GOVERNANCE COMMITTEE**

THIS **SECOND** AMENDMENT ("**Second** Amendment"), dated ~~April 30~~July 20, 2014~~6~~, supplements and modifies the terms and conditions of that certain **Amended and Restated Agreement to Form The Monterey Peninsula Water Supply Project Governance Committee**, dated November 5, 2013 ("**Agreement**"), by and between the **MONTEREY PENINSULA REGIONAL WATER AUTHORITY** ("**MPRWA**"), the **MONTEREY PENINSULA WATER MANAGEMENT DISTRICT** ("**MPWMD**"), the **COUNTY OF MONTEREY**, and the **CALIFORNIA-AMERICAN WATER COMPANY** ("**Cal-Am**") (collectively, the "Parties"), as amended by Amendment dated April 30, 2016. The Parties agree to further amend the Agreement as set forth below.

1. Section II.R., defining the term "Value Engineer," is deleted in its entirety and replaced with the following:

R. Value Engineer. The professional engineer(s) to be retained by MPRWA or MPWMD upon the selection of the Governance Committee to perform a value engineering analysis for one or more components of the Desalination Project, excluding the Source Water Infrastructure, to potentially lower the costs of, or maximize the value of, the Desalination Project to Cal-Am's ratepayers, including matters concerning the cost effectiveness, performance, reliability, quality, safety, durability, effectiveness, or other desirable characteristics of the Desalination Project. A value engineering analysis will not be performed on the Source Water Infrastructure.

2. Section V.D., Category A, Paragraph 1., concerning the selection of the Value Engineer, is deleted in its entirety and replaced with the following:

1. The Governance Committee shall select, and shall request that the MPRWA or MPWMD shall retain, a Value Engineer(s) to facilitate and report on the proposed value engineering for one or more components of the Desalination Project. In selecting the Value Engineer(s), the Governance Committee shall consider any recommended engineer submitted by any member of the Governance Committee. This matter shall be ripe for decision for the Desalination Infrastructure component before Cal-Am accepts the 30% Design from the contractor retained for the design of the Desalination Infrastructure, ~~or and~~ at any other time that Cal-Am ~~intends to retain~~advises a Value Engineer should be retained for any other infrastructure constructed as a component of the Desalination Project. Cal-Am shall reimburse the MPRWA or the MPWMD respectively for all payments made by MPRWA or MPWMD to the Value Engineer for expenses reasonably incurred in the Value Engineer's performance of the value engineering services for the Desalination Project up to, but not to exceed, two hundred forty thousand dollars (\$~~204~~40,000). Cal-Am shall make such reimbursement payments within 60 days following Cal-Am's receipt of a valid invoice, with supporting documentation, from MPRWA or MPWMD.

~~3. In Section IX, concerning the term and termination of the Agreement, the first sentence of this section is deleted in its entirety and replaced with the following:~~

~~This Agreement shall continue in effect until the earlier of (1) March 8, 2053, or (2) the date that Cal-Am ceases to operate the Desalination Project, the earlier such date to be known as the "Expiration Date."~~

~~4. Section X.F., concerning the Parties bearing of costs, is deleted in its entirety and replaced with the following:~~

~~Except as expressly set forth in this Agreement, each Party shall bear its own costs relating to the rights and obligations of each Party arising from this Agreement and its participation in the Governance Committee and, therefore, no Party shall be entitled to any reimbursement from another Party as a result of any provision of this Agreement.~~

~~5.3.~~ All provisions of the Agreement other than the provisions expressly amended above are unaltered by this Second Amendment.

~~6.4.~~ This Second Amendment may be executed in two or more counterparts, each of which shall be deemed and original, but all of which together shall constitute one and the same instrument.

**IN WITNESS WHEREOF**, the Parties have executed this Second Amendment as of the date first stated above.

California-American Water Company

By: \_\_\_\_\_  
Robert MacLean,  
President

Monterey Peninsula Regional Water Authority

By: \_\_\_\_\_  
~~Chuck Della Sala~~Bill Kampe  
Interim President

Agreed as to form:

By: \_\_\_\_\_  
Donald Freeman  
General Counsel

Monterey Peninsula Water Management District

By: \_\_\_\_\_  
~~Jeanne Byrne~~David Pendergrass  
Chair

Agreed as to form:

By: \_\_\_\_\_  
David Laredo  
General Counsel

County of Monterey

By: \_\_\_\_\_  
~~Fernando Armenta~~ Jane Parker  
Chair of the Board of Supervisors

Agreed as to form:

By: \_\_\_\_\_  
Charles McKee  
County Counsel

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