This meeting has been noticed according to the Brown Act rules. The Board of Directors meets regularly on the third Monday of each month. The meetings begin at 7:00 PM.

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

AGENDA
Regular Meeting
Board of Directors
Monterey Peninsula Water Management District
****
Monday, March 16, 2015, 7:00 pm
Conference Room, Monterey Peninsula Water Management District
5 Harris Court, Building G, Monterey, CA

Staff notes will be available on the District web site at
http://www.mpwmd.net/asd/board/boardpacket/2015
by 5 PM on Friday, March 13, 2015.

Brenda Lewis will participate by telephone from 1758 Broadway Avenue, Seaside, CA 93955

The 7 PM Meeting will be televised on Comcast Channels 25 & 28. Refer to broadcast schedule on page 3.

CALL TO ORDER/ROLL CALL

PLEDGE OF ALLEGIANCE

ORAL COMMUNICATIONS: Anyone wishing to address the Board on Closed Session, Consent Calendar, Information Items or matters not listed on the agenda may do so only during Oral Communications. Please limit your comment to three (3) minutes. The public may comment on all other items at the time they are presented to the Board.

CONSENT CALENDAR: The Consent Calendar consists of routine items for which staff has prepared a recommendation. Approval of the Consent Calendar ratifies the staff recommendation. Consent Calendar items may be pulled for separate consideration at the request of a member of the public, or a member of the Board. Following adoption of the remaining Consent Calendar items, staff will give a brief presentation on the pulled item. Members of the public are requested to limit individual comment on pulled Consent Items to three (3) minutes.

3/11/15 Revised Staff Report

1. Consider Adoption of Minutes of the February 18, 2015 Regular Board Meeting
2. Consider Authorization of Expenditure of Funds for Design of Sleepy Hollow Steelhead Rearing Facility Intake Upgrade
3. Consider Expenditure of Funds for Additional Assistance with IFIM to Analyze Instream Flow Requirements for the Carmel River
4. Consider Adoption of Resolution 2015-03 Concurring in the Nomination of Paul E. Dorey, Vista Irrigation District to the Executive Committee of the ACWA/JPIA

This agenda was posted at the District office at 5 Harris Court, Bldg. G Monterey on Wednesday, March 11, 2015. Staff reports regarding these agenda items will be available for public review on 3/14/15, at the District office and at the Carmel, Carmel Valley, Monterey, Pacific Grove and Seaside libraries. After staff reports have been distributed, if additional documents are produced by the District and provided to a majority of the Board regarding any item on the agenda, they will be available at the District office during normal business hours, and posted on the District website at http://www.mpwmd.net/asd/board/boardpacket/2015. Documents distributed at the meeting will be made available in the same manner. The next regular meeting of the Board of Directors is scheduled for April 20, 2015 at 7 pm.

5. Consider Appointment of Director Clarke to the ACWA/JPIA Board of Directors
6. Receive Fiscal Year 2013-2014 Mitigation Program Annual Report
7. Consider Adoption of Treasurer's Report for January 2014

GENERAL MANAGER'S REPORT

8. Status Report on California American Water Compliance with State Water Resources Control Board Order 2009-0060 and Seaside Groundwater Basin Adjudication Decision
9. Update on Development of Water Supply Projects
10. Report on Drought Response

DIRECTORS' REPORTS (INCLUDING AB 1234 REPORTS ON TRIPS, CONFERENCE ATTENDANCE AND MEETINGS)

11. Oral Reports on Activities of County, Cities, Other Agencies/Committees/Associations

PUBLIC HEARINGS – Public comment will be received on each of these items. Please limit your comment to three (3) minutes per item.

12. Consider Second Reading and Adoption of Ordinance No. 163, Replacing Urgency Ordinance No. 159, Regarding Rebate Program Amendments and Amendments to the Expanded Water Conservation and Standby Rationing Plan (Regulation XV)
Action: *The Board will consider second reading and adoption of an ordinance that would amend the Rebate Program and Regulation XV to address inconsistencies with water rationing triggers and to establish the two-day per-week outdoor watering schedule.*

13. Consider First Reading of Ordinance No. 164 Establishing Water Permit Requirements for Outdoor Seating at Restaurants
Action: *The Board will consider first reading of an ordinance that would establish Water Permit requirements for outdoor seating at restaurants and bars. This item was considered at the February 18, 2015 meeting; however, it is presented for reconsideration because at the previous hearing the ordinance was neither affirmed nor rejected by a majority vote of the Board.*

14. Consider Adoption of April through June 2015 Quarterly Water Supply Strategy and Budget
Action: *The Board will consider approval of a proposed production strategy for the California American Water Distribution Systems for the three-month period of April through June 2015. The strategy sets monthly goals for surface and groundwater production from various sources within the California American Water systems.*

15. Consider Adoption of 2014 MPWMD Annual Report
Action: *The District's enabling legislation requires that each year a public hearing be conducted on the annual report. This item is deferred to April 20, 2015.*

ACTION ITEMS – No Action Items were submitted for consideration.

DISCUSSION ITEMS -- Public comment will be received on each of these items. Please limit your comment to three (3) minutes per item. No action will be taken by the Board.

16. Discuss Public Release of Proposed Amendment to State Water Resources Control Board Cease and Desist Order WR 2009-0060 (CDO)
The Board will discuss the proposed settlement agreement between the State Water Resources Control Board and negotiating parties seeking to modify the CDO. This is a discussion item; no action will be taken by the Board.

17. Proposed Emergency Conservation Regulations by State Water Resources Control Board
This is a discussion item; no action will be taken by the Board.

INFORMATIONAL ITEMS/STAFF REPORTS The public may address the Board on Information Items and Staff Reports during the Oral Communications portion of the meeting. Please limit your comments to three minutes.

18. Letters Received
19. Committee Reports
20. Monthly Allocation Report
21. Water Conservation Program Report
22. Carmel River Fishery Report for January and February 2015
23. Monthly Water Supply and California American Water Production Report

ADJOURN TO CLOSED SESSION

As permitted by Government Code Section 54956 et seq., the Board may adjourn to closed or executive session to consider specific matters dealing with pending or threatened litigation, certain personnel matters, or certain property acquisition matters.

1. **Conference with Real Property Negotiators (Gov. Code 54956.8)**
   Address: 1910 General Jim Moore Blvd., Seaside, CA 93955
   Agency Negotiator: David J. Stoldt, General Manager
2. **Conference with Legal Counsel – Existing Litigation (Gov. Code 54956.9 (a))**
   A. MPWMD v. SWRCB; Santa Clara 1-10-CV-163328 – CDO (6th District Appellate Case **#H039566**
   B. Monterey Peninsula Taxpayers Association v. MPWMD; Case No. M123512

ADJOURN

Board Meeting Broadcast Schedule – Comcast Channels 25 & 28 View Live Webcast at Ampmedia.org	
Ch. 25, Sundays, 7 PM	Monterey
Ch. 25, Mondays, 7 PM	Monterey, Del Rey Oaks, Pacific Grove, Sand City, Seaside
Ch. 28, Mondays, 7 PM	Carmel, Carmel Valley, Del Rey Oaks, Monterey, Pacific Grove, Pebble Beach, Sand City, Seaside
Ch. 28, Fridays, 9 AM	Carmel, Carmel Valley, Del Rey Oaks, Monterey, Pacific Grove, Pebble Beach, Sand City, Seaside

Upcoming Board Meetings			
Mon. April 20, 2015	Regular Board Meeting	7:00 pm	District conference room
Mon. May 18, 2015	Regular Board Meeting	7:00 pm	District conference room
Mon. June 15, 2015	Regular Board Meeting	7:00 pm	District conference room

Upon request, MPWMD will make a reasonable effort 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. MPWMD will also make a reasonable effort 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 Thursday, March 12, 2015. 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.

ITEM: CONSENT CALENDAR

1. CONSIDER ADOPTION OF MINUTES OF THE FEBRUARY 18, 2015 REGULAR BOARD MEETING

Meeting Date:	**March 16, 2015**	**Budgeted:**	**N/A**
From:	**David J. Stoldt, General Manager**	**Program/ Line Item No.:**	**N/A**
Prepared By:	**Arlene Tavani**	**Cost Estimate:**	**N/A**

General Counsel Review: N/A
Committee Recommendation: N/A
CEQA Compliance: N/A

SUMMARY: Attached as **Exhibit 1-A** are draft minutes of the February 18, 2015 Regular meeting of the Board of Directors.

RECOMMENDATION: District staff recommends approval of the minutes with adoption of the Consent Calendar.

EXHIBIT
1-A Draft Minutes of the February 18, 2015 Regular Board Meeting

EXHIBIT 1-A

DRAFT MINUTES
Regular Meeting
Board of Directors
Monterey Peninsula Water Management District
February 18, 2015

The meeting was called to order at 7:00 p.m. in the Water Management District conference room.

CALL TO ORDER/ROLL CALL

Directors Present:
Jeanne Byrne – Vice Chair, Division 4
Andrew Clarke – Division 2
Robert S. Brower, Sr. – Division 5
David Pendergrass – Mayoral Representative
David Potter –Monterey County Board of Supervisors Representative

Directors Absent:
Kristi Markey – Chair, Division 3
Brenda Lewis – Division 1

General Manager present: David J. Stoldt

District Counsel present: David Laredo

The assembly recited the Pledge of Allegiance.

PLEDGE OF ALLEGIANCE

No comments were directed to the Board.

ORAL COMMUNICATIONS

Potter offered a motion that was seconded by Pendergrass, to adopt the Consent Calendar without item 2 and pull it for separate consideration. The motion was approved on a vote of 5 – 0 by Byrne, Clarke, Brower, Pendergrass and Potter. Lewis and Markey were absent.

CONSENT CALENDAR

Approved.

1. Consider Adoption of Minutes of the January 28, 2015 Regular Board Meeting

On a motion by Potter and second of Brower, Resolution 2015-02 was adopted on a vote of 5 – 0 by Byrne, Clarke, Brower, Pendergrass and Potter. Lewis and Markey were absent.

2. Consider Adoption of Resolution 2015 - 02 Declaring March 16 through March 22, 2015 to be Fix a Leak Week

Approved expenditure of $5,000.

3. Consider Expenditure of Budgeted Funds for Purchase of Internet License for Water Wise Gardening in Monterey County

Approved.

4. Consider Amendment to Cost Sharing Agreement with DeepWater Desal

Approved expenditure of $300,000.

5. Consider Funding Purchase and Reestablishment of Pure Water Monterey Project Pilot Plant

Approved.

6. Receive and File Second Quarter Financial Activity Report for Fiscal Year 2014-15

Approved.

7. Consider Approval of Second Quarter FY 2014--2015 Investment Report

Approved.

8. Consider Adoption of Treasurer's Report for December 2014

GENERAL MANAGER'S REPORT

A summary of Stoldt's report is available for review at the office and website of the Water Management District. Stoldt noted that for the period of October 1, 2014 through February 11, 2015, rainfall was at 103% of long-term average. For the same time period unimpaired flow was at 55% of long-term average, and useable storage was estimated to be 102% of long-term average.

9. Status Report on California American Water Compliance with State Water Resources Control Board Order 2009-0060 and Seaside Groundwater Basin Adjudication Decision

A summary of Stoldt's report is available for review at the office and website of the Water Management District.

10. Update on Development of Water Supply Projects

No report was presented.

11. Report on Drought Response

ATTORNEY'S REPORT

District Counsel Laredo reported that at the January 28, 2015 closed session, he presented a status report on agenda item 1. No reportable action was taken.

12. Report on January 28, 2015 Closed Session of the Board

1. Conference with Real Property Negotiators (Gov. Code 54956.8)
Address: 1910 General Jim Moore Blvd., Seaside, CA 93955
Agency Negotiator: David J. Stoldt, General Manager

DIRECTORS' REPORTS (INCLUDING AB 1234 REPORTS ON TRIPS, CONFERENCE ATTENDANCE AND MEETINGS)

No reports were presented by the Board members.

13. Oral Reports on Activities of County, Cities, Other Agencies/Committees/ Associations

PUBLIC HEARINGS

On a motion by Potter and second of Brower, the Board of Directors adopted the first reading of Ordinance No. 163 on a vote of 5 – 0 by Potter, Brower, Byrne, Clarke and Pendergrass. Lewis and Markey were absent. No comments were directed to the Board during the public hearing on this item.

14. Consider First Reading of Ordinance No. 163, Replacing Urgency Ordinance No. 159, Regarding Rebate Program Amendments and Amendments to the Expanded Water Conservation and Standby Rationing Plan (Regulation Xv)

Brower offered a motion to adopt the first reading of Ordinance No. 165 with the following amendment: the words "bars/brew pubs, and to" shall be added to the definition of "Restaurant." The motion was seconded by Potter, and failed for lack of a determination by a Board majority. Affirmative votes were cast by Potter, Brower and Byrne. Voting in opposition to the motion were Clarke and Pendergrass. Lewis and Markey were absent.

During the public hearing on this item, John Narigi, representing the Coalition of Peninsula Businesses, stated that he did not support the ordinance. He explained that the Coalition's position was that an outdoor seat would not create additional water demand.

15. Consider First Reading of Ordinance No. 164 Amending Regulations regarding Outdoor Restaurant Seating

On a motion by Potter and second of Brower, the Mid-Year Fiscal Year 2014-15 Budget Adjustment was approved on a vote of 5 – 0 by Potter, Brower, Byrne, Clarke and Pendergrass. Lewis and Markey were absent. No comments were directed to the Board during the public hearing on this item.

16. Consider Adoption of Mid-Year Fiscal Year 2014-15 Budget Adjustment

Pendergrass offered a motion that was seconded by Brower to approve the distribution of Local Project grant funds to the City of Pacific Grove. The motion was approved on a vote of 5 – 0 by Pendergrass, Brower, Byrne, Clarke and Potter. Lewis and Markey were absent. No comments were directed to the Board during the public hearing on this item.

17. Consider Distribution of Local Project Grant Funds to City of Pacific Grove

ACTION ITEMS

18. Discuss and Provide Direction on Action Related to the Future of Los Padres Dam

Brower moved that staff develop a long-term comprehensive action plan for intervention at Los Padres Dam with a focus on dredging, sediment management, preservation of water rights, and investigations into CEQA, liability, and project costs. The motion was seconded by Pendergrass and approved on a vote of 5 – 0 by Brower, Pendergrass, Byrne, Clark and Potter. Lewis and Markey were absent.

George Riley addressed the Board during the public hearing on this item. He expressed support for the staff recommendation. In addition, he asked how the proposed effort relates to the request by California American Water for authority to spend $7 million to study the demolition of Los Padres Dam. *Stoldt responded that Cal-Am has requested over $1 million in the three-year General Rate Case to fund the Carmel River Instream Flow Study; Coupled Groundwater-Surface Water Flow Model; and Los Padres Dam Long-Term Plan necessary for development of an alternatives analysis related to removal or future operation of the Los Padres Dam. The Water Management District will take the*

leadership role in preparation of the studies and contribute in excess of $1 million to that end.

Stoldt summarized the proposed draft settlement agreement and exhibits presented in the staff report. He distributed a chart titled Attachment 1, Table 1, Projected Reductions in Illegal Diversions from the Carmel River, which is from the CDO. He compared the columns titled Mandatory Cumulative Annual Reduction and Total Estimated Amount Diverted from Carmel River to the same columns in the proposed settlement agreement. He explained that the community has reduced diversions from the Carmel River at a greater rate than originally expected. Therefore, the proposed settlement decreases the amount of water that can be diverted from the Carmel River and places a greater burden to reduce water use. There is no allowance for an eventual rebound in the economy and the corresponding increase in water use that could occur. Another concern is that milestones proposed in the settlement assume progress on a new water supply. However, if progress is delayed or halted and the milestones are not met, severe water reductions would be required. Stoldt noted that it might be advantageous to the community if the Board maintained its right to challenge punitive fines or water reductions in court. The Board discussed the settlement agreement. No direction was given to staff.

Public Comment: **(1) John Bottomley** suggested that a local delegation of community leaders should meet with the current members of the SWRCB, as they did not issue either Order 95-10 or the CDO and may not support them. **(2) George Riley** proposed that the settlement should protect the community against water rationing in the event that milestones are not met. Instead of water rationing, fines should be assessed on Cal-Am shareholders, not the ratepayers. The fines collected could be allocated to Carmel River mitigation programs.

DISCUSSION ITEMS

19. Discuss Public Release of Proposed Amendment to State Water Resources Control Board Cease and Desist Order WR 2009-0060 (CDO)

There was no discussion of the Informational Items/Staff Reports.

INFORMATIONAL ITEMS/STAFF REPORTS

20. Letters Received
21. Committee Report
22. Monthly Allocation Report
23. Water Conservation Program Report
24. Carmel River Fishery Report
25. Monthly Water Supply and California American Water Production Report

The closed session was not conducted.

ADJOURN TO CLOSED SESSION

1. Conference with Real Property Negotiators (Gov. Code 54956.8)

Address: 1910 General Jim Moore Blvd.,
Seaside, CA 93955
Agency Negotiator: David J. Stoldt, General Manager

ADJOURNMENT

The meeting was adjourned at approximately 8:55 pm.

U:\staff\Boardpacket\2015\20150316\ConsentClndr\01\Item 1_Exhibit 1-A.docx

Arlene M. Tavani, Deputy District Secretary

Revised March 11, 2015
Distributed to the Board and Posted to Website on March 12, 2015

ITEM: CONSENT CALENDAR

2. CONSIDER AUTHORIZATION OF EXPENDITURE OF FUNDS FOR DESIGN OF SLEEPY HOLLOW STEELHEAD REARING FACILITY INTAKE UPGRADE

Meeting Date:	**March 16, 2015**	**Budgeted:**	**Yes**
From:	**David J. Stoldt General Manager**	**Program/**	**Protect Environmental Quality**
		Line Item No.:	**2-3-1-F**
		Account No.	**24-04-785812**
Prepared By:	**Larry Hampson**	**Cost Estimate:**	**$400,000~~to be provided~~ (100% reimbursable)**

General Counsel Review: N/A
Committee Recommendation: N/A
CEQA Compliance: Exempt under §15262

SUMMARY: Staff recently received several proposals to design an upgrade to the Sleepy Hollow Steelhead Rearing Facility (SHSRF), complete environmental compliance documents, and acquire permits to construct the upgrade. A technical review committee composed of District staff and representatives of the State Coastal Conservancy (SCC) and National Marine Fisheries Service reviewed the proposals on March 11, 2015 and have unanimously recommended that Tetra Tech ~~————————~~be selected based on their proposal (**Exhibit 2-A -** to be provided under separate cover to ~~at or prior the~~ Board members~~meeting~~).

The SHSRF is in need of an upgrade in order to be able to operate at a wider range of Carmel River flows and with potential future changes in water quality conditions. A new or modified raw water intake would be designed to make it more accessible for maintenance and less susceptible to clogging. To improve system reliability and increase the periods when the facility can operate, a recirculating aquaculture system (RAS) would be designed that would allow the facility to switch from once-through flow mode (existing) to partial or full recirculating system during periods when river flow is not suitable for once-through mode. This design project has been selected for funding from Cal-Am Settlement Agreement funds administered by SCC. District expenses, including staff time, are eligible for reimbursement of up to $450,000. Design and permit acquisition is expected to take about 18 months to complete.

RECOMMENDATION: Staff recommends approval of the expenditure of District funds to complete the Sleepy Hollow Steelhead Rearing Facility Raw Water Intake and Water Supply System Upgrade. If this item is adopted with the Consent Calendar**,** the General Manager would be authorized to enter into an agreement for services with Tetra Tech ~~————————~~for a not-to-exceed (NTE) amount of $400,000~~————————~~. ~~—~~. The District would seek

reimbursement of expenses for this work from the State Coastal Conservancy under grant agreement 14-018.

IMPACTS TO STAFF/RESOURCES: Funds for work in this fiscal year are identified in the mid-year FY 2014-15 Budget Adjustment, Program Line Item 2-3-1-F, Design and permitting for new intake system. Grant Agreement 14-018 between the District and the State Coastal Conservancy allows the District to recover 100% of the District's costs. The actual amount of the proposal for services from Tetra Tech was $373,000; however, the requested funding limit of $400,000 is to account for a proposed $8,000 optional item to update the sediment transport model for the Carmel River and a small amount for contingencies ($19,000).

BACKGROUND: The Sleepy Hollow Steelhead Rearing Facility (SHSRF or facility) is located at approximately river mile 17.5 on the west bank of the Carmel River (latitude: 36.443508, longitude: 121.715974), about one mile downstream of San Clemente Dam (see Figures 1 and 2). MPWMD has operated the facility since 1996 to raise young-of-the-year and juvenile steelhead rescued from portions of the Carmel River that dry up nearly every year due to stream diversions for municipal and private use. An average of about 16,000 steelhead are rescued each year, with a portion placed in the facility; however, up to about 40,000 steelhead have been reared during the dry season in a 900-foot long simulated natural channel consisting of riffle/pool sequences separated by weirs. An important operational feature of the facility is to replicate as closely as possible the natural conditions under which steelhead exist in the channel of the Carmel River.

Steelhead rescued from drying reaches of the river in spring and summer are transported to the facility where they are placed in quarantine before being transferred to the rearing channel. Although fish are initially sized, due to the difficulty of re-capturing fish when the channel is full and flowing, no additional sizing occurs. This can lead to predation because these fish are wild and can grow at significantly different rates. Steelhead are normally released back into the river and at the Carmel River lagoon in late fall or early winter after the river reconnects to the lagoon. The facility is then shut down for the winter.

Situated on a seven-acre site adjacent to the river, the facility consists of an enclosed river intake, pump system, cooling tower, channel, miscellaneous treatment tanks, and an administrative office. A horizontal drum screen in the channel bottom and pump system deliver continuous flow of about 900 gallons per minute (gpm) or about two cubic feet per second (cfs). Flow can be delivered directly to the channel or processed through a cooling tower for oxygenation and cooling. Additional off-channel systems are also fed from the raw water intake. There is no potable or domestic water supply available to the site; however, office facilities (sinks and toilet) use untreated river water. The intake and pump system were designed with three key assumptions: 1) that clear water (i.e., water free of sediment and debris) would be available from Carmel River flow; and 2) that a minimum of five cfs would be available at all times at the intake; and 3) that the flow rate would be a constant 900 gpm. The system cannot be operated during river flows below about four cfs or when sediment and debris is transported past the intake structure. Flow from the rearing channel is returned to the river in a pool about 200 feet downstream of the intake location.

Because reservoir storage capacity upstream at Los Padres Reservoir (RM 24.8) is limited, during dry and critically dry periods flow at the intake can drop below four cfs – a level at which pump cavitation can occur and cause failure in a matter of hours. In addition, organic material or

sediment can clog the rearing channel and the drum screen in the bottom of the river channel at low flows. Even with frequent cleaning, reduced flow through the clogged screen can cause pump failure (due to cavitation). This problem will be exacerbated once San Clemente Dam is removed and more sediment and organic material begins to flow downstream. Furthermore, the California Department of Fish and Wildlife (CDFW) and the National Marine Fisheries Services (NMFS) have requested that MPWMD release steelhead held in the facility later in the rainy season in order to provide more time for the re-watered downstream reaches to recover. Under current conditions, operating into the winter storm season would increase the possibility of system failure due to a clogged intake structure. In addition, at high flows, the intake structure is not accessible from the streambank and vehicular access into the facility can be restricted by heavy rains (the road condition has recently been improved greatly as a result of construction activities associated with the San Clemente Dam Removal Project).

MPWMD has previously carried out preliminary assessments of the facility and has reviewed several options for a new intake and pump system; however, the basic premise for these options was to modify the existing intake and pump system to operate at higher organic and sediment loads and at flows above five cfs (see the previous assessments available on the District's RFP web site). In 2013 and 2014, it became clear that operating at flows below five cfs would need to be considered. A partial or full recirculation system would be needed in order to operate during periods of low Carmel River flows.

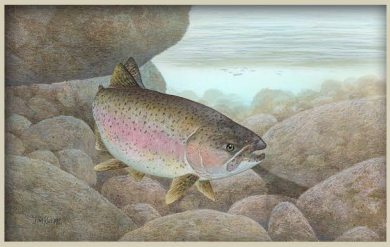
The highest priorities for an upgrade at this facility are:

1) Improved access to the intake pumps and controls;
2) An improved fish screen that requires less maintenance (i.e., does not clog with leaves, sediment, or debris;
3) Reduce sediment input to river pumps and all other equipment downstream of the pumps;
4) Maintain a minimum of 2 cfs (900 gpm) flow to the rearing channel during operations, with the ability to deliver a peak flow of 3 cfs (1,350 gpm) for short periods;
5) Prevent degradation in the water quality of return flow to the Carmel River channel;
6) Allow more flexibility to operate the facility both at extreme low flows and during winter season high flows;
7) Operate the facility during any period for as long as it takes for suitable conditions to develop in the Carmel River in order to release reared fish back into Carmel River or lagoon.

With input from representatives of NMFS, SCC, and CDFW, the District developed a detailed scope of work to improve and/or relocate the existing raw water intake, design a recirculating aquaculture system, and acquire permits to construct the project. The District advertised for proposals beginning January 16, 2015. The initial deadline for proposal submittal was February 27, 2015. However, after a field visit, two groups requested a one-week extension to this deadline to March 6. The proposal review was then re-scheduled to March 11, 2015.

EXHIBIT

2-A Proposal by Tetra Tech (provided to Board members under separate cover)



MONTEREY PENINSULA
WATER MANAGEMENT DISTRICT

PROPOSAL FOR ENGINEERING SERVICES

Sleepy Hollow Steelhead Rearing Facility

RAW WATER INTAKE AND WATER SUPPLY SYSTEM UPGRADE

March 6, 2015

TETRA TECH

Submitted to:

Monterey Peninsula Water Management District

In Association with:

Freshwater Institute
Anchor QEA
PanGEO

Image of painting “Sunrise on The Carmel River Lagoon” used with permission of the artist
Robert Lewis
robertlewisart.com

TETRA TECH

March 6, 2015
Mr. Larry Hampson
District Engineer
5 Harris Court Building G
Monterey, CA 93940

Subject: Sleepy Hollow Steelhead Rearing Facility Water Intake and Water Supply System Upgrade

Mr. Hampson and Selection Panel Members:

The efforts of your agency and your community partners to rescue Carmel River steelhead and increase their survivability is just the type of project our team members desire to be a part of. Tetra Tech has been involved in habitat and hatchery improvements for steelhead and other salmonids in the Pacific NW and Alaska for several decades. We offer our knowledge and that of our highly qualified subconsultants to enhance the operation and reliability of the Sleepy Hollow facility. **The Tetra Tech team provides these advantages:**

- Decades of experience by an in house, multi-disciplined team who are able to work efficiently together on fisheries related projects.
- In depth knowledge of the geomorphology of the Carmel River and the impacts of sedimentation from the San Clemente Dam removal. Dr. Bob Mussetter and his team are best able to guide development of the intake location and criteria for the screens.
- The expertise of the Conservation Fund's Freshwater Institute and Brian Vinci in water conservation and recirculating systems for holding and culturing healthy fish.
- Success in designing the Oregon Hatchery Research Center, a research institute studying the behavior of hatchery salmon and steelhead. The facility includes naturalistic channels that mimic native streams.
- In-house state of the art survey capability in our office a few hours away from the project site.
- Experience designing water intake systems for hatchery and municipal water supplies.

The team will be led by Darrel Nice, who brings over 20 years of experience in civil design and hatchery design and construction. He will be supported by veterans Don Beard and John McGlenn, two sturdy pillars of our fisheries engineering program. As principal in charge, it is my job to make sure he succeeds and has access to any Tetra Tech resources needed.

Thank you for considering our sincere interest in this assignment. We look forward to working with the District and your partners on this important undertaking,

Contact Information:

Darrel Nice, PE, Project Manager, 316 W. Boone Avenue, Suite 363, Spokane, WA 99201
(509) 232-4308, (509) 944-1681 (mobile)

Organizational Info:

Tetra Tech was founded in 1966 as a civil engineering firm by four graduates of the California Institute of Technology who provided engineering services for waterways, harbors, and coastal areas. The company has been headquartered in Pasadena, CA since then. In December 1991, Tetra Tech became a publicly traded enterprise (NASDAQ symbol: TTEK. Since its initial public offering, the company has grown substantially, expanding its markets, services, and clientele through internal growth and international acquisitions. In 1995, Tetra Tech acquired Seattle-based KCM, Inc., a multi-discipline engineering firm with an established fisheries engineering practice that remains strong today.

We currently have 13,000 employees in 300 offices in North America and worldwide. From front-end science and planning to design, construction management and operations, Tetra Tech provides best-in-class experts with worldwide project experience to deliver a high level of integrated services for the full project life-cycle in five service areas: water, natural resources, the environment, infrastructure, and energy.

For more information about Tetra Tech's services please visit our website

http://www.tetratech.com/en/our-company

Sincerely,

Tetra Tech
Water, Environment & Infrastructure

H.R. Naderi-Asia

Daniel J. Nice

Hamid Naderi, PEDarrel Nice, PE
Vice PresidentProject Manager

SIGNATURE PAGE

ISSUE DATE: January 16, 2015
RFP EXTENSION DATE:

RFP: Sleepy Hollow Steelhead Rearing Facility Raw Water Intake and Water Supply System Upgrade

PROPOSALS ARE DUE IN THE DISTRICT OFFICE BY 3:00 P.M., LOCAL TIME, ON MARCH 6, 2015

MAILING ADDRESS:
Monterey Peninsula Water Management District
5 Harris Court, Building G
Monterey, CA 93940

QUESTIONS ABOUT THIS RFP #10340 SHOULD BE DIRECTED TO
Larry Hampson, larry@mpwmd.net, (831) 658-5620 or (831) 238-2543
Consultant MUST INCLUDE THE FOLLOWING IN EACH PROPOSAL:
1 original plus 3 copies = total of 4 copies plus one CD or DVD (no USB sticks)

☑ ALL REQUIRED CONTENT AS DEFINED PER SECTION 7.1 HEREIN

This Signature Page must be included with your submittal in order to validate your proposal.
Proposals submitted without this page will be deemed non-responsive.

☑ **CHECK HERE IF YOU HAVE ANY EXCEPTIONS TO THIS SOLICITATION.**

Consultant MUST COMPLETE THE FOLLOWING TO VALIDATE PROPOSAL

I hereby agree to furnish the articles and/or services stipulated in my proposal at the price quoted, subject to the instructions and conditions in the Request for Proposal package and the identified exceptions. I further attest that I am an official officer representing my organization and authorized with signatory authority to present this proposal package.

Company Name: Tetra Tech, Inc. Date: March 6, 2015

Signature: H.R. Naderi-Asia Printed Name: Hamid Naderi, PE, VP

Street Address: 1420 Fifth Avenue, Suite 600

City: Seattle State: WA Zip: 98101-2357

Phone: (206) 883-9300 Fax: (206) 993-9301 Email: Hamid.Naderi@tetratech.com

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Licensing Requirements

Tetra Tech hereby acknowledges that the team we are proposing for this project meets the prequalification requirements. We will maintain all permits, licenses, and professional credentials necessary to provide the service specified in the RPF for the *Sleepy Hollow Steelhead Rearing Facility Raw Water Intake and Raw Water Supply System* project.

Our team includes the following individuals with current California professional licenses:

Dan Helt, PE, PLS.....Licensed Professional Surveyor, CA L8925; C69347

Bob Mussetter, PE.....Licensed Civil Engineer, CA C59128

Tim Tipton, PE, SE .....Licensed Civil Engineer, CA 77785

Philip Tunnell, PE.....Licensed Mechanical Engineer, CA M35934

Brian Vinci, PE .....Qualified Aquaculture Specialist

Katie Chamberlain.....CEQA/NEPA Compliance Specialist

Team Member Firms

Tetra Tech

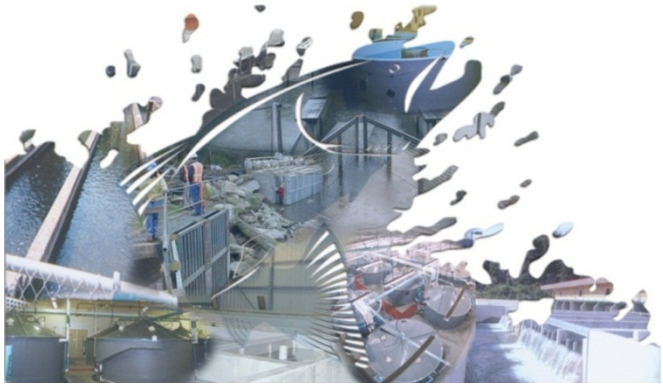
Tetra Tech provides a complete range of civil, environmental, aquaculture / fisheries science, mechanical, electrical, structural engineering and architecture, surveying and mapping services.

Hatchery Engineering

Tetra Tech has four decades of experience designing new hatcheries and renovations to meet both conservation and harvest goals.

Our recent experience includes many projects with requirements similar to the Sleepy Hollow project —programming for native stocks, adaptive management, water conservation and phased construction to keep facilities operating during renovations. These include:

- The Walla Wall Spring Chinook Hatchery, which will upgrade the adult holding and spawning facility to include onsite incubation, rearing and release of 500,000 spring Chinook.
- At the Colville Tribal Resident Fish Hatchery, we are designing the addition of several circular tanks for rearing Rainbow Trout. The circular tanks will be installed using infrastructure that was originally in place for rectangular raceways. Construction will be coordinated with concurrent hatchery operation.



- The Kootenai Twin Rivers (Sturgeon and Burbot) Hatchery is a conservation hatchery that will use locally collected broodstock to incubate and rear young fish for release into the local rivers and streams. This project includes renovations to the existing Tribal Hatchery while the facility is under operation.
- Chief Joseph Hatchery to strengthen both spring and summer/fall Chinook runs throughout the Okanogan River Basin.
- Cedar River Hatchery to enhance and stabilize Sockeye returns to Lake Washington without adversely affecting other wild stocks.
- A hatchery project to incubate and rear salmonid species for stock restoration throughout the Norton Sound Region in Alaska.
- Renovating a closed state hatchery into the Oregon Hatchery Research Center now used to study hatchery/wild fish interaction and the best use of hatcheries to meet conservation objectives.

Fish Passage and Habitat

Our expertise includes fish passage and screening including habitat restoration efforts, replacement of impassable culverts, water intake screening, adult holding and trapping facilities, self-cleaning screens and multi-species fish passage and trapping, and sorting and spawning facilities. Our designs combine biology, hydrology, hydraulics, stream morphology and civil engineering disciplines, tailored to specific project conditions.

Land and Water Surveying

The California Tetra Tech survey team offers a full complement of licensed survey professionals as well as seasoned field survey crews. We have four California Professional Land Surveyors on staff, as well as four dedicated, fully-equipped, survey vehicles. As a whole, Tetra Tech has a total of nearly 30 Professional Land Surveyors and over 100 field and office staff throughout the U.S. With two

field crews in San Luis Obispo, one field crew in Lafayette, and one field crew in Irvine Tetra Tech is capable to support the Sleepy Hollow project. Based on the Tetra Tech Teams past experience with similar projects we believe that a mixture of GPS and traditional total station surveying will be required in order to complete the surveying portion of the project.

Tetra Tech's Project Manager for this task will be Dan Helt, PE, PLS. Mr. Helt is a land surveyor and civil engineer who specializes in overall obtaining survey data for design purposes, as he often performs both roles on projects, land surveyor and civil engineer.

The Conservation Fund's Freshwater Institute

The Freshwater Institute specializes in the production technology and design of aquaculture systems and in solutions to the water quality constraints and impacts. The Freshwater Institute is an internationally recognized program of The Conservation Fund. For more than two decades, they have been one of the nation's premier research and development facilities dedicated to sustainable water use and reuse. Throughout this document we will refer to the organization by a shortened title, *the Freshwater Institute*.

Freshwater Institute staff, including Brian Vinci, have designed several full and partial water reuse systems for hatcheries on the East and West coasts and have conducted a bio-programming analysis for multiple pacific anadromous restoration programs for the Chelan County Public Utility District (PUD). They also conducted an observational study of fish reared in a partial reuse system versus fish in traditional raceway rearing units also for Chelan County Public Utility District (PUD).

They have pioneered the use of new hatchery technologies that better manage effluent waste loads by concentrating, isolating, and removing the majority of waste before its release into surface waters. The application of this technology ranges from standard hatchery settings to land-based, closed containment water recirculation systems that are biosecure and produce healthy and optimally performing fish.

Anchor QEA

Anchor QEA's team of more than 350 staff provide a full range of planning, science, and engineering services to the public and private sectors. Specific to the needs of this project, Anchor QEA provides comprehensive environmental review and natural resources assessment services for development and restoration projects throughout the U.S. They have substantial expertise preparing documentation to support National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) reviews; completing wetland, stream, and other sensitive habitat assessments; obtaining federal, state, and local regulatory permits; and leading Endangered Species Act consultations with the National Marine Fisheries Service, U.S. Fish and Wildlife Service, and California Department of Fish and Wildlife. Anchor QEA's San Francisco-based planning staff have strong relationships with Bay Area regulatory permitting agencies and their biologists are experienced in providing expert analyses, regulatory assistance, and science-based guidance to implement and improve the performance and compliance of hatchery projects.

Anchor QEA has a proven record of success navigating the entitlement process for projects involving sensitive aquatic habitats. They have extensive knowledge of federal, state, and local regulations and are able to identify and complete biological services required to obtain project approvals. Our team includes biologists and scientists with extensive stream, riparian, wetland, and salmonid experience. For the City of Martinez Marina Maintenance Dredging and Renovation project, Anchor QEA planners Ms. Katie Chamberlin and Mr. Nicolas Duffort performed biological resource evaluations of the project area, obtained an incidental take permit from CDFW for potential project impacts on longfin and delta smelt, completed an informal ESA consultation with NMFS for potential project impacts on salmonids and green sturgeon, and completed a formal ESA consultation with USFWS for potential project impacts on salt marsh harvest mouse habitat, which included the development of a mitigation plan focused on salt marsh restoration. Each of these elements was critical to obtaining the full suite of required regulatory approvals.

PanGeo, Inc.

PanGEO is a small business with a staff of 8 engineers and 3 geologists. The firm's three principals have a combined experience of over 70 years in geotechnical practice on hundreds of local and national projects with construction costs in excess of hundreds of millions of dollars. Their diverse experience with major capital projects including dams, hatcheries, waterfront facilities, transportation systems, and buildings. PanGEO has developed a reputation of providing innovative and cost-effective solutions for difficult site conditions earning awards for their work from their peers in the American Society of Civil Engineers and American Council of Engineering Companies. A trusted partner to Tetra Tech for many years, PanGEO will be available to address any geotechnical challenges. One of their principals will be on site to monitor subsurface investigation work that may be conducted to support design assumptions.

Summary of Relevant Experience

We offer a team with a true dedication to the goals of this project – to protect and enhance the Carmel River Steelhead runs and improve the operation of the rearing facility. We also offer unique expertise in the most critical aspects of this project:

- Understanding the geomorphological conditions in the Carmel River that will establish design and operating criteria.
- Knowing how to design a recirculation system that meets biological requirements and is operable, flexible and reliable.
- Meeting the requirements of federal, state and local regulatory and permitting agencies with different perspectives and timeframes.

Fish Culture & Design Projects

Walla Walla Hatchery, near Milton-Freewater, Oregon

Similarities to Sleepy Hollow Project

- River Intake
- Restoration of Depressed Stocks
- Preservation of Existing Hatchery
- Recirculating Aquaculture Alternatives
- Pump Station
- Underground Piping
- Site Work and Utilities
- Structural Concrete

Client:
Bonneville Power Administration
Gerald McClintock (503) 230-5375
gmcclintock@bpa.gov

Owner:
Confederated Tribe of the Umatilla Indian Reservation (CTUIR)
Brian Zimmerman (541) 276-3447
BrianZimmerman@ctuir.org

Duration or Date Completed
01/2014 – 04/2017

Construction Value:
$11,477,147

Team Member Roles on Project

- John McGlenn, Project Manager
- Don Beard, Design Manager
- Darrel Nice, Assistant Design Manager/Mechanical Engineer

- Brian Vinci, Aquaculture Engineer
- Joe Miller, Bioprogramming, Liaison to Scientific Review Panel
- Richard Hensel, Electrical Engineer
- Erik Nordholm, Civil Engineer
- Ryan Maas, Structural Design
- Hamid Naderi, PIC

Description of Services Performed

Bonneville Power Administration selected Tetra Tech / Goodfellow Bros. Inc. to provide design/build services for scientific support, analysis of alternatives to the 30% predesign, final design, and construction services for the Spring Chinook Hatchery Facilities on the South Fork of the Walla Walla River (SFWW) near Milton-Freewater, Oregon.

History & Data Compilation:

Prior to Tetra Tech beginning this project work had been done by others to prepare a master plan, a 30% design, a hatchery genetic management plan, and submittal to the Northwest Power and Conservation Council (NPCC). These documents were compiled by the project engineer and used to refine the Owner's desired direction of the project. Ultimately a basis of design document was prepared that outlined the direction for proceeding with design phases.

The project began with an assessment of the existing facility—a Spring Chinook adult holding and spawning facility operated by CTUIR since 1996. Existing infrastructure at the site includes a river water intake, pump station, water supply piping, adult holding raceways, spawning building, ozone water treatment building, staff housing, effluent pond, and effluent discharge line.

Other initial activities included review and establishing the rearing program goals for the project. This process helped to direct what physical investigations, studies, alternatives analysis and permitting activities were needed. As part of restoration of spring chinook in the South Fork Walla Walla basin the Umatilla Basin was also looked at to be included in the facility. An alternative was to upgrade the Umatilla Hatchery. Our team conducted an assessment of the Umatilla Hatchery including review of the hatchery genetic management plan, current operations, and record drawings. Then an extensive analysis of reuse options with design alternatives and estimated construction costs was prepared. Many of these tasks took place simultaneously including an integrated hydraulic and sediment transport assessment, cold weather and debris testing of the intake system, pump inspection and performance testing, evaluation of existing intake screen functionality related to sweeping velocity and fish bypass compliance.

Collecting and Analyzing Survey Data:

Preliminary survey for this project utilized County survey records and record documents from the initial construction. As part of the river hydraulic and sediment transport study, river and site cross section surveys were completed. The river survey was tied to previously established control monuments and significant site structure elements.

Civil Engineering and Design/Cost Estimating:

The project includes review of preliminary design elements, design, procurement of materials and equipment, construction, and supporting services for expanding the hatchery. New facilities developed include a building for egg incubation and early fish rearing and a sufficient number of rearing containers for full-term rearing of 500,000 spring Chinook through the smolt stage. Connection of the

new facilities to existing water supply and effluent discharge systems are included in the design. In addition, improvements to adult fish trapping facility and fish transfer equipment at the Nursery Bridge Dam is included in the project.

Further objectives are to: (1) provide scientific and engineering input during Steps 2 and 3 of the NPCC's 3-Step planning Review process; (2) provide support associated with managing the technical work group process that involves fishery co-managers and regulators; and (3) provide technical assistance in: (a) evaluating alternatives for incubation, filtration, and rearing methods and infrastructure; and (b) identifying environmental and construction permitting requirements.

The South Fork Walla Walla River has scoured the area in front of the hatchery in the last 18 years reducing the depth of water at the intake. Tetra Tech performed an integrated hydraulic and sediment transport assessment of the reach upstream and adjacent to the hatchery. As part of this study an in stream riffle was proposed to restore river elevation and improve habitat. A preliminary design of the riffle has been prepared and it is being integrated with intake improvements to solve several intake concerns.

Tetra Tech performed a cold weather test on the current intake and screen, which was done during a week long period of outside temperatures below zero at night and highs in the teens. A low water temperature of 32.1F was observed. Currently, the intake and fish screen does not function as originally designed due to reduced water depths. Once water depths are restored the system still does not meet current standards for sweeping velocity and fish bypass. Two screening and bypass options are being reviewed including using fabricated cone style screens with hydraulically operated exterior cleaning brushes.

Aquaculture and Mechanical Engineering Design

The project included analysis of recirculating aquaculture systems for implementation at two facilities the existing Umatilla Hatchery and the new Walla Walla Hatchery. Through this evaluation process a decision needed to be made whether to move the rearing of 850,000 spring chinook from the existing Umatilla Hatchery to the proposed Walla Walla Hatchery and combine them with the Walla Walla program of 500,000 fish.

At the Umatilla Hatchery there are existing raceways that have already implemented a serial reuse system. The facility raises steelhead, fall chinook, and spring chinook. The concern at the facility was to optimize the fish rearing environment, and reduce water requirement due to the increasing reduction in well water capacity. A site visit was conducted by Brian Vinci, Darrel Nice, and Joe Miller to evaluate the biological program, civil and mechanical infrastructure, current reuse system performance, and options for adding recirculating aquaculture. The effort resulted in conceptual layout of a six circular dual drain tank, three module reuse system installed in place of two future rearing ponds. The systems were sized for rearing 810,000 fish using 1,710 gpm of makeup water and a total recirculation flow rate of 5,700 gpm. The estimated cost of this system was eight million dollars.

At the SFWW facility where the new Walla Walla Hatchery is proposed there were a different set of limitations. During master planning this hatchery was proposed to rear 500,000 spring chinook. Due to growing concerns about water supply availability at the Umatilla Hatchery the project required

analysis for rearing all 1.35 million spring chinook at the SFWW facility. Site limitations and water requirements make the increased production possible only by utilizing recirculation aquaculture systems. Brian Vinci, Darrel Nice, Joe Miller, Don Beard, and others on the Tetra Tech team evaluated the biological program, civil and mechanical infrastructure, water supply requirements, effluent waste treatment requirements and options for implementing recirculating aquaculture. Site investigations were conducted and a detailed study of existing infrastructure was performed by both document review and onsite inspection. Operating personnel were interviewed to verify actual functionality and performance of equipment.

Once the program goals and site specific limitations were established, schematic designs of multiple recirculation aquaculture options were prepared. In order to accurately prepare cost estimates the designs were carried out to a high level of detail. The basic elements included dual drain circular rearing tanks, reuse treatment, recirculating pumping equipment, and effluent treatment with radial flow settling units. These systems were configured in multiple tank arrangements and multiple modules. Up to nine three tank modules were looked at as an option.

In addition to recirculating aquaculture the facility required review of the existing pumping and piping facilities. An existing hydraulic profile was established and the modified hydraulic system was integrated. The existing pumping systems include a river pump station, fire pumping system, and utility water booster system. Due to a differing total dynamic pumping head from the original design the main river water pumps do not fit the proposed design conditions. The pumps will be reviewed for compatibility with the system hydraulic curve using modified impellers and replacement of the motor. If necessary new pumps will be specified.

Analyzing Impacts/Environmental Review Documents

This project involves building a hatchery to produce fish needed to restore an extirpated Spring Chinook population in the Walla Walla subbasin. The project is part of the NPCC's Fish & Wildlife program, and is a component of the Fish Accord between BPA and the Confederated Tribes of the Umatilla Indian Reservation (CTUIR).

Tetra Tech is providing technical input to BPA staff as they prepare a Biological Assessment and a NEPA EIS.

Kootenai Twin Rivers Sturgeon and Burbot Hatchery, Bonners Ferry, ID

Similarities to Sleepy Hollow Project

- Two River Intakes
- Settle Basin and Drum Filtering
- Restoration of Depressed Stocks
- Preservation of Existing Hatchery
- Underground Piping and Site Work and Utilities
- Structural Concrete

Client
Kootenai Tribe of Idaho
Susan Ireland (208) 267-3620

Duration or Date Completed
Planning/Design Phase:
2006 – 5/2013
Construction Phase
6/2013 – 9/2014

Construction Value
$14,681,000 (Partial)

Team Member Roles on Project

- Darrel Nice, Design and Construction Oversight
- John McGlenn, Project Manager/Principal
- Richard Hensel, Electrical Engineer
- Steve Kraushaar, Civil Engineer

Description of Services Performed

Libby Dam has disrupted natural reproduction of sturgeon and burbot in Northern Idaho. The goals of this hatchery, at the confluence of the Moyie and Kootenai Rivers, are to incubate and rear locally collected progeny of both species for release in the Kootenai River system in order to establish a naturally reproducing population of sturgeon and burbot.

History & Data Compilation:

As the lead engineering consultant on the project, Tetra Tech worked with the Owner and a team of fisheries biologists creating a hatchery plan that included genetics, broodstock collection plans, incubation and rearing procedure, release strategies regarding locations, timing and target fish sizes. The facility is set up for maximum flexibility in water supplies and rearing strategies because sturgeon rearing for conservation is still in its early development, and burbot rearing has only been accomplished at a University research scale.

Collecting and Analyzing Survey Data:

Site topographic survey was performed by an outside survey firm. Tetra Tech compared the survey data to record drawings and created a base map for the project that included best information available on locations of existing utilities. Bathymetric survey was performed by Tetra Tech staff and added to the base map drawings.

Civil Engineering and Design/Cost Estimating:

Tetra Tech performed fisheries, civil, structural, architectural, landscape, mechanical, electrical and instrumentation design services from conceptual master planning through preliminary and final design. Goodfellow Bros. construction was asked to join the team to manage the complex in-river and site work based on their past performances on the Kootenai River Restoration projects. Bonners Ferry Builders, as a local building contractor, was retained to construct the hatchery building. To ensure the project could be accomplished within budget, both contractors, Tetra Tech and the Owner meeting in 3 internal VE sessions shaved $5 million from the earlier estimate so that the Kootenai Tribe of Idaho could proceed with firm fixed price construction contracts.

Tetra Tech is the construction management consultant including commissioning, start-up, and testing of the systems. The team's work includes

preparation of operation and maintenance manuals.

Aquaculture and Mechanical Engineering Design

The project includes river intakes, a groundwater well field, influent and effluent settling basins, a new 36,000-square-foot hatchery building, renovating the existing sturgeon hatchery, two residences, a 6,400 square foot vehicle storage and maintenance building. The mechanical systems inside the hatchery will allow for heated or chilled water to be distributed throughout the facility as needs define. Sturgeon and burbot will be incubated and reared in round tanks located inside the hatchery building.

The Kootenai River intake will be the primary hatchery water supply.

Work included site evaluation, river surveys, hydraulic modelling, development of conceptual designs, and preliminary cost estimates for the new intake structures, intake screens, intake pipe, and pump clear well at the Kootenai River and Moyie River intake sites. Intake screens proposed for the site had to meet all state and federal juvenile fish screen criteria, had to minimize maintenance requirements for the screen, and needed to operate at anticipated low flow water surface elevations.

Screens selected for the project needed to deal with a wide range of river elevations and bed load conditions. An ideal screen for this application is the self-cleaning cone screen utilizing wedge wire screen material with 1.75mm opening and a hydraulically driven brush system. Hydraulic brushes utilize a hydraulic pump, hoses, and simple direction sensor. The pump and control panel can be located almost any distance from the screen. At the Kootenai intake the there are two cone screens located in a deep pool with trash rack protection.

After the cone screen the water flows by gravity to the pump wet well where submersible pumps are installed and utilize guide rails for mounting and maintenance removal. Water is pumped from the wet well to a concrete settling basin where fine sediment settles out before water passes through a drum filter system and is then pumped into the hatchery for further treatment by UV disinfection, gas stabilization and cooling/heating.

The Moyie River intake will be utilized during runoff periods when there is a higher loading of fine sediment in the Kootenai River or when Kootenai Rivers are not at an ideal temperature. Much of the year Moyie River water is cooler than Kootenai.

The Moyie intake uses similar components to the Kootenai, but the arrangement is different. At the Moyie intake the cone screen is located downstream from the intake pool. A pipe connects the intake structure to the screen vault. Fish passage is provided for within the screen structure allowing leave through a bypass pipe. The screen vault is located adjacent to the pump station.

Chief Joseph Hatchery and Okanagan River Acclimation Ponds
Columbia River near Bridgeport, WA

Similarities to Sleepy Hollow Project

- River Intakes
- Restoration of Depressed Stocks
- USACE, NMFS consultation and permits
- NEPA EIS
- Water Reuse
- Site Work and Utilities
- Structural Concrete

Client

Confederated Tribes of Colville Reservation,
Patrick Phillips, Hatchery Manager
(509) 631-1870,
Patrick.Phillips@colvilletribes.com

Durations

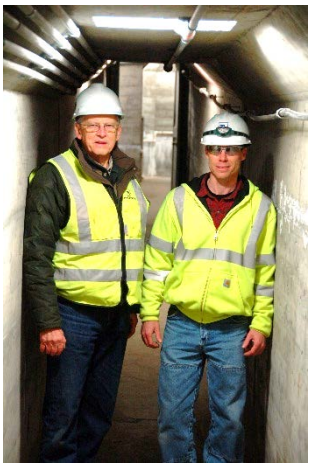
Planning /NPCC Review Phase: 2004–2009
Construction Phase: 6/2010 – 6/ 2013

Construction Value

$50.8 million

Team Member Roles on Project

- John McGlenn, Project Director,
- Darrel Nice, Design and Construction Engineer
- Don Beard, Water Supply and Quality
- Richard Hensel, Electrical and Controls
- Steve Kraushaar, Intakes and Pump Stations



John McGlenn and Darrel Nice on the job at CJH.

Description of Services Performed

History & Data Compilation:

In 2008 federal agencies and the Columbia basin tribes reached a historic agreement on a plan for fish culture and habitat restoration to compensate for the federal dams that blocked fish passage up the Columbia River to native spawning grounds. Tetra Tech's involvement in the project began in 2004 supporting development of a Master Plan and three year approval process. While this was an entirely new facility, preparation of the Master Plan required extensive literature review to confirm the biocriteria and consistency with regional salmonid recovery plans. The project included repurposing an irrigation port in the face

of the USACE's Chief Joseph Dam to provide one water supply. This necessitated research into archival drawings, thorough inspection and assessment of the innards of the dam structure and underwater inspections.

Collecting and Analyzing Survey Data:

The Tetra Tech team gathered data compiled by the USACE on bathymetry and river currents in order to locate and design the Ice Harbor style fish ladder. Additionally a 60 cfs river intake was required on the face of Chief Joseph Dam. The basis of the intake design was established on USACE as-built drawings for the dam and underwater conditions as confirmed by the contractor's diving and underwater construction team.

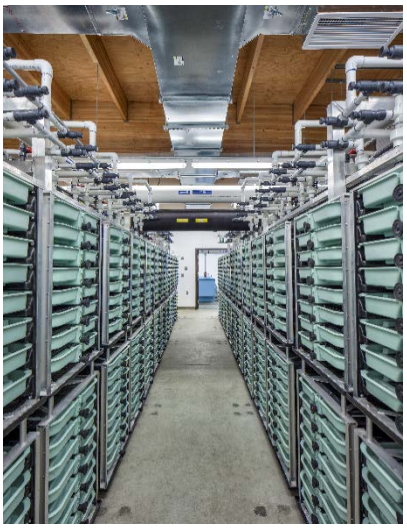
Civil Engineering and Design/Cost Estimating:

The project included the main hatchery complex with fish production, laboratory, facility maintenance, a visitor center and residential areas for hatchery managers. An important aspect of the project is to restore runs of naturally spawning Chinook to the Okanogan River. This involves transferring some fry from the hatchery to sites along the river. Tetra Tech designed two new acclimation ponds and improvements at three existing pond sites.

The Tetra Tech team reviewed each acclimation site and studied the site's biological, river hydraulics, design and permitting issues. Work at the two new sites included design of new intakes on the Okanogan River and involved development of conceptual designs, hydraulic modeling, and project designs for the proposed intake structure, intake screens, and intake pipes for the Omak and Riverside sites. The intake cone screens meet state and federal juvenile fish screen criteria and provide design flows at anticipated river discharges that range from annual low flows during periods of ice cover to high spring rain on snow events. The water is diverted from river section that is typically less than 2 feet deep and is subject to heavy debris and ice conditions.

The screens allow the intake to draw water from depths between 1 and 12 feet deep. A well water sprinkler system is used in conjunction with the effective brush cleaning system to prevent the intake from icing conditions should they occur. The critical intake operates year round in all river conditions.

Aquaculture and Mechanical Engineering Design



The hatchery is programmed to produce 2.0 million summer/fall Chinook and 0.9 million spring Chinook. The design includes forty 10' x 100' raceways, three rearing ponds each having up to 50,000 cubic feet volume, spawning facilities, a degassing headbox for up to 60 cubic feet per second of flow, drum screen filtration and UV disinfection of the reservoir water supply, process water distribution to incubation and rearing facilities, cleaning waste treatment facility, low head oxygen supplementation, adult return fish ladder and broodstock holding and spawning facility.

Twenty raceways and the three ponds can be **operated by reusing water leaving the first 20**

raceways. This serial reuse system implements low head oxygenation devices and a central oxygen generation system to supplement DO to an acceptable level.

Startup and Training. Tetra Tech acted as the Owner's Representative during the commissioning, start-up and training on the hatchery systems. The three water systems, along with the systems at the hatchery site are all monitored and controlled by a central computer. Tetra Tech worked closely with the Contractors for equipment ordering, pre-installation testing, testing at installation and overall system testing. Tetra Tech also coordinated the training of the operators by the equipment vendors and installing contractors; prepared an Operations and Maintenance manual and provided support to the operators during the initial "shake out" period and assisted in identifying and tracking warranty issues.

Analyzing Impacts/Environmental Review Documents

Tetra Tech supported the BPA's preparation of a NEPA EIS by providing all the technical documents.

Cedar River Sockeye Hatchery, Landsburg, King County, WA

Similarities to Sleepy Hollow Project

- Bio-programming
- Master Planning
- 34 Million Fry
- State Environmental Policy Act EIS

Client

Seattle Public Utilities, Ms. Pat Lee, Senior Civil Engineer (206) 615-1315
Paul Faulds, Fish Program Manager, (206) 423-2280

Durations

Planning/Design Phase: 2001-2008
Construction Phase 8/2009 – 8/2011

Construction Value

$7.3 million

Team Member Roles on Project

John McGlenn, Project Manager
Don Beard, Design Engineer Water Quality/Rearing Facilities
Steve Kraushaar, Civil Engineer

Description of Services Performed

One of the first major sockeye hatcheries in Washington State, the Tetra Tech-designed

facility can produce up to 34 million fry annually, but it is also a laboratory for fish scientists to adaptively manage the culture of hatchery fish in a way that does not harm the co-existence of wild salmonid stocks in the Cedar River drainage area. The bio-program was developed based upon the principle that the fish produced in the hatchery are not to be detrimental to existing populations of fish, including the existing sockeye that have evolved from the Baker River stock that was introduced 80 years ago.

Collecting and Analyzing Survey Data:

A variety of data was utilized for preliminary studies including department of transportation aerial photos, Army Corps as built plans, and previous bathymetric surveys. Tetra Tech staff worked with a survey firm and used a project filing system to track surveys as they were performed and amended.

Civil Engineering and Design/Cost Estimating:

The project includes a 15,000-square-foot hatchery building with offices and laboratory as well as two separate residences and supporting infrastructure, a spring water system for the fish processes and a well for domestic use, pollution abatement ponds, a septic system, a vehicle storage canopy and a storage building for fish trap accessories. The hatchery was designed to use existing water rights to spring water from the left bank at Landsburg Dam. A site several miles downstream of the hatchery was selected to build an access road and a system of floating weirs and traps to collect adult sockeye. The system has proved effective for its sockeye collection success while allowing Chinook to be passed upriver with no impacts on the fish. Additionally the new floating system is much more resistant to damage from high river flows and can be removed from the river channel relatively quickly when required.

Aquaculture and Mechanical Engineering Design

The design a number of techniques to minimize the risk of hematopoietic necrosis (IHN), a viral disease and malnutrition after release which could devastate populations of fry. Water from an existing spring system on the south side of the Cedar River is collected and pumped by two small pump stations to the hatchery on the north side of the river. Water is supplied from a head box via numerous discrete supply lines so that each small group of eggs makes contact only with its own supply of water. Using this manner of isolation prevents spreading disease should one incubator become contaminated.

Reducing malnutrition and predation in Lake Washington requires that the hatchery fry enter the lake at the proper time, coincident with the plankton blooms that support wild and hatchery fry. Preventing premature

development of fry at the hatchery is accomplished by tempering the spring water with the cooler river water via a heat exchanger. This saved energy over mechanical cooling.

Otolith marking is used to determine which practices in the hatchery result in the most successful survival to spawning. The hatchery facility is designed to allow for fry outmigration and release at the site or to a truck loading area from which fry can be transported to different release sites downstream in the Cedar River. As return data is analyzed, more successful release sites can be utilized more intensively and less successful release sites can de-emphasized.

Analyzing Impacts/Environmental Review Documents

Tetra Tech's team provided technical support for the preparation of the State Environmental Policy Act EIS. This process was rigorous due to several years of lawsuits and appeals by a few fish hatchery opponents. Although the opposition added time and effort to completing the project, the final decision was that the Cedar River hatchery is located in the right place and is programmed in the proper way to be an asset without causing significant risk to the environment, including populations of listed steelhead and Chinook.

The adaptive management goals were refined by a scientific group on the Tetra Tech team. SPU staff and the Tetra Tech team worked with this group to define a structure for the AMP and set the overall policies that were then adopted by a small management group who meet regularly to continue the process of implementation and refinement of the AMP.

Sandy Hatchery and Intake, Sandy, OR

Similarities to Sleepy Hollow Project

- Intake and Screening Upgrades
- Adult Holding Improvements
- Design to NOAA criteria

Client

Oregon Department of Fish and Wildlife
Ray Hartlerode, Chief Engineer
(503) 947-6215

Durations

Planning Phase: 2/1997 – 6/2011
Planning took several years due to changes in project goals by the Owner.

Construction Phase: 6/2011–10/2011

Construction Value

$3.2 million

Team Member Roles on Project

- Steve Kraushaar, Project Manager
- Eric Nordholm, Design Engineer

Description of Services Performed

The Oregon Department of Fish and Wildlife (ODFW), in collaboration with regulatory agencies and other interested entities, has developed objectives and a scope of work for the Cedar Creek intake and fish passage improvements. The design objectives and goals are to make improvements to enhance the viability of fish species in Cedar Creek, in conformance with management objectives, including upgrade intake screens and related features to conform to current NOAA and ODFW criteria; provide for trapping, sorting, hauling, and delivery back to Cedar Creek of wild fish to access 12 miles of habitat upstream from the intake on Cedar Creek; provide for fish passage for all life stages and species present in conformance with ODFW's approved management plan; and provide improvements for performance and maintenance of existing facilities.

History & Data Compilation:

Tetra Tech performed programming and evaluation of fish passage, trapping, and intake improvements. This involved data collection, studies and development of recommendations for screening, maintenance, and fish passage improvements at the intake and trapping facilities, filtration and disinfection of hatchery water supply, and new acclimation pond facilities.

Civil Engineering and Design/Cost Estimating:

Tetra Tech designed the following improvements:

Intake and Screening. The intake was rebuilt with a lower head water pool, replacing an impassable dam with passage weirs and NOAA compliant screening to allow the use of gravity flow all year and replacing an impassable picket weir with an adjustable inflatable weir. These improvements provide ODFW with maximum operational flexibility at a lower cost than the other alternatives.

Trap and Sort. The holding area in the same location is now 2 feet deeper, with wider raceways and all new structural concrete, increased holding volume. It now includes a false weir for in-water upstream passage and mechanical crowding and lifting to the sorting area. The increased holding capacity is a critical factor in meeting the intent of NOAA Fisheries' fish holding and handling criteria. There was also concern that the existing concrete structures, in particular the 5-inch floor slab, would not have enough strength or integrity to support the proposed new walls and related structural loads from the crowder and fish lock. The design replaced the existing structure will new concrete as the cost-effective solution.

Nome Central Incubation and Rearing Facility, Nome, AK

Similarities to Sleepy Hollow Project

- Increase salmon reestablishment efforts in local streams

- Water intake
- Water quality for incubation

Client

Norton Sound Economic Development Council
Charlie Lean, (907) 443-2477

Durations

2013-Current

Construction Value

To be determined

Team Member Roles on Project

- Don Beard, Project Manager
- Bridget LaPenter, Conceptual Planning

Description of Services Provided

Salmon populations have been declining in the drainages around Norton Sound, Alaska since the early 1990s. In an effort to address this issue, NSEDC has contributed to a variety of fisheries projects in the region. Many of these projects have focused on the re-establishment and restoration of salmon runs. Thus far, NSEDC's re-establishment projects have been modest, involving remote egg takes from streams with declining returns, moist air incubation of the eggs in Nome, and re-planting of eyed eggs into their respective streams of origin. Through the design and construction of a central incubation facility, NSEDC aims to increase their re-establishment projects and, in addition, supplement the cost of these projects with commercial fisheries enhancement programs.

Tetra Tech has been contracted to assist the NSEDC with preliminary planning and development of designs for a central incubation and rearing facility near Nome. Preliminary plans call for several re-establishment programs of chum, chinook, and coho stocks, each in the range of 100,000 to 300,000 eggs. These would be complemented by a chum enhancement program of approximately 55 million eggs.

Our present level of involvement includes:

- Development of fish cultural objectives and design criteria for both re-establishment and enhancement projects, including an annual operating schedule.
- Development of a conceptual model of process and program space requirements.
- Site selection and feasibility study including water quality and quantity.
- Development of conceptual design including: floor plans, water supply, drainage systems, and infrastructure designs including hydropower.

Water Conservation and Recirculation Systems

Chiwawa Acclimation Site Partial Water Reuse System, Leavenworth, WA

Similarities to Sleepy Hollow Project

- Steelhead Conservation Recirculation/Reuse Water System
- ESA compliance
- Permit Negotiations

Client

Chelan Public Utility District
Samuel Dilly, PUD Engineer, 509-661-4566
Sam.dilly@chelanpud.org

Team Member Roles on Project

Brian Vinci, Process Design
Joe Miller, Client Project Manager

Duration

2009-2013

Construction Value

$500,000

Description of Services Provided

Staff from the Freshwater Institute (**Brian Vinci**) and Anchor (**Joe Miller**) worked together on this project that involved process engineering design, commissioning and operational support for a partial water reuse system for 25,000 steelhead smolt. The steelhead partial water reuse system was designed to allow the Public Utility District to utilize their existing surface water intake – this avoided the delay associated with permitting and construction of a new intake for a large flow-through water requirement. The partial water reuse system was constructed and commissioned in 2009. First year results of fish health and performance indicate that the steelhead raised in this system outperformed their cohorts in flow-through raceways.

As the Client Project Manager, Mr. Miller worked closely with the engineering and fish health experts from the Freshwater Institute from conceptual design to finished construction.

Aquaculture and Mechanical Engineering Design

The water reuse system at the Chiwawa Fish Hatchery utilizes surface water from the Wenatchee River to supply 20% of the total water required to over-winter and acclimate ESA-listed Wenatchee River steelhead; the remaining 80% of water required is provided through the water reuse system. The water reuse system has two 20-ft diameter by 4-ft deep fish culture tanks for rearing 25,000 steelhead and associated equipment to filter solids, remove carbon dioxide, oxygenate and UV disinfect the fish culture water to maintain strict high water quality standards. Makeup supply water from the Wenatchee River (120 gpm) is combined with reuse water (400 gpm) from the fish tanks prior to the reuse equipment in order to allow for pre-treatment of the river water along with the reuse water, ensuring good biosecurity. Uneaten feed and fish feces are quickly flushed from the two self-cleaning, dual-drain, circular fish culture tanks and combined with solids removed by the microscreen filter for treatment in a 10-ft diameter radial flow settling unit. Solids are captured, thickened and stored in the radial flow settling unit for removal and beneficial reuse at the end of each rearing cycle.

The high quality design and fish health evaluations led by Dr. Vinci played a key role in securing approvals from state, federal and tribal managers for project implementation. The approval process was under heavy scrutiny because there were no other examples where Endangered Species Act listed steelhead had been reared in a water reuse system.

Monitoring and Evaluation (2009-2013): Following construction of the Chiwawa Acclimation facility, Mr. Miller managed within-hatchery and post-release steelhead performance evaluations. These included monitoring and analyzing survival, migration rate, residualism, and adult returns for fish reared using water re-use. Mr. Miller also managed the development and successful installation of a volitional release exit for fish reared in the reuse vessels. This was an important adaptation that allowed the facility to comply with Endangered Species Act requirements.

Regulatory: Mr. Miller was responsible for ensuring that the Chiwawa steelhead acclimation site complied with Endangered Species Act Section 7 and Section 10 requirements. The new acclimation site was developed without additional consultations because Mr. Miller successfully argued that the project was within the scope of existing permits and consultations.

Facility Planning and Water Reuse System Design, Aquatic Research Lab, Richland, WA

Client

Pacific Northwest National Laboratory
Greg Turpen, AIA
(509) 371-7947
greg.turpen@pnnl.gov

Duration

February 2011 – December 2012

Construction Value

$3 - $4 million

Team Member Roles on Project

- Brian Vinci, Process Design Lead

Description of Services Provided

The Pacific Northwest National Laboratory (PNNL) Aquatic Research Laboratory (ARL) facility provides fish culture resources for PNNL researchers. Prior to a 2011 design and renovation, fish culture resources were primarily outdoors and after renovation all facilities are housed in a new 5,500 ft2 facility designed for the purpose. Aquatic resources include fish culture space that can be tailored to the necessary environment for research purposes as well as for raising 40,000 to 50,000 juvenile Chinook salmon. Spring and summer Chinook salmon are produced to meet this year-round need by manipulating the source water temperature for rearing. Manipulation of the source water temperature had required significant heating and chilling energy in the past. This design and renovation focused on reducing the energy required for heating and chilling of water. The process design utilizes partial water reuse technologies to achieve a 75% reduction in water use and energy for heating and chilling. During operation only a small portion of makeup water is required from the Columbia River (20% of total flow required). This makeup flow is treated with

sand filters and UV disinfection to maintain excellent biosecurity.

Chelan Falls Rearing and Acclimation Facility Design, Chelan Falls, WA

Client

Chelan County PUD
Steve Weist, (509) 661-4268
Steve.Weist@chelanpud.org

Duration

2010-2011

Construction Value

$3.75 Million

Team Member Roles on Project

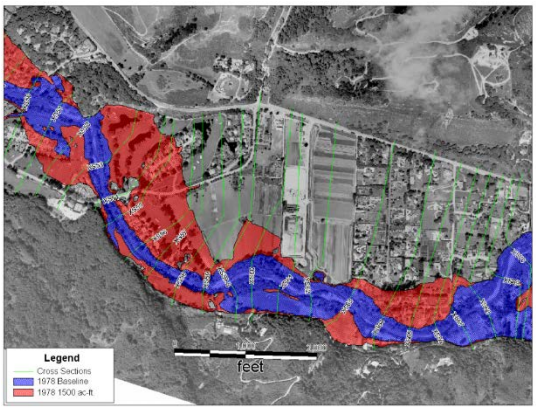
- Brian Vinci, Project Manager

Description of Services Provided

Freshwater Institute conducted an alternative analysis for using circular dual-drain tanks instead of raceways for the Chelan Tailrace Summer Chinook Acclimation Facility, then completed the conversion of this facility from raceways to circular tanks. The facility now rears and acclimates 800,000 summer Chinook salmon using dual-drain circular tank technology. Brian Vinci completed the alternative analysis and the process design which included radial flow settling units for waste capture and volitional and forced release design features. Brian Vinci was involved in commissioning the facility in 2011 and provided operational support during the first year of operation.

Geomorphology

San Clemente Dam Seismic Retrofit Study, River and Reservoir Modeling



Similarities to Sleepy Hollow

- Statistical Analysis of Gage Records
- Flood Impacts
- Sediment-Transport Modeling
- Hydraulic Modeling
- Fluvial Geomorphology
- Environmental Restoration
- Environmental Impacts
- Reservoir Routing
- GIS CADD
- Field Data Collection
- Design

Client:

California Dept. of Water Resources
Mr. Kevin Faukenberry (916) 653-5791

American Water Works Company
Mr. John Kilpatrick (856) 346-8200

Duration or Date Completed
2002 - 2015

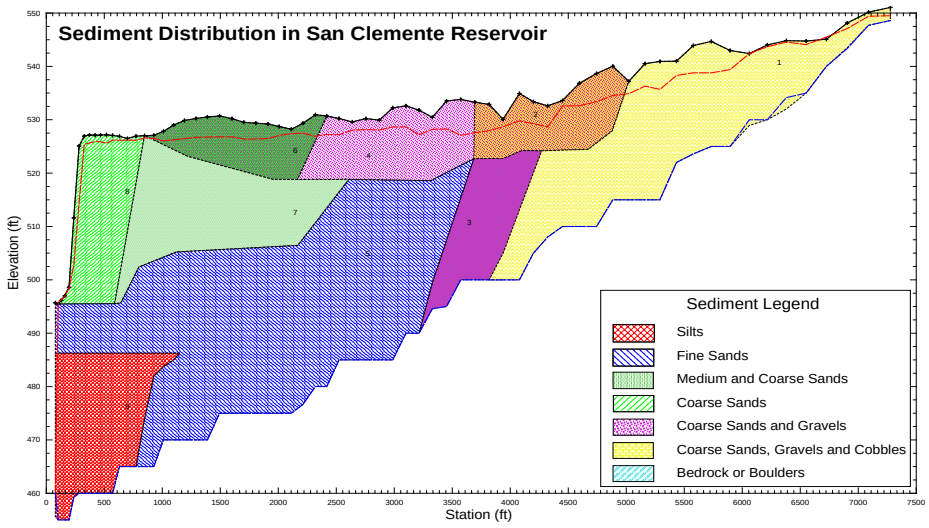
Project Value:
$896,000

Team Member Roles on Project

- Bob Mussetter, Project Manager and Principal Engineer
- Stu Trabant, Senior Engineer and Lead Sediment-transport Modeler

Description of Services Performed

Tetra Tech, Inc. (Tetra Tech) performed detailed modeling of potential dam removal/retrofit alternatives for San Clemente Dam, including flood hazard studies of the Carmel River in the approximately 18-mile reach between the dam and coast. The reservoir behind the dam is nearly filled with sediment, and release of this sediment may cause aggradation in the downstream valley, which in turn may increase the flooding potential. The purpose of the studies was to quantify the entrainment of sediment from the existing reservoir deposits under a variety of dam removal scenarios that ranged from buttressing the existing dam and providing a sluice gate to provide a suitable channel across the reservoir deposits for fish passage to complete removal of the dam. The complete dam removal scenarios included phased notching of the dam to control downstream sediment releases, excavation and removal of the deposits to the approximate pre-dam topography, and the alternative that is currently being implemented that involves isolating the bulk of the reservoir deposits in Carmel River arm of the reservoir, removing the deposits in the San Clement Creek arm and then rerouting the river into San Clemente Creek, significantly limiting the amount of sediment that could potentially be moved into the downstream river. HEC-6T modeling was performed to quantify sediment movement from the reservoir and through the downstream river, and the results were then used to assess potential geomorphic and flood capacity impact of the altered sediment load.



History and Data Collection

The results of the studies were used to assist the stakeholders and regulatory agencies in selecting a preferred alternative for retrofitting the dam to meet safety standards. Tetra Tech was responsible for all aspects of the analysis,

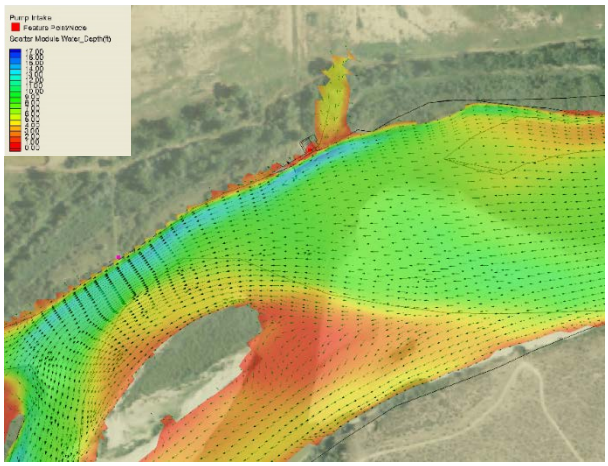
including coordination of topographic mapping of the approximately 18-mile study reach, field data collection of sediment samples in both the river and reservoir, hydrologic analysis of gage records, development of hydraulic and sediment-transport models of the reservoir and river, and evaluation of the hydraulic and geomorphic implications of the model results. As part of this work, Tetra Tech worked with Kleinfelder to perform a subsurface investigation to characterize the existing sediment deposits.

In developing the HEC-6T model for the project, Tetra Tech worked closely with the original author of HEC-6 and HEC-6T to modify the computer code to more realistically simulate erosion of the delta and the river's response to high sediment loads. Tetra Tech also developed algorithms for extracting important information from the model in an efficient manner to facilitate evaluation of the results. These modifications were successfully implemented and significantly improve the utility of the model for evaluating dam removal impacts.

Coordination with Regulatory Agencies

Tetra Tech also coordinated closely with technical representatives from a variety of regulatory agencies and stakeholders, including the California Department of Water Resources, National Marine Fisheries Service, California Department of Fish and Game, U.S. Fish & Wildlife Service, Monterey Peninsula Water Management District, Monterey County Flood Control, and American Water Works Service Company. Flooding impacts associated with the project were critical to the investigation, as there are currently about 1,400 residential structures that could potentially be affected by increased water-surface elevations. Flood boundary and flood depth maps were prepared for each scenario to assist in evaluating these impacts. The study reach also contains important Steelhead and Red-legged Frog habitat, and the model results were used to evaluate potential impacts to this habitat. Tetra Tech is currently assisting Granite Construction in the design-build project.

Hydraulic and Sediment-transport Evaluation, Uintah Water Conservancy Pumping Plant, Utah



Similarities to Sleepy Hollow Project

- Bathymetric and topographic surveying
- Two-dimensional Hydraulic (SRH-2D) Modeling
- Sediment-transport Analysis
- Hydraulic Analysis
- Channel Stability Evaluation
- Water Intake Design and Sediment Management Plan

Client:
Bowen Collins & Associates, Inc.
Bob Mayers (801) 495-2224)

Duration or Date Completed
2008 – 2010

Project Value:
$77,471

Team Member Roles on Project

- Bob Mussetter, Project Manager and Principal Engineer
- Mike Harvey, Principal Geomorphologist
- Chad Morris, Senior Engineer and Lead Hydraulic Modeler
- Dai Thomas, Senior Engineer and Lead 2-D Hydraulic and Sediment-transport Modeler

Description of Services Performed

Tetra Tech, as a subcontractor to Bowen, Collins and Associates, Inc., performed a study for a new proposed Pumping Station on the Green River just upstream from the Ouray National Wildlife Refuge (ONWR) near Vernal, Utah that is being designed for the Uintah Water Conservancy District. The study included an evaluation of channel stability, sediment transport and local scour conditions in the vicinity of the proposed pumping station, and provides recommendations regarding the location of the pumping station, and bank protection and other measures to limit the potential for sedimentation problems at the intake. The study also provided river hydraulic data to design the pump intake.

A field reconnaissance was conducted by Tetra Tech in August 2009 to collect samples to characterize the existing bed material in the study reach, and to conduct a bathymetric and topographic survey of the project reach using a survey-grade Global Positioning System (GPS). The survey data, together with historical mapping and aerial photography, were used to evaluate historical river planform changes in the study reach between 1953 and 2009 and to identify the most likely future conditions at the pumping station.

A relatively high-resolution 2-D hydraulic model was developed for the 4-mile long project reach using the surveyed bathymetry and the SRH-2D computer program. The model, which contained approximately 40,000 elements, was calibrated to measured water-surface elevations and high-water marks, and applied for a range of flows up to the bankfull flow (24,000 cfs). Hydraulic output from the 2-D model were used to develop stage-discharge curves at the pump to facilitate design of the pump intake, evaluate the flow

patterns and the sediment transport characteristics of the reach, and in particular, at the pump intake, and perform a scour analysis for the proposed sheet pile bank stabilization.

Results from the analysis indicate that sedimentation problems could occur at the currently proposed location in the near future due to continued high-flow deposition and subsequent re-incision into the deposits at low to intermediate flows that could cause the existing bank-attached sandbars to migrate farther downstream across the intake or cause avulsion of the primary flow path away from the intake. Results from the analysis strongly suggest that an alternative location 600 feet to 800 feet downstream from the initially proposed location would be preferable from a sedimentation perspective.

Sediment-transport Analysis of the Gila River at the Proposed AWSA Diversion Site

Similarities to Sleepy Hollow Project

- Geomorphic and Geologic Analysis
- Topographic Surveys, Field Data Collection
- Flood Frequency and Flow-duration Analysis (HEC-FFA)
- One-dimensional (HEC-RAS) Computer Modeling
- Sediment-transport (HEC-6T) Modeling
- Design of Water Intake with Sediment-reduction Elements

Client:

New Mexico Interstate Stream Commission
Craig Roepke (505) 827-6117

Duration or Date Completed

05/2014 – 12/2014

Project Value:

$92,000

Team Member Roles on Project

- Stu Trabant, Project Manager, Lead Engineer
- Bob Mussetter, Technical Oversight, QA/QC
- Mike Harvey, Principal Geomorphologist
- Tom Smrdel, Scientist, Modeler

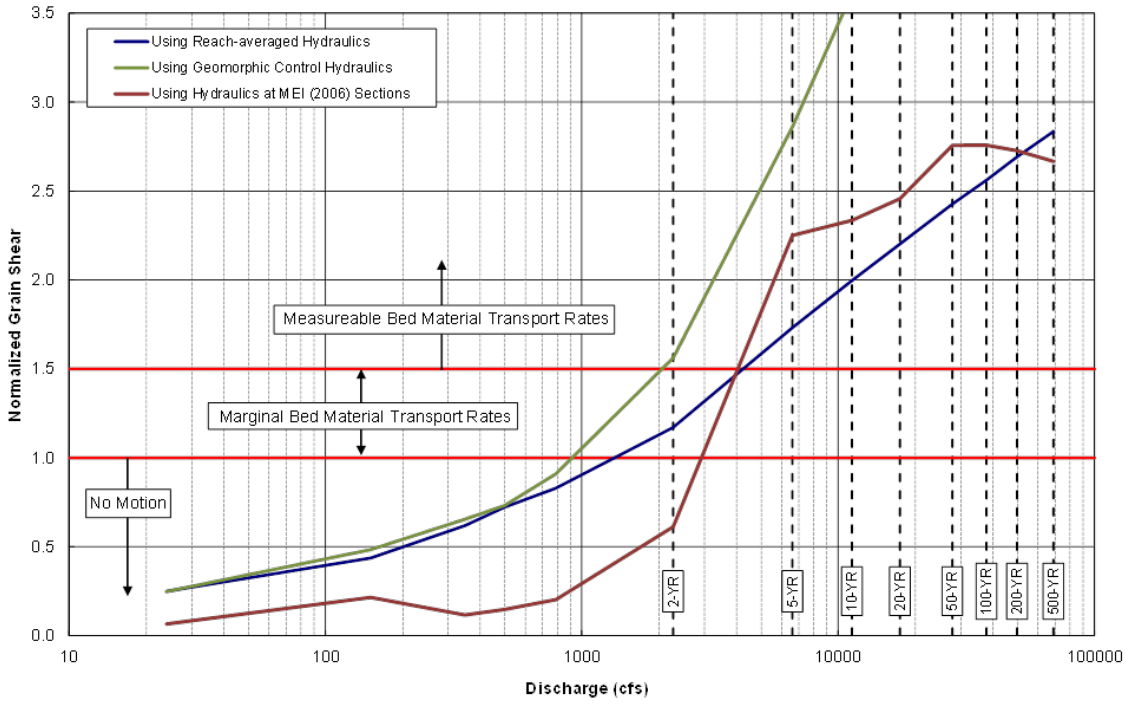
Description of Services Performed

As part of the Arizona Water Settlements Act (AWSA) process, stakeholders in Southwest New Mexico have proposed to construct a diversion structure on the Gila River northeast of Cliff, NM that would deliver diverted flows to a tunnel for purposes of conveyance to downstream storage facilities. Bohannan Huston, Inc. (BHI) prepared the preliminary engineering report for the project which included conceptual designs of the diversion structure and tunnel. In general, the current proposed design includes an inline partial weir and bypass channel for conveying the bypass flows. The weir is to be outfitted with a wire mesh screen, sometimes referred to as a Coanda-effect Screen to limit the amount of sediment delivered to the tunnel.

As part of BHI's continued evaluation of the project, Tetra Tech was retained to assist BHI

and NMISC in evaluating the hydraulic, geomorphic and sediment-transport conditions of the Turkey Creek project reach. The evaluation included updates to the hydrologic analysis that was conducted for previous studies and a site reconnaissance of the project reach to identify the most suitable location for the diversion structure and to conduct sediment sampling. The evaluation also included topographic and bathymetric surveys, development of hydraulic and sediment-transport models, and an assessment of suspended-sediment loads and incipient motion conditions. The hydraulic modeling was performed using HEC-RAS and the sediment-transport modeling was conducted using HEC-6T and included a 50-year simulation of existing (baseline) and with-project conditions. These analyses were then used to estimate the volume of sediment that would be delivered to the tunnel and the potential for sediment deposition within the tunnel.

The bedrock outcrops along the valley bottom, and to a lesser extent remnant debris flow material delivered by the tributaries, provide the primary geomorphic and hydraulic controls along the project reach. In the alluvial areas, the primary determinant of the channel morphology is the occurrence of infrequent, large magnitude floods (≥15,000 cfs) of long duration that cause lateral erosion and widening of the channel. Between large floods, channel narrowing occurs. The sediment loads convey a very broad range of sediment sizes, ranging from silt and clay particles up to boulder-sized material. The 50-year sediment-transport model simulation under existing conditions indicates that the configuration of the valley bottom controls the response of the system to sediment loading, with aggradation occurring in areas where the valley bottom is wide and upstream from valley constrictions, and degradation in areas where the valley bottom is narrow. Changes in mean bed elevation at the end of the simulation are generally less than 2 feet along the majority of the reach. The 50-year

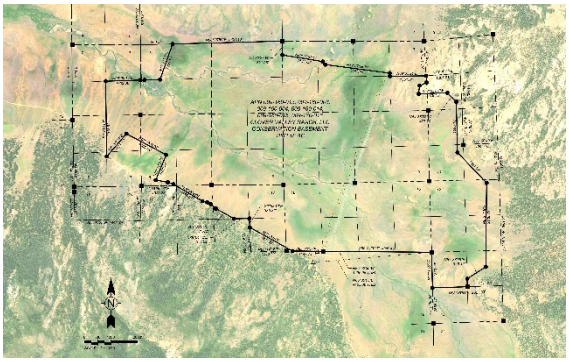


sediment-transport model simulation for project conditions includes the geometry of the diversion structure but does not account for flow diversions. This model indicates that the structure will have a relatively small effect on the overall sediment-transport characteristics of the project reach. It can be expected, however, that deposition will occur in the local backwater area upstream from the structure during higher flows.

Estimated sediment loading to the tunnel indicates that the volume of annual sediment delivery will depend on the hydrologic conditions in the watershed (i.e., the river discharge) and the diversion discharge schedule. Very little sediment would be delivered in a representative dry year and the volume of sediment delivery varies from about 18 ac-ft during average years to about 44 ac-ft during wet years. The potential for sediment deposition in the tunnel depends on the amount of sediment delivered to the tunnel, as well as headwater and tailwater conditions.

Surveying /Civil Design

FY12, FY13, and FY14 Boundary Surveys for NRCS Easements, Northern California



Similarities to Sleepy Hollow Project:

- Data collection of topographic survey
- Performed surveying tasks on sensitive habitat areas.
- Provided high accuracy data of existing features

Client:

United States Department of Agriculture
Natural Resources Conservation Services
430 G Street, Room 4164
Davis, CA 95616
Mr. Dean Kwasny, Easement Programs Specialist, (530) 792-5648

Duration or Date Completed

20012 – Ongoing

Project Value:

$3.2M

Team Member Roles on Project

- Mauricio Argente, R.L.A. Program Manager
- Dan Helt, P.E., P.L.S., Project Manager
- Jason Fussel, P.E., P.L.S, LEED AP, Project Engineer and Surveyor

Description of Services Performed

Tetra Tech was selected three years in a row by the Natural Resources Conservation Service (NRCS) to provide survey services in support of the Wetlands Reserve Program (WRP), a program that provides help to landowners for their wetland restoration efforts. Tetra Tech is providing boundary surveys, legal descriptions and exhibits, GIS data, boundary monumentation, easement signage, and for most sites topographic features, for over 50 sites in 22 Northern California counties. Project sites range in size from 11 to 2,871 acres and are mostly located in wetlands areas, riparian areas, agricultural crop or grazing land.

History & Data Compilation:

The project consists of two phases. The first phase involves preparing the documentation to create the easement. To do this, Tetra Tech and the NRCS met with each landowner to define the proposed boundary for the WRP easement. Where the boundary is coincident with the parent parcel boundary, a boundary survey was performed. Where not coincident, a topographic survey was performed to establish the location of the physical object that would define the WRP easement boundary. A plat map, and legal description and exhibit were prepared using the survey data. The NRCS will then pair the legal description and exhibit with their warranty deed for the landowner's signature, thereby creating the easement. This first phase of the project must be completed within 90-days of the initial site visit. Once the landowner has signed and recorded the warranty deed, the second phase of the project begins. This phase involves setting monuments at all WRP easement corners, placing signage at 500-foot intervals on the WRP boundary, and submitting records of survey to the county in which the WRP easement is located. The second phase must be completed 22 days after recordation of the warranty deed.

Collecting and Analyzing Survey Data:

In all cases, survey monumentation and the data gathering was acquired using Trimble R8 GNSS enable surveying set ups. Depending on the existing control, the surveys were either performed on constrained RTK networks, or post processed using OPUS for final adjustments.

Peck Park Canyon Stormwater Quality Enhancement Project, San Pedro, California

Client:

City of Los Angeles Bureau of Engineering
Department of Public Works Bureau of Engineering
1149 South Broadway, Suite 630
Los Angeles, CA 90015
Mr. John Saldin, Project Manager
Proposition O Implementation Program
213-485-1411

Duration or Date Completed

2008 – 2011

Construction Value:

$3.8M

Team Member Roles on Project

- Mauricio Argente, R.L.A. Project Manager
- Jason Fussel, P.E., P.L.S, LEED AP, Project Engineer

Description of Services Performed

The 31-acre Peck Park Canyon is located in an undeveloped segment of the greater 76-acre Peck Park, a Los Angeles city park. Surface water runoff from the Canyon flowed into the Los Angeles Harbor. The goal of the Peck Park Canyon Enhancement Project was to improve the quality of stormwater entering and leaving the Canyon. The project provided water

quality benefits by reducing the bacteria in the Canyon's stream and in the Los Angeles Harbor.

History & Data Compilation:

Tetra Tech performed a thorough site investigation, topographic, soils and geotechnical investigation, and infrastructure analysis. A hydrology model of the watershed was prepared. Best Management Practice selection was evaluated so that the selected BMPs could be optimized prior to implementation. Tetra Tech also performed an analysis of the information gathered with the development of aesthetic and circulation alternatives for the parking lot. Public outreach and permitting support, landscape architecture and interpretive design, cost analysis and value engineering were also provided.

Collecting and Analyzing Survey Data:

Given the large size of the project area, a combination of aerial photogrammetry and conventional surveying methods were utilized to create a digital terrain model (DTM). The topographic map that was created from the aerial photogrammetry was augmented with more detail surveying of specific project areas. Both, a total station and GPS units, were used in the detail topographic survey. The survey aimed to not only create a more accurate DTM, but also to capture the precise location of relevant surface features and other underground utilities that would affect the design.

Civil Engineering and Design/Cost Estimating:

The project incorporated the latest design strategies in water quality improvement, BMPs, Landscape Architecture, Low Impact Development (LID), Leadership in Energy and Environmental Design, engineering and public outreach. This was achieved through the implementation of bioswales and infiltration strips at the top of the Canyon, using stepped and armored channels, dissipaters and stilling basins to reduce runoff velocities and erosion throughout the remainder of the Park. Also included were reconstructed trails, passive recreational amenities and interpretive signs. Additional Low Impact Development techniques such as pervious pavement, connector pipe screens (CPS), and automatic retractable screens (ARS) were installed as BMP measures. LID involves the use of natural processes to minimize the amount of pollutants in the stormwater before it is discharged into the Los Angeles Harbor and San Pedro Bay. Previously, all stormwater flowed directly to two channels within Peck Park. These flows conveyed large amounts of trash, debris, pollutants and sediment directly to the channel. The LID/BMP measures greatly reduced the amount of foreign objects that were discharged to the harbor.

Tetra Tech also provided construction support services for the project, including assistance with all requests for information and change orders. Tetra Tech played a key role in reviewing all submittals, and worked closely with the Contractor on all rejected items in order to prevent delays. Recommendations were provided for stormwater pollution prevention, and for construction deficiencies.

Tetra Tech performed structural observations of pedestrian abutments and bridges, including caisson reinforcement, abutment reinforcement and formwork, and observed the bridge placement. Tetra Tech also observed mock-ups of key features, and provided a landscape mock-up and irrigation spray check. Additionally, Tetra Tech combined as-built data onto AutoCAD files. The team attended construction meetings as needed and requested by the City, as well as performed site visits and inspections at key milestone points during construction and performed a final site walk along with preparing a punchlist.

Analyzing Impacts/Environmental Review Documents

Tetra Tech assisted the City in preparing the Mitigated Negative Declaration (MND) as required by CEQA. In addition, Tetra Tech prepared, submitted and obtained a 401 (RWQCB) and 404 (ACOE) permits as the improvements within the channel impacted Waters of the US. Tetra Tech was very effective in obtaining these permits ahead of schedule, insuring that no permitting delays would impact the construction schedule which was constrained by expiring grant funding.

CEQA/NEPA

Carmel River Lagoon Water Augmentation

Similarities to Sleepy Hollow Project:

- Monterey County experience
- Habitat assessment
- Impact avoidance and minimization

Client

Carmel Area Wastewater District

Duration

Summer 2011

Construction Value

NA

Team Member Roles on Project

- Julia King, Lead Biologist

Description of Services Provided

The Carmel River Lagoon Water Augmentation project involved investigations of lands adjacent to the Carmel River and lagoon to determine the potential locations for the placement of a proposed water percolation test pond for the Carmel Area Wastewater District (CAWD). The study area was evaluated with consideration of avoiding impacts to wetlands and special-status species, such as red-legged frog.

Anchor QEA's Julia King led habitat assessment and mapping exercises for the early planning phases, including site selection for water percolation test ponds. Ms. King also conducted field surveys and mapped the existing habitats located to the south of the CAWD facility, linking signatures on aerial photographs to vegetation types observed on the ground.

CalAmerican Coastal Waters Project Marina, California

Carmel River Lagoon and Wetlands Natural Reserve, Photo by Harvey Barrison

Similarities to Sleepy Hollow Project:

- Monterey County experience
- Habitat surveys and assessment
- Impact avoidance and minimization

Client

California American Water Company

Duration

Summer 2012

Construction Value: NA

Team Members Roles on Project

- Julia King, Lead Biologist

Description of Services Provided

The CalAmerican Coastal Waters Project consists of a proposed desalinization plant and the associated delivery infrastructure to be situated between Marina and Carmel, California. Due to the increased water flow requirements in the Carmel River to meet regulatory agency requirements, water draws from the river have been reduced. Alternate water sources are needed to meet domestic needs in the Carmel Valley, which the desalinization plant is intended to fulfill. The scope of work for the biological resources included surveys in the CEMEX dunes lands due to the known high likelihood of special-status plants and animals surveys.

Anchor QEA's Julia King led special-status plant surveys of more than 500 acres of coastal dune habitat associated with the CEMEX lands to the north of Marina State Beach using GPS to map state and federally listed species. Ms. King also coordinated the production of special-status species maps to be used in the planning process to assist in the placement of project infrastructure. Constraints were identified within the project area, and avoidance of special-status species was accomplished.

Maintenance Dredging and Mitigation Planning, Martinez, California

Similarities to Sleepy Hollow Project

- Regulatory permitting - federal and state
- ESA consultations
- Impact avoidance and minimization; mitigation planning
- Agency coordination

Client

City of Martinez, CA

Duration

2009-2013

Construction Value

$1.5 Million

Team Member Roles on Project

- Katie Chamberlin, Project Manager, Environmental Planner
- Nicholas Duffort, Project Planner

Description of Services Provided

In early 2012, Anchor QEA planners and engineers began assisting the City of Martinez with planning for maintenance dredging of the Martinez Marina. The upland dredged material placement ponds are adjacent to the marina and were historically used to stockpile hydraulically dredged material. Throughout the past use of the ponds for dredged material placement, portions of the pond system became vegetated by pickleweed (Salicornia virginica). Anchor QEA biologists completed surveys of the ponds to evaluate potential habitat for salt marsh harvest mouse (Reithrodontomys raviventris), a federally endangered and fully state-protected species that is closely associated with pickleweed and salt marsh habitat. Anchor QEA prepared all regulatory permit applications and coordinated with the Dredged Material Management Office.

While the dredged material placement ponds are relatively isolated from known salt marsh harvest mouse habitat, the U.S. Fish and Wildlife Service (USFWS) considered the area to be potential salt marsh harvest mouse habitat, and formal Endangered Species Act (ESA) consultation for potential impacts on the species was required. Because the maintenance dredging project would result in temporary inundation of the pond system, USFWS required that the City mitigate for the project's temporary impacts. Anchor QEA led all mitigation negotiations with USFWS and the U.S. Army Corps of Engineers (USACE), and developed a mitigation concept for the project, consisting of salt marsh habitat enhancement at the adjacent Martinez Regional Shoreline Park.

In addition to the formal ESA consultation for salt marsh harvest mouse, the project also required an informal consultation with the National Marine Fisheries Service for salmonids for work occurring outside of the programmatic dredging work window. The project also required a California Endangered Species Act (CESA) consultation with the California Department of Fish and Wildlife for potential impacts on longfin smelt (Spirinchus thaleichthys) and delta smelt (Hypomesus transpacificus) associated with hydraulic dredging in the Carquinez Strait.

Port of Stockton, Stockton, California

Similarities to Sleepy Hollow Project

- Regulatory permitting
- CEQA compliance
- Federal ESA consultations
- Impact avoidance and minimization; mitigation planning; agency coordination

Client

Port of Stockton, CA

Duration

2012-Present

Construction Value

$3 Million (several projects)

Team Member Roles on Project

- Katie Chamberlin, Project Manager, Environmental Planner
- Nicholas Duffort, Environmental Planner. Biologist
- Julia King, Biologist

Description of Services Provided

For the past several years, Anchor QEA has assisted the Port of Stockton with permitting, biological evaluation, and regulatory strategy needs for both routine maintenance as well as development projects. Key efforts are described below.

Anchor QEA represents the Port of Stockton in its role as non-federal sponsor and California Environmental Quality Act (CEQA) lead agency for this project. The program involves phased deepening of the John F. Baldwin and Stockton Deep Water Ship channels. Contra Costa County and the Western States Petroleum Association are close project partners to the Port of Stockton, with the U.S. Army Corps of Engineers (USACE) San Francisco District acting as the National Environmental Policy Act (NEPA) lead. Anchor QEA facilitates local sponsor meetings and serves as the Port of Stockton's primary point of contact for interactions with USACE. Anchor QEA has worked closely with the local sponsors and USACE to integrate multi-purpose planning involving navigation and ecosystem restoration (at Big Break, Little Franks Tract, and Franks Tract) into Phase II of the program, which will involve deepening of the Stockton Deep Water Ship Channel. We also work with the local sponsor team to manage resource-specific evaluations; negotiate mitigation needs in support of both phases of the project; ensure that the Environmental Impact Statement/Environmental Impact Report(EIS/EIR; led by USACE) is fully compliant with CEQA; and prepare and review sections of the EIS/EIR and Biological Assessment.

Anchor QEA routinely provides regulatory and biological support for projects located on the Port of Stockton's property. Specifically, Anchor QEA has:

- Completed all state and federal permitting documents as well as an EIR addendum for the Port of Stockton's West Complex rail line extension project; currently leading a consultation with USFWS for potential project impacts to the federal threatened giant garter snake (Thamnophis gigas)
- Prepared the 404(b)(1) Alternatives Analysis and addressed regulatory agency comments for the Docks 16-20 maintenance dredging project
- Conducted a biological evaluation of the Rough and Ready dredged material placement site and addressed regulatory agency comments regarding the Port of Stockton's proposed use of the site
- Conducted a delineation of waters of the United States and State of California on Rough and Ready Island and developed a Jurisdictional Delineation Report summarizing the findings
- Prepared NEPA compliance documents for the San Joaquin International Gateway Project.

Sacramento River Deep Water Ship Channel EIS/EIR

Similarities to Sleepy Hollow Project

- NEPA/CEQA compliance
- Federal and state ESA consultations
- Impact avoidance and minimization; mitigation planning; agency coordination

Client

U.S. Army Corps of Engineers San Francisco District, San Francisco, California

Duration

2009-2012

Construction Value

NA

Team Member Roles on Project

- Katie Chamberlin, Project Manager/Environmental Planner
- Pradeep Mugunthan, Hydrodynamic Modeler
- Nicolas Duffort, Environmental Planner/Biologist

Description of Services Provided

Anchor QEA staff managed the preparation of a Supplemental EIS (SEIS)/Subsequent EIR (SEIR) for the Sacramento River Deep Water Ship Channel (SRDWSC) maintenance dredging project. The SRDWSC is a cost-shared federal project between the USACE San Francisco District and the Port of West Sacramento. The project involved evaluation of dredging extensive portions of the Sacramento River to improve navigation and commerce at the Port of West Sacramento and in the region. Anchor QEA staff were responsible for preparation of the SEIS/SEIR on behalf of the USACE and the Port of West Sacramento, including management of the public process and development of all related technical issues.

As part of this effort, our team assisted USACE in its federal ESA consultations with the USFWS for delta smelt and NMFS for salmonids and green sturgeon. Anchor QEA biologists and planners met with the resource agencies and USACE staff biweekly throughout the project to ensure that information needs were met and that the impact analyses in the Biological Assessment and SEIS/SEIR were consistent with resource agency expectations.

San Francisco Bay LTMS Program Facilitation

Similarities to Sleepy Hollow Project

- Agency coordination
- Regulatory permitting
- Federal and state ESA consultations
- impact avoidance and minimization

Client

U.S. Army Corps of Engineers San Francisco District, San Francisco, California

Duration

2009-2014

Construction Value

NA

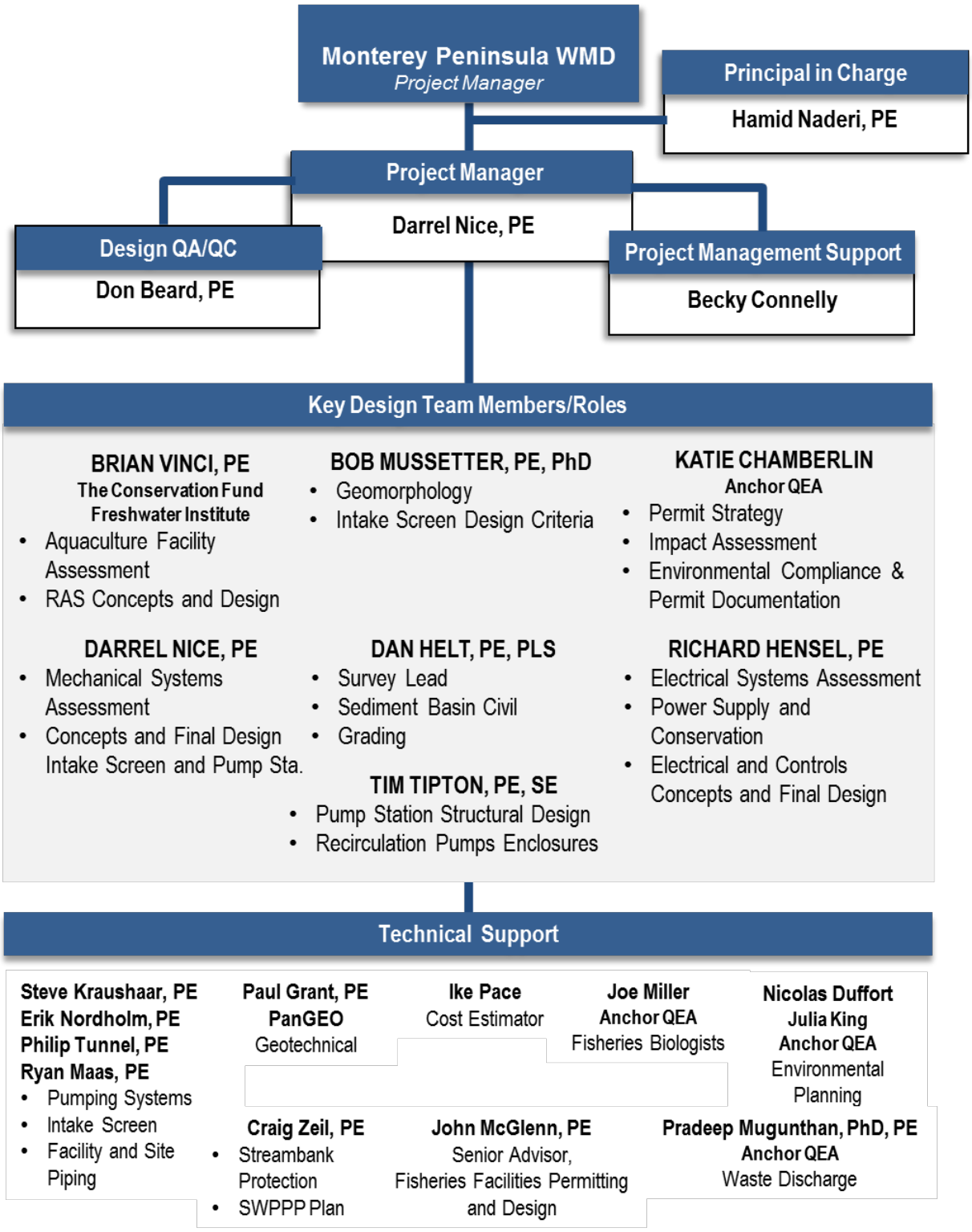
Team Member Roles on Project

- Katie Chamberlin, Project Manager/Environmental Planner
- Nicolas Duffort, Environmental Planner/Biologist

Description of Services Provided

Under contract to USACE, Anchor QEA facilitated the San Francisco Bay Long-term Management Strategy (LTMS) program for dredging and dredged material management in the region. As the conduit between the LTMS agencies and stakeholders, Anchor QEA led program manager and stakeholder-attended subcommittees meetings, maintains the LTMS website, prepares white papers, and organizes symposia on various technical issues relevant to the program. In 2010, Anchor QEA staff chaired the Dredging 201 workshop and LTMS Science Workshop. In 2012 and 2013, Anchor QEA managed the LTMS 12-year review process, which involved facilitating a series of five stakeholder meetings, preparing documentation for public review, and addressing stakeholder comments on 12-year review findings. Anchor QEA provided assistance to the LTMS agencies as they completed programmatic consultations for endangered species and essential fish habitat for maintenance dredging projects in the Bay Area.

Project Team Organization



Key Staff Qualifications

The team we are proposing has a track record of working together on similar fisheries projects to produce excellent results for our clients. The organization chart identifies the key personnel and the technical staff who will assist in developing design concepts and preparing final bid documents. This team draws on staff in Tetra Tech's offices in the NW and California to provide a broad range of experience and local knowledge of the Carmel River management issues relevant to the success of the Sleepy Hollow facility from permitting through facility startup and operations. Our team is also qualified in assisting with construction phase services and facility startup. Their qualifications are briefly described below and resumes for all staff involved are provided in the Appendix.

Darrel Nice, PE, Project Manager

Darrel has 21 years of experience in the planning, design and construction of a wide variety of fish culture and civil engineering projects including hatcheries, acclimation ponds, pump station and hydraulic structure design, wastewater treatment and collection systems. His recent experience includes:

- Managing the alternatives analysis and design of the expansion of the Walla Walla Hatchery near Milton-Freewater, OR for the Confederated Tribes of the Umatilla Indian Reservation. This project will provide incubation and rearing facilities for up to 500,000 spring chinook.
- Civil design and on site engineer for Chief Joseph Hatchery, Bridgeport, WA. This $80M chinook production facility and related acclimation ponds involved intake structures, bypass structures and fish culture facilities aimed in part at restoring fish runs on the Okanagan River.
- Construction administration on the new Penticton Hatchery for the Okanagan Nation Alliance, a project to support long-term reintroduction of sockeye into the upper Okanagan River system and Lake Skaha, British Columbia. The hatchery has sockeye production goals to provide an annual egg take of up to 8 million.
- Construction administration for the Twin Rivers Hatchery for the Kootenai Tribe of Idaho. This facility will culture white sturgeon and burbot to restore populations below Libby Dam. The new facilities include improved river intakes and filtration systems to address high turbidity in the Kootenai River.

Don Beard, PE, Senior Environmental Engineer, Quality Assurance

Don Beard has over 35 years of experience on major hatcheries throughout Southeast and South Central Alaska, in Washington and Oregon and internationally. Don's expertise includes site and biological production-related master planning, water supply and effluent treatment, facility hydraulics, design documents for buildings and facilities, construction oversight and startup. Don has been a key member of the design team for the Chief Joseph Hatchery, the Cedar River Sockeye Hatchery and numerous hatcheries for the State of Alaska and private and tribal enterprises, including several private non-profit corporations that are presently performing upgrades on aging state-owned facilities throughout Alaska.

John McGlenn, PE, Vice President, Senior Fisheries Advisor

John McGlenn is a registered civil and structural engineer with four decades of experience and a special interest in fish culture facilities design. He was principal-in-charge for planning, design and construction phases of the new Chief Joseph chinook hatchery on the Columbia River; Okanagan Sockeye Reintroduction Project; the Cassimer Bar steelhead hatchery expansion for the Colville Tribes and the Kootenai white sturgeon/burbot hatchery. John was also the project manager for the City of Seattle's Cedar River Hatchery and broodstock collection project oversaw design of the Oregon Hatchery Research Center near Alsea, OR. John served for 12 years on the Washington Fish and Wildlife Commission, four as Chairman. In this position, he was involved in adoption of the Wild Salmonid Policy for Washington State.

Bob Mussetter, PhD, PE, Geomorphology

Dr. Mussetter has over 30 years of experience in analysis and design for a broad range of water-resource and civil engineering projects. His primary area of expertise involves integration of hydrology, hydraulic engineering, and river mechanics with fluvial geomorphology to solve river stability, flooding, and environmental problems. He was the principal engineer and project manager for the San Clemente Dam Retrofit Study which detailed the potential impacts on flooding, river stability and instream habitat in an 18-mile reach of the Carmel River associated with various options for retrofitting San Clemente Dam to meet seismic safety standards. He is currently Engineer-of-Record for design of the reconstructed Carmel River channel through the former impoundment of San Clemente Dam, as part a design-build team.

Brian Vinci, PhD, PE, Senior Engineer, The Conservation Fund, Freshwater Institute

Brian Vinci has 21 years' experience in fisheries bioengineering including experience with Pacific Northwest hatchery facilities design and construction. He has in-depth knowledge of environmental regulations for fisheries facilities. Brian was involved in publications assessing the suitability of a partial water reuse system for rearing juvenile Chinook salmon for stocking in Washington in 2011; performance characterization of influent and effluent treatment systems for the Craig Brook Nation Fish Hatchery in 2008; design of partial water reuse systems at the White River National Fish Hatchery for production of Atlantic salmon smolt for restoration stocking in 2004; and oxygenation and carbon dioxide control in water use systems in 2000. Brian is currently working with Tetra Tech on the Walla Walla Hatchery project.

Kristi Chamberlain, Environmental Compliance

Ms. Chamberlin has 10 years of experience, specializing in federal, state, and local environmental permitting and regulation, as well as in preparation of state and federal environmental documentation related to waterfront development, sediment management, and transportation. She has managed complex Environmental Impact Statements (EISs) and Environmental Impact Reports (EIRs) for the National Park Service and the U.S. Army Corps of Engineers (USACE) in the San Francisco Bay Area and Sacramento Delta, respectively. She has significant experience in developing permitting strategies for projects located in the coastal zone, and routinely leads permitting efforts related to waterfront development and maintenance projects for numerous marinas, ports, and ferry operators throughout California.

Dan Helt, PE, PLS, Survey Lead

Dan Helt is experienced in both civil engineering and land surveying aspects of construction and land development projects. Mr. Helt has performed field boundary and topographic surveys, as well as construction staking, certification and monitoring, and ALTA/ACSM surveys. He has considerable experience researching boundary and chain of title information, and preparing legal descriptions.

Dan has extensive knowledge in the use of Autodesk's Civil 3D software for both conceptual and detailed design studies, as well as the production of construction plan sets. He also has significant experience using Hydraflow and Hydraflow Express for flow modeling and storm routing and HEC-RAS, USEPA SWMM and Storm and Sanitary Analysis for stormwater system design and modeling.

Richard Hensel, PE, Electrical and Controls Engineer

Richard Hensel is an electrical and controls systems engineer with 17 years of experience in energy management, municipal and industrial projects. Richard was the lead electrical/controls designer for the Kootenai Twin Rivers Hatchery. Richard also performed the power system design for the Chief Joseph Hatchery facility and water supply. Richard designed the power distribution and lighting systems for the hatchery building, visitor's center, fish ladder, relief tunnel pump station and equipment additions to the existing Chief Joseph dam spillway.

Tim Tipton, PE, SE, Lead Structural Engineer

Since joining Tetra Tech as a graduate engineer, Tim has become a member of the fisheries design group, supporting the design of Chief Joseph Hatchery, the Cedar River Hatchery, the Kootenai Twin Rivers Hatchery the Sandy Hatchery intake, and the expansion of the Macaulay Pillar Creek and Kitoi Bay hatcheries in Alaska. Structural design for these project included a variety of requirements for concrete, structural steel, wood frame and prefabricated metal buildings. Tim is skilled in the use RISA-3D and RISAFoot for structures and foundation engineering.

Technical Support Team

Steve Kraushaar, PE, Intake and Pump Station Detail Design

Steve Kraushaar has over 35 years' experience in the planning, design and construction of a wide variety of civil engineering projects. Steve has provided civil engineering design on numerous recent Tetra Tech fisheries projects, including the Kootenai (Twin Rivers and Moyie intakes), Chief Joseph (Omak and Riverside acclimation ponds), Cedar River, Sandy and Quinault hatcheries and wastewater treatment facilities for the hatchery at the Bonneville Dam. Steve was also the project manager for the Silverton Creek Water Intake. Steve's professional experience also includes projects related to stormwater planning and facilities design, pump station and hydraulic structure design, wastewater treatment and collection systems facility planning and design, water distribution systems, hydraulic and hydrologic modeling, floodplain studies, streets, park site design and residential and commercial land development.

Erik Nordholm, PE, Site/Civil Engineering

Erik has 16 years' experience in design, construction, and surveying on sewer, water,

and street projects. While with Tetra Tech, Erik has been involved with wastewater and water pipeline design, sewer and water system modeling, planning and design and street design projects. He has provided civil engineering design on numerous recent Tetra Tech fisheries projects, including the Cedar River, Chief Joseph, Kootenai and Penticton hatcheries. Erik has modeling experience using the Hydra Sewer Modeling Software, WaterCAD Water Distribution Modeling Software, and the EPA's EPANET2 Software. Prior to joining Tetra Tech, Erik assisted, as a Portland Bureau of Environmental Services staff member, in management of construction contracts totaling $45 million for the installation of 10,900 feet of 144 inch diameter jacked and open-cut pipeline and 7,200 feet of 72 inch diameter open cut pipeline.

Philip Tunnel, PE, Mechanical Engineer, Pump Station

Philip Tunnell, a registered mechanical engineer in California, has experience in many facets of water and wastewater engineering. His technical design experience includes preparing plans, specifications, and cost estimates for reservoirs, pump stations, wells, pipelines, and chlorination facilities, as well as performing analysis of existing systems including pump station operations, and feasibility studies for reservoir siting. He has experience in construction administration, including overseeing the construction of pipelines, reservoir rehabilitation, and pump station upgrades. He is currently the lead project engineer for the Water Reclamation Plant No. 10 Secondary Effluent Pump Station for the Coachella Valley Water District in Palm Desert, CA. The project involves design of a secondary effluent pump station, including approximately 8,800 linear feet of piping for the suction and discharge lines and all piping appurtenances. This 21 mgd capacity pump station pumps secondary effluent from the existing SE ponds on site, and discharges either to percolation ponds for settling/ground recharge, or back to the headworks and aeration basins to aid in operation during low incoming flow periods.

Pradeep Muguntan, PhD, PE, Effluent Treatment

Dr. Mugunthan has more than 12 years of experience in water quality evaluations. He has led or managed water quality studies to support evaluations of management alternatives, permitting, and environmental impact assessment. His water quality work focuses on the management of temperature and eutrophication in lakes and streams. He has led model development for various water quality and contaminated sediments remediation projects. He has led or leads the development and application of several surface water models to support various applications including water quality studies to determine impacts of salmonid rearing in hatcheries and acclimation facilities, support evaluations on biological habitat improvements, and evaluate water quality management alternatives for riverine and lacustrine systems. Dr. Mugunthan has also led the development of several groundwater models, specifically focusing on groundwater-surface water interactions. He has designed monitoring programs to support model development and has performed numerous

statistical evaluations of environmental data. He has presented his evaluations to various stakeholders and regulators, and has provided strategic technical support for his clients on water quality management and National Pollutant Discharge Elimination System (NPDES) permitting issues.

Joe Miller, Biologist

Joe Miller is a fisheries scientist with extensive experience interpreting fisheries resource issues within biological, regulatory, and hatchery compensation frameworks. He specializes in developing strategic approaches to achieve production goals and meet compliance trajectories for hatchery projects. He has played a key role in gaining support from regulators, tribes, and other stakeholders for the adoption of innovative hatchery technology including water-reuse and circular vessel technology. As a senior manager at the Washington Department of Fish and Wildlife (WDFW) and Chelan Public Utility District (PUD, he has been responsible for obtaining and maintaining Endangered Species Act (ESA) coverage for hatchery production while adapting to new science and regulations. Joe has also managed large-scale hatchery monitoring and evaluation programs that support both conservation and harvest objectives. Joe is working with Tetra Tech on the Walla Walla Hatchery.

Ryan Maas, PE, Structural Design

Ryan Maas is a structural with Tetra Tech. Ryan graduated with his master's degree in structural engineering in 2011. Ryan specializes in structural steel, concrete, timber; foundation design; structure failure investigations and bridge rating and field testing. Ryan has been providing structural engineering design on the Kootenai Sturgeon Burbot Hatchery in Bonners Ferry Idaho, the Kitoi Bay Hatchery in Alaska, and the Penticton Sockeye Hatchery in Canada.

Hamid Naderi, PE, Principal in Charge

Hamid Naderi's 33 years of experience includes management and technical leadership on a variety of high profile structural projects. As Tetra Tech's Director of Structural Engineering in the Northwest, he is responsible for managing workflow; technical oversight for standard details, specifications, analysis and design calculations of all structural engineering products; discipline training; and mentoring staff. As a designer, he has worked on industrial buildings, parking garages, chemical facilities, federal correctional facilities, bridges, and numerous elevated/surface water storage tanks. Hamid was the chief structural engineer on the Chief Joseph Dam Hatchery for the Colville Tribes and the Sturgeon/Burbot Hatchery for the Kootenai Tribe of Idaho.

Tetra Tech, Inc. is subject to certain claims and lawsuits typically filed against the engineering and consulting professions, primarily alleging professional errors or omissions. Tetra Tech carries professional liability insurance, subject to certain deductibles and policy limits against such claims. Tetra Tech believes that the resolution of these claims will not have a material effect on our financial position or results of operations.

Assurance of Meeting RFP Scope of Work

Our proposal is inclusive of all elements necessary to complete the described scope of work within 18 months of the executive of the Agreement.

Section 6 – Technical Aspects

Within the Request for Proposal (RFP), the Monterey Peninsula Water Management District (MPWMD) included a guide line scope of work and a number of technical discussions about the facility operations and concerns. In the following paragraphs, the activities to be completed for each task will be described to illustrate our technical approach to the project. Our approach will follow the outline provided in the RFP and supplement with descriptions of the proposed process to accomplish the Sleepy Hollow Rearing Facility (SHRF) objectives.

Task 1 – Assessment of the Operation and the Facility

We have already started this work during our review of the detailed information that MPWMD and others have prepared prior to issuing this RFP. This phase of the work will integrate with the separate specialty area design work such that the intake, pump station, and aquaculture design engineers will all take part in this assessment phase. Other technical disciplines will be engaged at the appropriate time including geotechnical, electrical, structural, water quality (both supply and discharge), and permitting.

Available documentation, will be gathered, distributed as appropriate, and reviewed prior to the technical team making the coordinated site visit. Even though, much of the needed information about the operation and the facility will be available prior to the visit we recommend adequate time is arranged to give the engineers with the facility managers and operators the opportunity to evaluate SHRF conditions, make initial findings, and identify needs.

During the site visit the engineers will review existing conditions, meet with the managers and operators, and tour and inspect SHRF. Facility information will be gathered, records reviewed, and it will be determined if there are any information gaps. SHRF biological programing, facility needs, and projected production requirements will be discussed with facility managers and operators.

Listed below are items that will be part of the assessment and will be described in a technical memorandum documenting the existing conditions. The technical memorandum will establish the Basis of Design for SHRF, and include proposed improvements to be reviewed further as part of preliminary design.

- Establish Biological Program and Operating Schedule (coordinated with Task 3)
- Assess Primary Mechanical Systems and the Backup Systems (coordinated with Task 2)
- Assess the Intake Screening and Sediment Control (coordinated with Task 2)
- Complete a Catalog of Equipment
- Review Energy Needs and Power Supply
- Perform a Pipe Capacity Analysis
- Review the Cooling Water Systems

- Study the existing Alarms and Monitoring Protocols
- Review the Effluent Filtration and Discharge Limitations
- Document the Aquaculture Parameters (coordinated with Task 3)
- Evaluate the Proposed Design and Operation (coordinated with Task 2 and 3)

As noted in the list above this assessment will include proposed design and operation improvements. These proposed improvements will be based on a preliminary review and on input from the managers, operators and project partners during the initial meetings. In order to meet the project schedule and allow permitting review to start, an early understanding of the range of alternatives is needed. This will facilitate determining if a highest impact alternative can be developed to concept level drawings that can be used for the "project description" in the permit applications.

Tasks 2 and 3, Water Intake Design and Recirculation Aquaculture System (RAS) design, respectively, will be coordinated with this task and concept level alternatives will be included. This coordination will also help with recommendations for integration or replacement of existing systems with proposed improvements. Information gathered during the assessment will be utilized in Tasks 2 and 3, and the design criteria established during the preliminary steps of Task 2 and 3 will be incorporated into the Basis of Design. Work related to Task 5, Permitting, will also begin as part of the assessment. Permitting specialists will review the site, existing permits and summarize permitting issues and implications of different design alternatives, especially as they relate to schedule.

Task 1 Deliverables:

- Kick off meeting – We assume Teleconference is acceptable or it could be coordinated with the assessment site visit. Teleconference will be attended by all key team members.
- Assessment Site Visit – We assume 2 day for this visit and there will be meeting time MPWMD office and time at the SHRF site. At this time we assume this visit will be attended by the Project Manager, Aquaculture Specialist, and Electrical Engineer.
- Technical memorandum describing the Basis of Design for SHRF in PDF format. This document will provide complete documentation of information gathered during the assessment.

Task 2 – Water Intake Preliminary Design

Work under this task will focus on the assessment and preliminary design of improvements to the SHRF water supply system. There are several components of this system which require involvement of different engineering disciplines and coordination with RAS design and permitting. Assessment of existing conditions will be done during Task 1.

A river intake that consists of a fish exclusion screen meeting National Marine Fisheries Service (NMFS) facility design requirements is utilized to divert water to the facility. The intake is affected by the river conditions, which will be assessed as part of a surface water study that involves hydraulic and sediment transport analysis. This will identify

the anticipated sediment size and quantity and will give options for reducing sedimentation. A description of this analysis is given later in this section.

Currently the fish screen is not a self-cleaning type and is vulnerable to clogging especially under conditions when water is high and maintenance cleaning cannot be performed. On several of the projects listed in our experience section of this proposal we have had good results designing intakes that utilized the cone style screen with hydraulically operated brushes to self-clean. This type of screen will improve maintenance and reduce small gravels and grit entering the pumping chamber. In order to estimate fees our design cost assumes a self-cleaning cone screen type of system installed near the existing intake.

After water passes the river intake, a pumping station is utilized to lift the water to the facility where it is cooled and supplied to the rearing containers and rearing channel. Existing pumping systems will be assessed for hydraulic capacity, mechanical condition, and electrical supply and control. Improvements to these systems will be recommended and will be coordinated with revised operations for single-pass, partial water reuse, and full recirculation. Some settling prior to pumping is desirable, but this may not be feasible for the project due to site conditions, difficulty of maintenance, and costs. We anticipate a reduction in grit with the intake and screen improvements discussed above. This will be analyzed as part of the sediment-transport analysis. Pump selection will choose pumps that can tolerate the anticipated level of grit. Positioning pumps to keep them out of the 1998 high water elevation will contribute to the pump selection process and wet well configuration. Pumps such as self-priming centrifugal located outside of the wet well may be acceptable. Some of these pumps have an ancillary vacuum assist system to ensure keeping them primed. Other options are submersible effluent pumps installed in the wet well or vertical suction centrifugal with the motor mounted above

Currently there is no settling and filtering of water that passes through the intake screen. Review of options for reducing sediment will be coordinated with improvements to the intake, changes in operations with addition of water reuse/recirculation, and selection of pumps that are less grit susceptible. For maintenance, cost and permitting purposes an above grade settling basin is a good option, but other factors will be examined during this analysis. Our design fees are based on a concrete settling basin that is integrated with the RAS equipment including integration with the RAS pumping. Low maintenance options for disposal of accumulated sediment will consider placement in an inundated area depending permitting considerations.

A summary of the work items involved in this task is listed below; a detailed outline of the sediment-transport work proposed follows.

A summary of the work items involved in this task are listed below.

- Establish the Facility Water Budget
- Establish Hydraulic Profile at three River Stages, which result in three different Recirculation Operating Conditions

- Sediment Transport Analysis including bedload and debris review, and recommended intake location
- Site Survey in areas where improvements must be designed
- Geotechnical investigation and report
- Intake and Screening Option 1
- Intake and Screening Option 2
- Pumping and Conveyance Option 1
- Pumping and Conveyance Option 2
- Screen bank Protection Plan
- Maintenance Access Plan
- Settling, Filtering, and Waste Materials Disposal
- Preliminary Design Drawings of Existing and Proposed
- Preliminary List of Specifications for Materials and Equipment
- Preliminary Cost Estimates

River Intake Hydraulic and Sediment Transport Analysis

Having worked on a wide variety of studies related to the removal of San Clemente Dam since 2001, Tetra Tech's hydraulic engineers and geomorphologists (formerly Mussetter Engineering, Inc.), have unparalleled knowledge of the sediment-transport characteristics of the Carmel River below the current dam. Through these studies, team members have worked closely with MPWMD, SCC, American Water Works Service Company (Cal-Am), NOAA Fisheries, California Department of Fish and Game, California Department of Water Resources, U.S. Fish and Wildlife Service and a variety of other agencies and stakeholders, and are very familiar with the hydrologic, hydraulic and sediment-transport conditions that will affect the design of the SHSRF retrofit. Tetra Tech is currently a member of the Granite Construction Design-Build Team for the Carmel River Reroute and Dam Removal (CRRDR) Project, where we are responsible for design of the reconstructed reach of the river through the former reservoir and re-route cut. Dr. Bob Mussetter, PE, will be the Engineer-of-Record for that portion of the CRRDR project.

Based on our past work, we believe that the available sediment-transport data is sufficient to prepare the design of the water intake structure and associated sediment management facilities. Although additional sediment-transport data would benefit the analysis and design, it is probably not practical to collect this information during the relatively short period leading up to the analysis and design phases. List Engineering Company (LEC, 2003) compiled bed load and suspended sediment load estimates developed by MEI (MEI, 2003) under baseline conditions, but these estimates do not represent conditions that will occur after completion of the CRRDR project. Results from the residual sediment analysis [MEI, 2006 (revised 2007)] indicate that the volume of sediment stored in the Carmel River below the existing dam would increase by 10 to 12 percent over existing conditions, and most of this increase would occur during the first 10 years following construction of the CRRDR project. Some of the most significant increases would occur in the vicinity of the SHSRF (Subreach 4.3), where the volume of sediment storage would increase by 25 percent to 65 percent, depending on the hydrologic conditions following construction. We do not believe this increase would be a significant design

constraint because some of the increase in sediment storage would occur along the overbanks during periods of high flow, and the volume of sand sized bed material that would be of most concern to the design of the intake structure only increases by 2 percent to 5 percent. The hydraulic and sediment-transport models that were developed to evaluate the CRRDR project will be updated to represent the proposed project conditions. Results from this modeling, including estimated bed material loads and suspended sediment concentrations, will be used to prepare the design of the intake structure and develop a maintenance plan for sediment disposal.

To reduce the amount of sediment that enters the intake structure as part of their preferred alternative, LEC recommended that parallel, buried river water clarifiers be installed upstream from the pumps. To further reduce the amount of sediment that enters the intake structure, Tetra Tech recommends that a self-cleaning screen [i.e., a cone screen, Coanda-effect screen (Wahl, 2003) or similar apparatus] be installed at the entrance weir. These types of screens would eliminate all but the finest fractions of the sediment load from entering the intake, thereby reducing the amount of material that would need to be removed by the sand removal pumps. Results from the sediment-transport modeling will be used to determine the fraction of the sediment load are finer than the design screen mesh that would ultimately enter the intake structure to assist in designing the sand removal pumps identified as part of the preferred alternative and preparation of an associated maintenance plan.

The current intake structure is located along a relatively straight reach of the Carmel River. The preferred alternative includes an entrance weir oriented parallel to the direction of flow. A parallel weir orientation should be sufficient if the cone-screen is included in the design; however, if it is determined that a Coanda-effect screen would better eliminate sediment loading to the intake structure, the weir would need to have an orientation that is generally perpendicular to the direction of flow. (Based on previous work with similar intake structures, the weir would not necessarily have to span the entire width of the channel.) To avoid the potential for flanking of a perpendicular weir and subsequent undermining of the intake structure, it may be advisable to relocate the weir and intake structure about 80 feet upstream where the natural topography limits flow conveyance in the right (north) overbank. The final location for the intake structure will be identified during a field reconnaissance of the project reach and will be selected in a manner that provides the highest benefit in terms of geology, geomorphology and hydraulic connectivity. Some form of bank protection will be required along the left (south) bank at and upstream from the intake structure. Although a traditional riprap revetment may be warranted in the immediate vicinity of the structure, it is likely that bio-engineered bank protection (i.e., boulder toe material with vegetated, soil encapsulated lifts making up the upper bank) would be sufficient in the approach section.

Optional Task

Another step that could be taken to update the model is to consider other proposed activities that could also have an effect on the

SHSRF retrofit. Old Carmel River Dam, located about 1 mile upstream from the SHSRF and about 2,000 feet below San Clemente Dam, may be removed as part of the CRRDR project. Although there is not a significant amount of sediment stored above the old dam, removal of the dam could affect sediment-transport conditions in the vicinity of the structure. MPWMD has also proposed removal of the concrete crossing and construction of a new bridge at Sleepy Hollow Ford, located about 550 feet upstream from the intake structure, to improve upstream spawning and rearing habitat for Steelhead Salmon. Construction activities associated with this project could also result in slightly elevated sediment loads, especially during the period following removal of the crossing. It is unlikely that either of these activities would result in a significant, long-term increase in sediment loads. Nevertheless, the sediment-transport model could be adjusted to incorporate the physical changes that would result from these actions to evaluate the effects on sediment loading at the intake structure. We will review this with the District prior to beginning work.

The specific steps that will be carried out to analyze the sediment-transport issues in the vicinity of the intake and prepare recommendations for the design of the intake are as follows:

1. Conduct a field reconnaissance of the reach between the existing San Clemente Dam and the SHSRF to identify an appropriate location(s) for the intake structure.
2. Update the existing 1-D hydraulic model in the vicinity of the SHSRF to reflect the preliminary design of the intake structure.
3. Optional Task: This is an optional step and the estimated cost is shown separately in the pricing section. Update the existing sediment-transport (HEC-6T) model that was prepared for the Carmel River Reroute and Dam Removal project to incorporate elements associated with the preliminary design, and incorporate changes at Sleepy Hollow Ford and removal of Old Carmel Dam.
4. Evaluate sediment loading to the intake and revise the preliminary design for the weir and intake screen, as necessary. This step may require updates to Steps 2 and 3, above.
5. Use the results from the 1-D hydraulic and sediment-transport modeling to prepare scour estimates at the intake structure, including long term (general) scour and appropriate local scour estimates.
6. Prepare recommendations for the design, preliminary design of a diversion for dewatering, and outline a sediment-management plan for disposal of sediments that are delivered to the intake structure.

Task 2 Deliverables:

- Technical memorandum describing the Water Intake Preliminary Design. This will include studies and documentation on all aspects of the water intake system.
- Review meeting – A meeting to review the Preliminary Water Intake Design. We assume this meeting date can be coordinated with the Task 3 meeting. Meeting will be attended by the Project Manager, Aquaculture Specialist, Surface Water Engineer. Others including Permitting Specialist and Electrical Engineer may join by teleconference.

Task 3 – RAS Preliminary Design

Water supply concerns for the SHSF dictate that an evaluation of the feasibility and alternatives for reusing water is critical to ensure the long-term operation of the facility. Water reuse and recirculation technologies for fish culture have advanced in the last 15 years and new technologies are available to efficiently address SHSF water supply concerns. Feasibility evaluation and alternatives analysis for water reuse/recirculation will begin with a review of the existing infrastructure to determine the capacity of and potential reuse of equipment. Infrastructure assessment will be coordinated with Task 1, as will the identification of the biological design criteria and bioplanning of the existing steelhead program. The alternatives analysis will take into account the water supply and need for any influent treatment as a first step; second will be to determine the feasibility of implementing of a water reuse/recirculation system to accommodate a range of available supply water, from a high water exchange rate (50–75%, i.e., partial water reuse) to an almost zero water exchange rate on a flow basis (0.5–0%, i.e., fully recirculating). It will be important to evaluate both ends of the spectrum of water reuse/recirculation. A partial water reuse system lends itself to programs with a short operational period because it does not require a biofiler that takes time to become fully operational and once operational cannot be shut down and restarted quickly. However partial reuse systems can typically only reuse up to 75% of system water and maintain good water quality because ammonia concentrations will increase to toxic levels at reuse over approximately 75%. If water supplies can be expected to decline to zero then a full recirculating system would be necessary to recirculate 99.5–100% of the system water. The ability to accommodate high levels of recirculation comes at an increased cost over partial water reuse; development of both options at the concept design level allows for a logical decision based on funding availability and risk tolerance. Final selection of the optimal water reuse/recirculation alternative will be made in concert with the project partners.

A summary of the work items involved in this task are listed below; a detailed outline of the work proposed follows.

- River Water Quality Review
- Integrate with Water Budget and River Stages
- RAS Schematic Diagram and Operating Scenario
- Mass Balance Calculation
- RAS and Effluent Water Quality Analysis
- Effluent Treatment and Solid Waste Management
- Water Delivery methods, Pipe Calculations and Sizing
- Disinfection and Water Quality Control
- Feeding System Analysis
- System Monitoring and Alarm Communication
- Predesign of Full Recirculation Alternative
- Predesign of Partial Recirculation Alternative
- Predesign Drawings of RAS Alternatives
- Preliminary List of Specifications for Materials and Equipment

- Preliminary Cost Estimates

Proposed Work

A. Review of existing conditions. Inspect and assess existing SHRF infrastructure age and condition. Determine the suitability of existing structures and equipment for renovation and reuse in the context of a new water intake and a water reuse/recirculation system.

B. Identification of biological and physical design criteria so that critical design decisions may be resolved. Specific biological criteria that will be identified include SHRF biological holding/production objectives, biological growth regimes, fish rearing density criteria, and fish culture methods specific to the rearing channel facility. Specific physical criteria that will be identified include available space for all related processes and hydraulic gradeline limitations.

C. Alternatives analysis for water reuse/recirculation implementation. The following tasks will be completed.

1. Evaluate the surface water supply and the need for treatment in order to be used in the SHRF under flow-through and potential water reuse/recirculation. Biosecurity and pathogen disinfection are the focus of this analysis:

a. Review existing water quality data for the surface water.

b. Determine additional water quality data needs and request data as required.

c. Review existing fish disease and pathogen information.

d. Determine additional fish health and pathogen data needs and request data as required.

e. Analyze all water quality data and determine feasible influent water treatment processes for solids control and pathogen disinfection.

f. Develop a design strategy that will address influent water quality deficiencies and provide adequately treated water for fish culture and holding in the SHRF. Treated water quality shall have levels of dissolved gases, pathogens, and other constituents that are suitable for all species and life stages of fish being held and/or cultured.

2. Determine the feasibility of implementing of a water reuse/recirculation system for the SHRF to accommodate a range of available supply water, from a high water exchange rate (50–75%, i.e., partial water reuse) to an almost zero water exchange rate on a flow basis (0.5–0%, i.e., fully recirculating).

a. Complete mass balance calculations for oxygen, carbon dioxide, and ammonia-nitrogen for determining the required water flows to maintain good water quality at times of maximum steelhead holding and culture in the SHRF for upper and lower-end water exchange rate conditions (partial water reuse and fully recirculating systems).

b. Review temperature profiles of the water supply sources and ambient air to determine the feasibility of providing water temperature conditioning using the existing evaporative cooling and/or supplemental heat transfer processes within a reuse/recirculation water treatment loop.

c. Develop process designs to provide the water flows through the rearing channel (and structures) and treatment equipment, as well as initial water reuse/recirculation equipment sizing for upper and lower-end water exchange rate conditions (partial reuse and fully recirculating systems).

d. Identify facility size and equipment power requirements for the water reuse/recirculation system options.

e. Develop process flow diagrams, plan and section drawings of the treatment equipment detailing preliminary treatment equipment design and sizing for the water reuse/recirculation system options.

f. Preliminary treatment equipment list for manufactured equipment and material quantity list for the water reuse/recirculation system options.

D. Integration of the design criteria, feasibility analysis and identified design elements into a complete concept design for supply water treatment and water reuse/recirculation systems. Conceptual design packages will include unit process design and selection, process layout, and concept-level cost estimation.

1. Preliminary design of equipment and modifications required as applicable to the existing infrastructure. This includes associated equipment, preliminary piping sizes, utility needs, loading requirements, detention times, pump sizes, etc., to provide complete conceptual designs for both partial water reuse and fully recirculating system concept designs.

2. Preparation of conceptual plans which will include:

a. General site plans showing the proposed influent water treatment and water reuse/recirculation system options, including any major site features.

b. Plan and profiles of supply water treatment and both water reuse/recirculation system options with approximate floor plans, building sections and layout of proposed equipment, piping and appurtenances.

c. Plan of modifications to the existing infrastructure as required. Existing infrastructure includes the influent water supply lines and effluent discharge lines.

d. Construction cost estimate for definable features of the proposed design for both water reuse/recirculation system options.

E. Facilitate the selection of a concept design to develop to the final design phase in cooperation with project partners. The concept design will incorporate influent

water treatment and either of partial water reuse and/or fully recirculating system options.

Task 3 Deliverables:

- Technical memorandum describing the RAS Preliminary Design. This will include studies and documentation on all aspects of the water intake system.
- Review meeting – A meeting to review the RAS Preliminary Design. We assume this meeting date can be coordinated with the Task 2 meeting. Meeting will be attended by the Project Manager and Aquaculture Specialist. Others including Civil Engineer, Permitting Specialist and Electrical Engineer may join by teleconference.

Task 4 – Final Intake and Recirculating Aquaculture System Design

Final design will involve preparation of Draft and Final plans, specifications, and estimates (PS&E) for review. General descriptions of Draft and Final PS&E processes are describe in the next paragraphs followed by a more detailed description of the work involved for Water Intake and RAS Final Design.

Draft PS&E

Once the final design option has been agreed upon by MPWMD and other partners, we will prepare draft PS&E design documents. The draft design package will identify all program elements with enough detail to allow preparation of an estimate of probably construction cost. For this package, civil, mechanical, electrical, and structural details will be prepared. Attention will be given to communication among all design disciplines to ensure a well-coordinated set of drawings and specifications. Internal Quality Control (QC) review of the design will be performed then the documents will be submitted to MPWMD.

Draft plan documents will include:

- Dewatering Plan and Erosion Control Plans
- Process Diagrams
- Intake, Screen, Wet Well Structures
- Recirculating Pump Enclosure
- Piping Plan
- Electrical Plan
- RAS System and Filters
- Alarms and Control System Plan
- Grading Plan and On Site Disposal Plan

Draft specifications documents will include:

- Materials and Equipment
- Construction Methods and Requirements

A design review meeting will occur after submittal, and comments will be incorporated into the next design stage.

Final PS&E Design

After review and input from MPWMD and other project partners, the design team will make additions or modifications required to the final design drawings and specifications. At completion of final design, the documents will be reviewed for overall compliance with commitments from the client and with Tetra Tech's internal standards for quality. Final PS&E documents will be ready for signature and final review by MPWMD.

Water Intake and RAS Final Design

The water intake and water reuse/recirculation options selected in Tasks 2 and 3 will be developed for final design. The detail design of the water reuse/recirculation

system for the selected option will be completed via three-dimensional CAD modelling in order to integrate the water reuse/recirculation process design with other disciplines and prevent any conflicts. Final design will include selection of manufactured treatment equipment and design of custom equipment as required:

- Identification of water intake and water reuse/recirculation process equipment footprint, elevations, and layout.
- Completion of head loss calculations for the water intake system and through the water reuse/recirculation process equipment.
- Determination of pipeline elevations and diameters related to intake, pump station, settling and filtration, and water reuse/recirculation process equipment.
- Identification of water intake and water reuse/recirculation process equipment electrical, drainage, and operational requirements.
- Completion of settling and filter backwash/solids management process flow.
- Design of process instrumentation, control and alarming systems required for the water intake and water reuse/recirculation system. Instrumentation, control and alarming will be integrated in the existing SHRF automated calling system to the extent possible.
- Identification of backup systems required.

The water reuse/recirculation process design will be translated from the three-dimensional CAD model into design documents for the construction process. The design documents for water intake and water reuse/recirculation will include design drawings, equipment schedules, select equipment specifications, and select material specifications. The design documents will include the following:

- Plan, section and detail drawings of the intake screen, pumping, piping, settling and other process equipment
- Plan, section and detail drawings of integrated water reuse/recirculation system
- Piping and instrumentation diagrams of the intake screen, pump station, water reuse/recirculation systems, and other water-related infrastructure
- Specifications for screening, pumping, piping, filtering, aquaculture equipment, and general construction requirements in standard Construction Specifications Institute format (i.e., MasterFormat 2010 Update)
- Detailed engineer's cost estimate of construction

Task 4 Deliverables:

- Draft Plans, Specifications, and Estimates for Review
- Draft Plan Review Meeting – Plan review will be held at the MPWMD office and attended by key team members, others by teleconference.
- Final PS&E Documents for Review
- Final Plan Review Meeting – Plan review will be by teleconference and attended by key team members.

Task 5—CEQA/NEPA Analysis and Permit Acquisition

This approach based on our review of the scope of work and additional documentation relating to permitting and review of the

project under the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). We believe that a Mitigated Negative Declaration will be the appropriate CEQA document for the project, and that the proposed improvements will require new permits and associated biological studies and consultations.

Project Description

Our team will work with the District to prepare the new project description package, which will outline construction means and methods, facility operations, proposed best management practices and mitigation measures, and other information required for permit applications and the CEQA review. This will require input from the design team at a level of design suitable for permitting. We anticipate that a project description suitable for permitting and CEQA review purposes can be achieved using 30% design plans.

Assumptions:

- There will be up to two client meetings to complete this task; one will be in person at the District's office and will include a site visit.

CEQA Documentation and Coordination

Specific to the project's CEQA review, Anchor QEA will prepare the Initial Study (IS) for the project. The District may choose to prepare either a Negative Declaration or Mitigated Negative Declaration (MND), based on the results of the IS. Due to the presence of endangered species and the likely need for new permits, Anchor QEA expects that an MND may be the appropriate type of CEQA document for the project. We have assumed that the project's NEPA review will be completed by the U.S. Army Corps of Engineers (USACE) through their standard internal process for permit issuance.

Assumptions:

- A Negative Declaration (ND) or Mitigated Negative Declaration (MND) will be the appropriate CEQA document; an Environmental Impact Report will not be required. The ND/MND will be limited to available and existing information and information developed by the design team; new quantitative studies (e.g., air and traffic studies) are not included as part of this task.
- Draft and final versions of the IS and ND/MND will be prepared. One round of review by the District is assumed.
- This task includes circulating the Public Notice; compiling, evaluating, and addressing up to 20 comments received on the IS and ND/MDN; and preparing transmittals and submitting required copies (up to 5) to the State Clearinghouse.
- The District will be responsible for all required fees associated with noticing or other requirements.
- There will be up to three client meetings to complete this task; one will be in person at the District's office.

Federal, State, and Local Permits

We are assuming that it is unlikely that the USACE's Regional General Permit (RGP) 24460S and associated California Department of Fish and Wildlife (CDFW) and Regional Water Quality Control Board (RWQCB)

approvals will cover the proposed activity. The proposed improvements would be outside the scope of coverage of the RGP, which applies to maintenance and restoration projects that are only generally related to the proposed improvements. Based on this conclusion, we expect that USACE will require issuance of a new permit (either a Nationwide or Individual Permit depending on the nature and degree of project impacts to waters of the U.S.). Assuming that a new permit from USACE is required, the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) may need to initiate new consultations under the federal Endangered Species Act (ESA) for California red-legged frog (federally threatened) and steelhead (federally threatened), respectively. Based on our review of the RFP, we have assumed that consultations can be completed informally.

Our team understands that a new Streambed Alteration Agreement (SAA) and review under the California ESA (CESA) will be required from the CDFW; however, it does not appear that any CESA-listed species are present in the project area (the California red-legged frog is a California state species of special concern). Lastly, a new 401 Water Quality Certification will be required from the RWQCB. In the interest of due diligence and upon completion of the project description, Anchor QEA will complete a pre-application consultation with the resource agencies to confirm that new permits are indeed required. The scope of work and cost estimate may be revised should the existing permits be determined to be applicable.

Once the project description and supporting studies have been completed and reviewed, Anchor QEA will work with the District to begin preparing the permit applications concurrent with commencing the IS. We anticipate submitting the permit applications as soon as they are complete, regardless of whether the CEQA review has concluded. The RWQCB and CDFW require the CEQA review to be complete prior to permit issuance. The USACE permit and federal ESA approvals can be issued prior to completion of the CEQA review. The team will also work with the District to pursue the required local permits from Monterey County.

Our team has the experience and capacity to achieve the anticipated construction schedule, and our strategy includes completing the CEQA review and permitting tasks in tandem. Given the target construction period of the spring of 2017 for the larger project, it is imperative that the CEQA review process and permit acquisition process occur as efficiently as possible. Our planning staff includes several former federal and state regulators. Their familiarity with agency staff helps streamline communication for permitting efforts and maintain project priority during permit review. Anchor QEA planners often use pre-submittal agency meetings to inform the regulatory staff of the project details and facilitate effective and streamlined agency negotiations. This approach has allowed us to meet challenging construction schedules. Most recently, our team of planners and biologists implemented a concurrent CEQA review and permitting process for work on the Port of Stockton's West Complex rail extension project as part of our on-call contract, where urgent construction needs required the concurrent completion of biological investigations, CEQA analysis, and

permit acquisition. We are confident that a similar approach will help achieve the District's schedule goals.

Assumptions:

- Anchor QEA will complete a pre-consultation meeting with the resource agencies to confirm that new permits are indeed required. The scope of work and cost estimate may be revised should the RGP be determined to be applicable.
- Draft and final versions of the required permit applications will be prepared. One round of review by the District is assumed.
- USACE will require issuance of a new permit (either a Nationwide or Individual Permit depending on the nature and degree of project impacts to waters of the U.S.). Preparation of National Environmental Policy Act (NEPA) documentation for the U.S. Army Corps of Engineers (USACE); it is assumed that USACE will prepare their own NEPA documentation. This task does not include preparation of the Public Notice text, will be required if an Individual Permit from USACE is required.
- There will be no requirement for a formal ESA consultation (e.g., a take permit) with the USFWS and NMFS and federal ESA consultations can be completed informally.
- A new SAA will be required from CDFW.
- A new 401 Water Quality Certification will be required from the RWQCB.
- The existing NPDES general permit will be sufficient for the proposed modifications. If water quality evaluations under the proposed modifications indicate that the existing general permit will not be sufficient, Anchor QEA will provide a separate cost estimate for securing permit approvals with the RWQCB.
- There will be up to four client meetings to complete this task; two will be in person at the District's office or on site.
- The District will be responsible for all permit application fees.
- Costs do not include permitting or approval of any separate/additional tasks not presented in the RFP.

Optional Tasks

We have identified several potential optional permit-related tasks that could be required based on either the proposed design and/or the discretion of the regulatory and resource agencies.

If the ultimate design is determined to constitute an effect on the species or their critical habitat, then a Biological Assessment (BA) must be prepared to support a formal consultation. Specific to CESA, it does not appear that any CESA-listed species are present in the project area (the California red-legged frog is a California state species of special concern). If CDFW requires submittal of a biological report, it is assumed that the BA and biology report can be combined into a single document. In addition, should it be

determined that wetlands may be impacted as a result of the project, a Jurisdictional Delineation Report may be required.

It is possible that the existing permits could cover the proposed upgrades to the existing intake structure, which are planned to occur in the spring of 2016. Once additional details on the nature of the intake upgrades are known, we will work with the District and regulatory agencies to determine whether the intake upgrades require new permits or are considered covered by the existing permits for the facility. If they are determined to be covered, we will process the necessary documentation to inform the federal, state, and local agencies of the action. If the intake upgrades are determined not to be covered, we believe it is still possible to obtain separate permits and CEQA approvals for the action by the spring of 2016. Neither of these efforts are assumed in our cost proposal; both would be considered optional tasks. Alternatively, the District could elect to include the intake upgrades with the permitting and CEQA review effort for the larger project, which would be covered by our team's proposed costs.

A water quality analysis will be undertaken to determine effluent water quality compliance under the existing National Pollutant Discharge Elimination System (NPDES) general permit for the proposed modifications. If it is determined that modifications to the existing general permit are required to accommodate the project, our team will work with the San Francisco Bay Regional Water Quality Control Board to process any required modifications to the existing permit, including any evaluations of additional treatment options and their effects on effluent and downstream water quality. Costs associated with permit modifications are considered an optional task and are not part of our cost proposal. If the optional task becomes necessary our water quality team will provide a cost estimate for the same.

Assumptions:

- Wetland delineation costs assume a single day of field work and an area of less than 1-acre; additional field work and overhead expenses (i.e., per diem lodging, meals, and equipment) may be required for direct- or indirect-impact area of greater than 1-acre.
- If the ultimate design is determined to require a take permit, then a Biological Assessment (BA) must be prepared to support a formal consultation. Our proposal assumes only steelhead and California red legged frog will be considered in the documents.
- CDFW may require preparation of a biological report. Our cost proposal assumes that the BA and CDFW biology report can be combined into a single document.
- There will be up to two full day site visits/client meetings to complete the Biological Assessment/CDFW Biology Report, including the field assessment and ESA document preparation and consultation support.

Task 6—Project Management

Tetra Tech's successful delivery of projects derives from strong project management training and processes, systematic quality controls, and strong communications. Tetra Tech's proposed project manager, Darrel Nice,

will be the key contact with the MPWMD, and will manage and direct the project team. He will employ Tetra Tech's management strategies to keep the project on schedule and on budget and to deliver a quality project that meets the needs of the District's and their partners.

Scheduling

For every project, Tetra Tech develops a project plan that specifies all scope-of-work elements, the individuals responsible for each element and staffing and schedule requirements with key internal and external milestones. A startup meeting early in the project establishes a common ground for team participants to interact and leads to a better understanding of project objectives.

Regular progress meetings with the client allow joint review of schedule and budget, progress on specific work elements, potential problem areas, work items planned in the next progress period, and the resources needed to complete them.

To keep each project on track, a computerized schedule will be maintained as part of the project plan. The schedule will inform the District, review agencies and each team member of the status of project tasks. For simple projects, the schedule may be a simple bar graph; for more complex projects, Microsoft Project is used to correlate resources, effort and tasks and to define critical paths. When progress deviates from the plan, project engineers and the project manager will develop and implement corrective action.

Budget Tracking

Tetra Tech's internal accounting procedures provide reports to the project manager every week. These reports show project budgets for Tetra Tech and each subconsultant. Progress is monitored against established milestones and task budgets, with corrective action taken as necessary. Tetra Tech has a long history of keeping within budget for both design and construction.

Invoicing and Scope Changes

Tetra Tech employs an effective project management reporting system that provides regular reports to the Project Manager concerning budget status by task. The system also generates an Effort Report that indicates budget and actual effort expended by task. This report is compared with a monthly "estimate to complete" chart prepared by project staff and is incorporated into a cost to complete graph. These reports are available to the District's Project Manager for review. This process can identify schedule and budget problems early on so they can be managed effectively by shifting resources, adjusting schedules and modifying the scope to better meet actual conditions.

Tetra Tech will invoice the District monthly based on the previous month's efforts. Draft invoices are provided to project managers before the 10th of the month for review and corrections, and preparation of progress reports that identify the work accomplished during the previous month, compare expenditures to task budgets, provide documentation for invoices and progress of the schedule. These invoices and progress reports are then finalized and forwarded to

the District project manager within two to three days.

Changes in Scope

Tetra Tech's approach to managing changes during the work include informing the District project manager about changed conditions and about options for dealing with changes prior to expending any time, effort or budget on the contemplated work.

This gives the District the greatest flexibility in dealing with potential changes. Options to be formally approved by the District could include budget trading between tasks, further District involvement, or a contract modification. In any event, work related to changes in scope will not proceed until there is direction and authorization from the District.

If the District requests changes to the negotiated scope of work and budget, Tetra Tech will provide a revised scope and fee estimate for the requested changes. Additional services can be negotiated and estimates provided.

Communication

The Tetra Tech team recognizes the importance of maintaining close communication with client staff throughout a project. Our project manager and task leaders have been selected because they possess strong communication skills in addition to their technical strengths. Tetra Tech uses the following steps to ensure close regular communication and client/consultant interaction:

- Begin the project with a startup meeting for key Tetra Tech team members, District staff, and project partners. This meeting will identify project goals, establish design standards, map communication channels for participants, and provide a venue to raise concerns regarding the project.
- Maintain communication channels during the project with outside groups, regulatory agencies. At appropriate intervals, the Tetra Tech team will inform these parties about project progress and solicit comments on matters of interest to them.
- Hold progress meetings with affected parties through predesign and more frequently during final design not to exceed more than once a month.
- Make key project decisions on a consensus basis at regular or special project meetings, using issue papers and technical memorandums to identify and review design alternatives.
- Coordinate all staff assignments through Tetra Tech's project manager, with notice and approval by District staff.

Summary of Anticipated Meetings

This is a list of meetings on site at the MPWMD Offices or at SHRF. Consultant staff and key team members to attend meetings in person or by teleconference will be discussed with MPWMD prior to the meeting.

- Kick-off meeting
- Aquaculture Review of Existing and Proposed Operations with MPWMD Staff
- Joint Preliminary Design Review Meeting for Water Intake and RAS
- Draft PS&E Review Meeting
- Final PS&E Review Meeting

QA/QC Plan

Tetra Tech has a formalized quality assurance and quality control (QA/QC) program set out

in the company's Production Policies and Procedures Manual, updated regularly and distributed to all employees. The procedures require designated reviewers to review and sign-off on work products before they are submitted to clients. They provide flexibility to deal with a variety of projects and complexities. The QC lead calls on senior specialists to do independent reviews of products for completeness, design intent, fulfillment of contract requirements, document clarity, and constructability.

Quality Control Plan. Our quality control process begins with a project-specific QC Plan. The plan, based on project scope, budget and schedule, is used to ensure that our work meets client requirements. Appropriate staff and resources are assigned, and a preliminary work breakdown and schedule are developed, identifying deliverable products, key review dates and project coordination meetings. The objective of the plan is to ensure that the project meets requirements defined by the scope of work, that construction requirements are clearly and accurately delineated in the drawings and specifications, that work conforms to technical and life safety standards, and that the project is constructible within project cost limitations.

Quality Assurance is achieved by periodic in-house technical reviews at key points throughout the duration of the project. Technical reviews include at least one senior level Tetra Tech engineer who is not part of the project team. General quality reviews of work products are performed by designated team members familiar with Tetra Tech procedures and any other standards required for the project. These reviews are directed at making certain that the goals of the scope of work have been met and that the project deliverables are completed in a quality manner.

Budget for Engineering Services

Our estimate of professional services to complete this work is $373,000. This fee corresponds with our approach presented in this proposal. We present this estimate as a basis for further negotiations if Tetra Tech is selected to perform these services.

Table A Cost Estimate for Professional Services	
Task 1: Assessment of the Operation and the Facility	$52,000
Task 2: Water Intake Preliminary Design	$68,000
Task 3: RAS Preliminary Design	$41,000
Task 4: Final Intake and Recirculating Aquaculture System Design	$94,000
Task 5: CEQA/NEPA Analysis and Permit Acquisition	$87,000
Task 6: Project Management	$31,000
Total Anticipated Costs	**$373,000**

Optional Tasks:

- Wetland Delineation - $13,000
- Formal Federal and State ESA Consultation Support Including Biological Assessment/CDFW Biology Report - $25,000
- Update sediment-transport model for proposed design and incorporate changes at Sleepy Hollow Ford and removal of Old Carmel Dam - $8,000

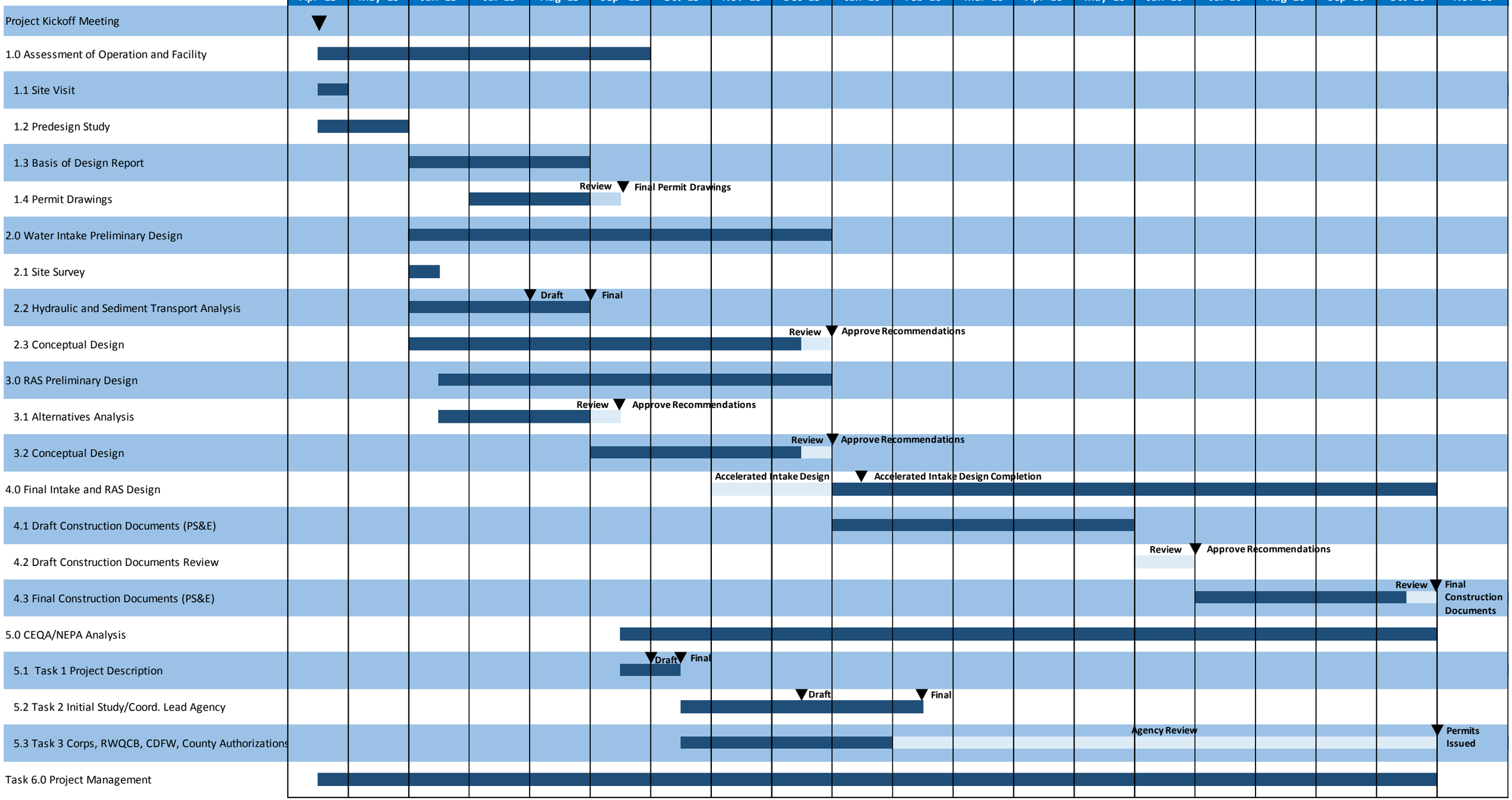
Schedule

We have prepared a project schedule and timeline that runs from a notice to proceed and project start in April 2015 through project completion by October 2016. This timeline is driven by two main items 1) is that the RFP indicated the work should be complete in 18 months, and 2) if new permits are required the permitting timeline will drive the construction start date. The timeline shows developing Permit Drawings by September 2015 in order to keep the permits on schedule by October 2016.

Tetra Tech has developed the proposed work schedule based on the anticipated work tasks needed to complete the assessment, design, and permitting. We anticipate the District's review and input at 6 stages through the design process and several stages of the permitting process. Based on our understanding that the desired construction time is in the spring of 2017, before the facility starts operation in May, this schedule leaves some room for the District to obtain funding and bid the project.

We have also shown an accelerated time line for the water intake work. This will be dependent the outcome of the assessment and feasibility phase of the work, and what permits are needed to accomplish the construction. It will require coordinating the design with the later pump station, settling basin, and RAS improvements.

Work Plan Schedule - Sleepy Hollow Project



Exceptions to Contract Language

EXCEPTION TO MONTEREY PENINSULA WATER MANAGEMENT DISTRICT SOLICITATION FOR SLEEPY HOLLOW STEELHEAD REARING FACILITY INTAKE UPGRADE

Page 37, Section II. Compensation, B. Method of Payment, 2nd paragraph.

Retention is not customary for design professional services. Request Ten percent retention be deleted.

EXCEPTION TO MONTEREY PENINSULA WATER MANAGEMENT DISTRICT SOLICITATION FOR SLEEPY HOLLOW STEELHEAD REARING FACILITY INTAKE UPGRADE

Page 38, Section II. Compensation B

D. Late Performance Penalty.

For professional consultants, time is of the essence should exercise professional judgment and particularly when related to schedules that may beyond control of consultant, etc.

Propose the following change:

“Time is of the essence for this agreement and each and all of its provisions in which performance is a factor, subject to the applicable professional standard of care.”

D. Language following time is of the essence.

It is not customary for consulting professionals to pay liquidated damages (LD’s) for their type of services nor are they included in design contracts. Consultants carry Professional Liability for contractual issue.

Propose deleting all language following time is of the essence in Section D, including to discretionary withholding of additional 10% of fee as well as 2nd paragraph related to reducing maximum payment in Section II, paragraph C of this Agreement by 20% and said reductions shall be deemed liquidated damages.

As written, there could be many contributing factors to delay of performance not based solely on consultants – other parties, force majeure. If no revisions, would need force majeure clause and possibly other clarifications.

EXCEPTION TO MONTEREY PENINSULA WATER MANAGEMENT DISTRICT SOLICITATION FOR SLEEPY HOLLOW STEELHEAD REARING FACILITY INTAKE UPGRADE

Page 38, Section IV, Ownership of Project Report and Equipment Purchased. As document ownership is specified, consultants need release of liability for reuse. Following is consultant-recommended language:

"Consultant shall not be held liable for reuse of documents or modifications of the subject data thereof, including documents on electronic media, by MPWMD or its representatives, for any purpose other than the original intent of this Agreement."

EXCEPTION TO MONTEREY PENINSULA WATER MANAGEMENT DISTRICT SOLICITATION FOR SLEEPY HOLLOW STEELHEAD REARING FACILITY INTAKE UPGRADE

Page 39, Section V Time of Performance. Time is of the essence is referenced in Section II, Compensation B.

Propose deleting 2nd sentence is section related to same or revising as indicated in Section II.

EXCEPTION TO MONTEREY PENINSULA WATER MANAGEMENT DISTRICT SOLICITATION FOR SLEEPY HOLLOW STEELHEAD REARING FACILITY INTAKE UPGRADE

Page 39, Section VI Responsibilities, F. Indemnity.

Consultant indemnity is for its client and third parties (agents, etc.) are not part of a contractual privity and are not owed the same obligation**.**

Propose revision as follows: "The Consultant agrees to indemnify, defend and save harmless MPWMD, its officers, and employees from any claims and losses to the extent arising or resulting from the negligent acts, errors, and/or omissions of the Consultant, Consultant's employees, or Consultant's subconsultants in the performance of this Agreement."

Appendix

Additional Relevant Project Experience

The following projects were completed more than five years ago but present highly relevant experience relative to the Sleepy Hollow project. They were completed by team members who will be assigned to the Sleepy Hollow project.

Oregon Hatchery Research Center, Alsea, OR

Client

Oregon Department of Fish & Wildlife, Oregon Hatchery Research Center (541) 487-5510

Duration

2005 project completion

Team Member Roles on Project

- John McGlenn, Project Manager
- Don Beard, Project Engineer

Description of Services Provided

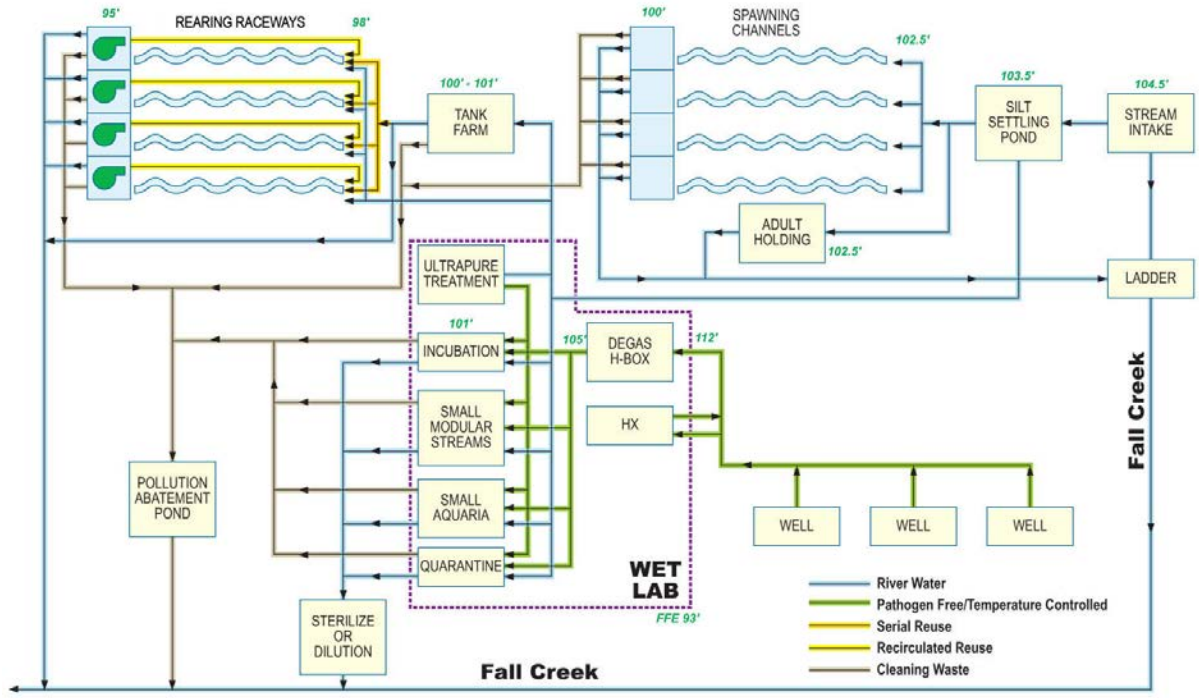
Oregon Department of Fish and Wildlife (ODFW), in collaboration with several stakeholders (including Oregon State University, National Oceanic and Atmospheric Administration, United States Fish and Wildlife Service), selected Tetra Tech as prime consultant for the programming and design of a fisheries research center to be constructed at the site of the existing Fall Creek Hatchery. The existing hatchery, located 25 miles inland from Waldport, has been converted from a production facility to a research center. This project complies with State of Oregon

sustainable design mandates and the Oregon Department of Energy SEED requirements. The facility was designed to meet three major program goals:

- Understand mechanisms that may create differences between hatchery and wild salmon and steelhead
- Develop approaches to best manage differences to meet fishery and conservation objectives.
- Help Oregonians understand the role and performance of hatcheries in responsibly using and protecting Oregon's native fish.

Tetra Tech's team was selected to perform programming, design, bidding, construction administration and closeout services for the Hatchery Research Center project. The project included programming to meet the planned research objectives; site surveying and mapping; floodplain determination; site utility evaluation; and facility design. The hatchery features a NOAA-compliant fish way and intake screening system, four artificial stream channels for long-term studies, a learning research building, a dormitory, a maintenance shop, restrooms, storage and residences. Infrastructure improvements included hatchery water supply and distribution, with a settling pond and disinfection; domestic water supply with treatment, storage and distribution; and collection, treatment and disposal of hatchery and domestic wastewater.

A new river intake with associated facility piping capable of diverting creek water to the scientific programs in the tank farm and **simulated streams** was the key engineering design element. The circulatory system required initial settling of unacceptable silt loads, screening of leaves and debris, and disinfecting critical portions of fish pathogens in several areas of the facility operations (flow diagram below). Custom designed research facilities included four 200-foot-long simulated stream channels. Several sizes of fiberglass round tanks from 3 foot to 12 foot diameter can be configured in flexible arrangements with quick connects to an underground pipe system for supply, drain and cleaning waste conveyance.



The new research building is 18,000 sf, including wet lab, quarantine lab (with effluent disinfection) and dry lab facilities. A 10,000 square foot tank farm area is located adjacent to the new research building. (Underground piping system is shown under construction at right.)

Silt Settling Pond. Water diverted from Fall Creek via the new intake is routed to a flow splitter box where it can be routed directly to the central site, or to the silt settling pond.

Simulated Streams. Four concrete channels, 25 feet wide by 200 feet long, were constructed to contain the simulated stream improvements. Water flow at the stream inlets is controlled by a replaceable glu-lam beam weir. Design flows of 1 to 3 cfs per stream will vary seasonally, as does the natural stream flow in Fall Creek. An innovative air lift pumping system will recirculate

up to 1 cfs from the tail end to the head end of the streams during low flow periods. At the downstream end of the stream channels, a concrete chamber allows crowding and trapping of juvenile fish. Valves control whether the flow is routed to cleaning waste, the central site tank farm via re-use pipes, or allowed to overflow to Fall Creek.

A mixture of river gravels and woody debris was placed to provide improved habitat. Shade cloth suspended above the streams simulates tree cover.

See also attached article on the OHRC Project from Oregon State University.

Recirculating Aquaculture Systems Design, Franklin, ME

Client

US Dept. of Agriculture. Agricultural Research Service, Bill Wolters, (207) 422-2467

Duration

2005-2007

Construction Value

$13 Million

Team Member Roles on Project

- Brian Vinci, Process Engineer

Description of Services Provided

The National Cold Water Marine Aquaculture Center (NCWMAC) is a research facility established by USDA ARS to improve the efficiency and sustainability of coldwater marine finfish farming.

Challenge: Researchers wanted a flexible facility to raise Atlantic salmon from eggs to 4-year-old fish that met strict biosecurity standards. The nature of available water supply sources at the site necessitated the use of recirculation technologies. Additionally, all effluent from the facility had to be filtered, disinfected, and fish excluded prior to being discharged into the bay.

Solution: Eight separate production systems were designed, enabling the facility to culture 200+ salmon families. Seven recirculating systems, ranging in size from 1,000 to 5,000 L/min, were designed for the salmon breeding program. A disinfected surface water source and three wells onsite provide makeup water at a range of salinities (0–35 ppt) to all systems, satisfying individual bioplan requirements. Recirculating systems include microscreen filtration, biological filtration, carbon dioxide removal, supplemental oxygenation, ozonation, and ultraviolet treatments. The wastewater treatment system designed for the facility includes solids

filtration, thickening, and storage; fish and egg escapement prevention; and effluent disinfection.

Results: Construction of the facility was completed ahead of schedule in the spring of 2007. The fish culture systems were subsequently stocked with fish that were being raised in temporary facilities.

Hatchery Planning & Partial Water Reuse System Design, White River National Fish Hatchery, Bethel, VT

Client

USFWS Region 5 Fisheries Bioengineering and Process Engineering
Duncan Creaser / Dale Aubin
(413) 253-8297 / (413) 253-8230

Duration

2005 construction completed

Team Member Roles on Project

- Brian Vinci, Task Manager

Description of Services Provided

The hatchery was designed to raise Atlantic salmon smolts using 10,000 gpm of water from the nearby White River; however, this has never been realized due to lower than expected flows, poor water quality, and disease problems in the river. As a result, the hatchery had to cut back its production and obtain most of its water supply from wells.

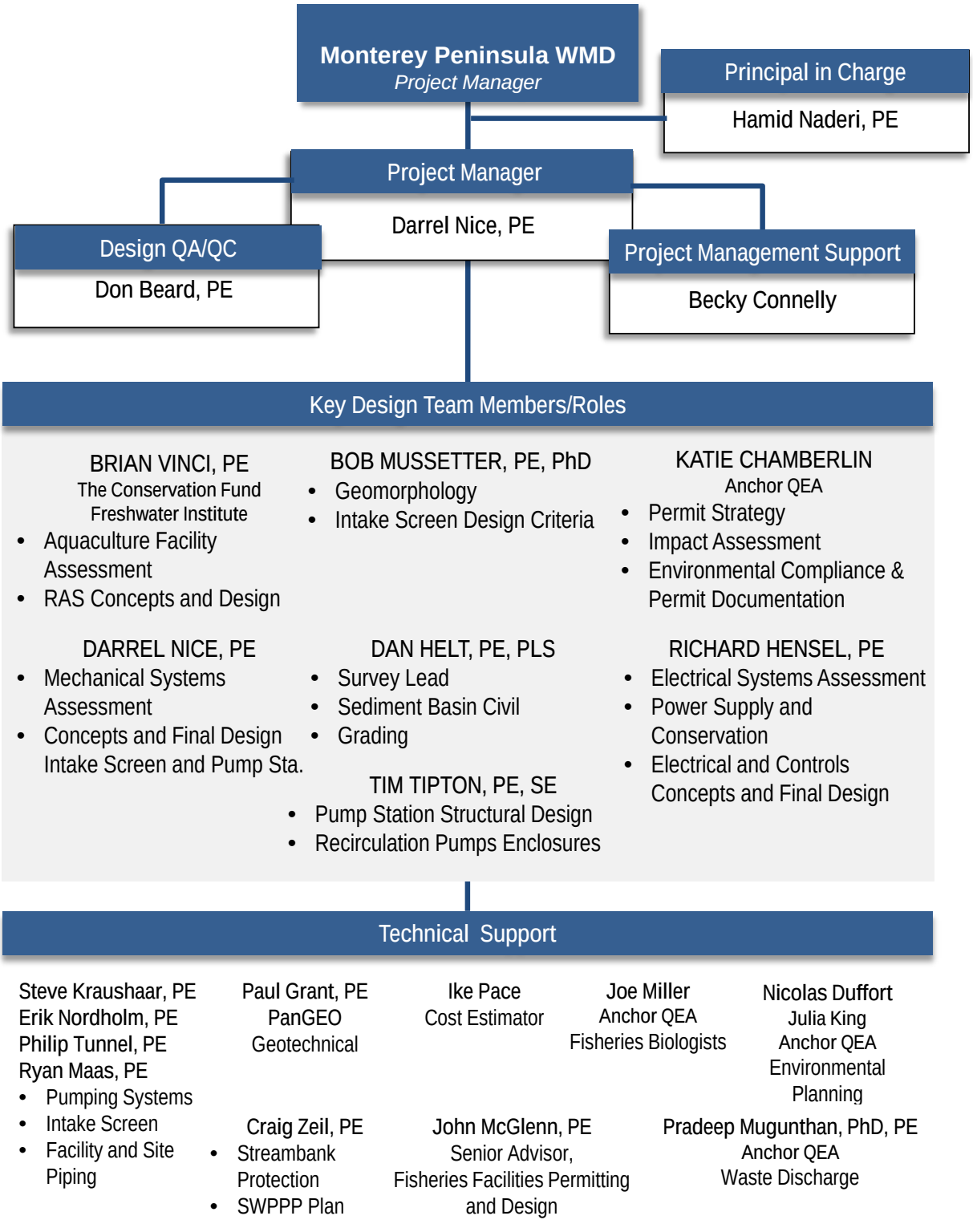
Partial water reuse technology was recommended for the hatchery to augment its limited water supply. Two partial water reuse systems were designed to accommodate the biological parameters of Atlantic salmon smolt production. Eight existing 30-ft diameter concrete fish tanks were retrofitted and refinished with fiber-reinforced plastic (FRP) coating, and a new building with water treatment equipment for both systems was designed.

Construction of the partial water reuse systems was completed in 2005. The systems allow the hatchery to utilize existing infrastructure and raise upwards of 200,000 Atlantic salmon smolts on just 640 gpm of well water. The new technologies reduce labor requirements by employing self-cleaning tank hydraulics, concentrate waste into a small effluent flow, and provide a major portion of the programmatic capacity the facility was originally intended to have.

2005 Carl V. Anderson Award of Merit Project –Association of Conservation Engineers

Resumes

Resumes are provided below in an order following the project organization chart (repeated here for reference).



TETRA TECH

Darrel J. Nice, P.E.
Project Manager

Darrel has experience in the planning, design and construction of a wide variety of civil engineering projects. These include projects related to fisheries design, stormwater planning and facilities design, pump station and hydraulic structure design, wastewater treatment and collection systems facility planning and design, hydraulic and hydrologic modeling, streets, park site design and residential and commercial land development.

Darrel has diverse technical expertise involving project engineering, design, inspection, surveying, and construction. His commercial construction experience helped him to better understand several aspects of the industry including client, consultant, contractor relationship and constructability considerations. Darrel was on the design team for the recently completed Chief Joseph Hatchery and he was Tetra Tech's on site engineer throughout the three-year construction of this $50 million complex near Bridgeport, WA. His design experience includes all aspects of civil and process mechanical design from private subdivision to regional wastewater treatment facilities.

EXPERIENCE

Tribal Resident Fish Hatchery – Circular Tank Fish Rearing, Colville Confederated Tribes, WA, Current – Project Manager for design of a circular fish culture tanks system at the existing trout hatchery. Design single supply dual drain circular tanks configured to meet the rainbow trout fish criteria. Incorporate the use of existing LHO's and connection of the system to the existing supply and drain piping.

Walla Walla Spring Chinook Hatchery, Bonneville Power Administration and Confederated Tribes of the Umatilla Indian Reservation, Milton-Freewater, OR, Current – Project Design Manager for analysis and design of architectural, electrical/controls, HVAC/plumbing; and structural efforts for incubation, early rearing, grow-out and related support facilities. The design includes river intake pump station, utility water supply systems, groundwater supply system and water quality for domestic use on-site; effluent ozone-gas generation and side stream disinfection, storage, handling and chemical feed system and adult broodstock collection and handling at the Nursery Bridge fish ladder facility.

Twin Rivers Hatchery, Kootenai Tribe of Idaho (KTOI), Bonners Ferry, ID, 2012 to 2014 – Project Engineer and onsite representative for construction of the $16 million Twin Rivers and Tribal Hatcheries, including water intakes off the Kootenai and Moyie Rivers, intake pump stations and force main to the Hatchery, influent and effluent treatment basins, hatchery effluent piping, and site work. The Twin Rivers Hatchery includes a new 13,500 square feet building with filtered and UV treated process water systems including heated, chilled, and ambient ground and river water systems.

Chief Joseph Dam Hatchery, Confederated Tribes of the Colville Reservation Bridgeport, WA, 2004 to Present – Civil Engineer for the project. During Step 1, he assisted with conceptual site and utility plans at the hatchery and six acclimation sites located along the Okanogan River. In Step 2 Darrel assisted with site plans, piping plans, and coordination of survey and permitting tasks. Darrel was in charge of designing the well water pumping and conveyance system, housing site design, and design of the acclimation sites. Development of

Project Role:

Project Manager
Mechanical Systems Assessment
Concepts and Final Design of Intake Screen and Pump Station

Education:

B.S., Mechanical Engineering, Washington State University, 1991

Registration/Certification:

Mechanical Engineer, Washington, No. 35304

Professional Affiliations:

American Waterworks Association

Years of Experience:

21

Years with Tetra Tech:

14

Areas of Experience:

Pipeline and Pumping Systems

Process Water Systems

Hydraulic Analysis and Hydraulic Structures

Construction Engineering and Management

Field Testing and Commissioning

Site Work and Facility Design

Chemical Storage and Dosing Systems

Water Supply Systems

On Site Sewer Design

Storm and Wastewater Conveyance Systems

two new acclimation sites included designing screened intakes in the Okanogan River. Four of the acclimation sites consisted of an existing water storage and pumping facility that required upgrades for reliable and safe fish rearing. He designed water supply for both potable and fishery use, and onsite wastewater disposal for the hatchery staff buildings. Water supply is a significant engineering effort as it includes three sources, each of which are required to produce in excess of 20 cfs. One of the sources, a dam relief tunnel, required constructing a pump station within a new concrete wetwell/drywell that is 24 feet diameter and 80 feet deep.

Darrel oversaw the final design of the water supply system design including transient analyses for five proposed water distribution pipelines including a 12,900LF HDPE pipeline with a diameter ranging from 14-42 inch diameter and with a peak flow rate of 40 CFS; a 36-inch steel and HDPE pressure pipeline from the reservoir with peak flow of 60 CFS; a 24-inch steel and HPDE pumped transmission line with 3600 LF and a peak flow of 20 CFS, as well as two shorter acclimation pond supply pipelines.

During construction, Darrel was the Owner's onsite representative and quality assurance engineer. He also worked with the hatchery manager to find and design functional modifications that better fit the final program and work these updates into the construction schedule. As construction neared completion, Darrel was responsible for writing operations manuals. Darrel continues to assist Pat Phillips, Hatchery Manager, with warranty items as they occur.

Penticton Sockeye Reintroduction Project, Okanagan Nation Alliance Enterprise Ltd, Westbank, BC, Current – Project Engineer performing construction administration for Penticton Hatchery improvements for annual production of up to 8 million sockeye salmon to support long-term reintroduction of the species into the upper Okanagan River system.

Solomon Gulch Hatchery Upgrades, Prince William Sound Aquaculture Corporation, Valdez, AK, Current – Project Engineer for design of major improvements to an existing pink and coho salmon hatchery. Improvements include upgrades to the water supply system to allow for expansion to approximately 300 million egg capacity for the pink salmon program.

Cassimer Bar Hatchery, Confederated Tribes of the Colville Reservation, Brewster, WA, 2006 – Civil Engineer for evaluation and recommendation of improvements of a Kelt hatchery located near Brewster WA. The project consists of performing engineering services to expand the existing facilities at Cassimer Bar Hatchery from the present 80,000-smolt capacity to rear a minimum of 200,000 steelhead smolts and to recondition at least 200 steelhead kelts. The primary purpose of the project is two-fold: 1) to provide a site planning document showing the general arrangement and orientation of a multi-use incubation, rearing and office building; a double-wide manufactured home; a concrete pad for a temporary mobile home plus the outdoor raceways and tanks, piping systems and related infrastructure necessary to support the smolt rearing and kelt reconditioning programs; and 2) construction documents for the multi-use building to accommodate incubation, early rearing, and a staff office space.

Mt Spokane Road Improvement, Washington State Parks and Recreation Commission, Mt Spokane, WA, 2001 – Project Engineer supporting the Tetra Tech effort to perform study level and design level services for the hydrology and utility elements of 10 miles of road improvements within Mount Spokane Park. These services included public meetings, streambank protection, utility coordination/relocation, fish passage, hydrologic modeling of 15 square miles of mountainous terrain, and cost estimating. Design was performed according to WA State Park, WSDOT, Spokane County, WA, State Department of Ecology, and WA Department of Fish and Wildlife guidelines.

Crewport and Buena Water System Improvements, Yakima County Public Works Yakima, WA – Project Manager for this Yakima County Public Works project to provide design and construction administration assistance for improvements to Crewport Water System and Buena Water System. Scope of services included evaluation of alternatives for replacement of an existing 50,000-gallon elevated steel water storage tank. Scope included plans and technical specifications for a new 250,000-gallon Crewport water reservoir, site piping, structural design of the foundation, and FAA top mounted obstruction lighting; plans and specifications for the Crewport well house electrical wiring, pump controls, monitoring and recording equipment, and autodialer; Scope also included specifications for the Buena pump controls, connections to existing monitoring and recording equipment, and connection to autodialer.

TETRA TECH

Donald R. Beard, P.E.

Director, Senior Civil Engineer

Don Beard is a civil engineer with experience in fisheries projects, utility systems, hydraulic and hydrologic studies, and water and wastewater treatment facilities. Since 1972, Don has participated in all phases of the design process, including feasibility studies, master planning, preliminary and final design, contract documents, construction administration, onsite observation and start-up. As a project leader, he has been responsible for design projects in Alaska, Washington, Oregon and overseas. He has extensive experience in Alaska with particular emphasis in design for cold remote regions.

EXPERIENCE

Walla Walla Spring Chinook Hatchery, Bonneville Power Administration, Confederated Tribes of the Umatilla Indian Reservation, Current – Design Manager for preliminary design of a new hatchery to rehabilitate and enhance Chinook salmon runs in portions of Columbia-Walla Walla River systems. Hatchery to produce 500,000 spring Chinook for release at the hatchery site and other locations along the South Fork of the Walla Walla River.

Nome Central Incubation and Rearing Facility, Norton Sound Economic Development Corporation, Nome, AK, Current – Project Manager for planning and design of a new hatchery in the vicinity of Nome. The project is an integral part of NSEDCs plans to restore depleted subsistence stocks around Norton Sound and provide the economic benefits of enhanced fisheries. Preliminary programming is aimed at restoration of about six stocks of chum, coho and chinook salmon and enhancement of commercial coho and chum fisheries in the sound.

Main Bay Hatchery Improvements, Prince William Sound Aquaculture Corporation, Current – Project Manager for design and construction assistance of new warehouse/apartment building and replacement hydroelectric turbine at a remote hatchery in Prince William Sound. The new turbine will produce about 200 kw while providing design flows of about 20 cfs to the hatchery

Evaluation of Gunnuk Creek Hatchery, Northern Southeast Aquaculture Association, 2013 – Project Manager for review of a private non-profit facility being evaluated for renovation. The project included preliminary scoping of upgrades required to produce 30 million chum salmon with a surface water supply that presents temperature and turbidity challenges.

Frazer Lake Fish Pass Improvements, Alaska Department of Fish and Game, Kodiak Island, AK, Current – Project Manager for the design of upgrades to an existing fish pass system that was installed in the 1960s to create a sustainable sockeye return to a previously-non-anadromous lake remotely located in the Kodiak National Wildlife Refuge. The goals of project include renovation of a deteriorating adult fish weir and improving the geometry and water flow characteristics of the ladder entry to reduce bear predation. Constructability and access are major issues in the design.

Hatchery Evaluations of Nine Salmon Hatcheries, Alaska Department of Fish and Game, 2011 – Project Engineer for civil and hatchery process reviews of State-owned facilities presently operated by private non-profit organizations throughout Alaska. Project included field investigations of existing conditions and development of summary reports for each facility.

Project Role:

Design QA/QC

Education:

M.S., Sanitary Engineering, University of California, Berkeley, 1971

B.S., Civil Engineering, University of California, Berkeley, 1970

Registrations/Certifications:

Civil Engineer, AK, 1976 (AK Registration #CE4225)

Civil Engineer, WA, 1975

Professional Affiliations:

Member, American Society of Civil Engineers (ASCE)

Member, Association of Conservation Engineers (ACE)

Office:

Juneau, Alaska

Years of Experience:

40

Years with Tetra Tech:

39

Key Areas of Experience:

Fisheries

Municipal Facilities

Water Supply Systems

Wastewater Systems

Construction Administration

Macaulay Salmon Hatchery Expansion, Douglas Island Pink and Chum, Inc., Juneau, AK, 2011-Current – Project Manager for design of a new raceway building and a warehouse building to allow for expansion of chinook and coho production and consolidate maintenance and storage operations at an existing hatchery and visitor center. The raceway building includes an elevated walkway for accessible visitor viewing of coho and chinook fingerlings.

Cannery Creek Hatchery Improvements, Prince William Sound Aquaculture Corporation, 2010-Current – Project Manager for design and construction assistance of new incubation building, fuel storage and diesel generation facilities at a remote hatchery in Prince William Sound. The new incubation building will accommodate expansion of the pink salmon production to approximately 300 million.

Kitoi Bay Hatchery Improvements, Kodiak Regional Aquaculture Association, Afognak Island, AK, 2010-Current – Project Manager for planning and design of improvements to the hatchery, which was originally constructed in the 1960s. Major new facilities include: bunkhouse upgrades, a new sockeye incubation and rearing building, a new pink incubation building and replacement of water supply piping and old hatchery water systems.

Pillar Creek Hatchery Improvements, Kodiak Regional Aquaculture Association, Kodiak, AK, 2010-Current – Project Manager for planning and design of improvements to the hatchery. Major new facilities include: a new oxygen generation building, roof structures over both sockeye and sportfish raceways, and repairs to the aging incubation building.

Solomon Gulch Hatchery Upgrades, Prince William Sound Aquaculture Corporation, Valdez, AK, Current – Project Manager for design of major improvements to an existing pink and coho salmon hatchery. Improvements include upgrades to the water supply system to allow for expansion to approximately 300 million egg capacity for the pink salmon program.

Chief Joseph Dam Hatchery, Confederated Tribes of the Colville Reservation, Bridgeport, WA, 2002-2012 – Design Manager for preliminary design of a new hatchery to rehabilitate and enhance chinook salmon runs in portions of Columbia-Okanogan River systems. Hatchery to produce 3 million summer and spring chinook for release at the hatchery site and to new and retrofitted acclimation ponds along the Okanagan River.

Sawmill Creek Hatchery, Northern Southeast Regional Aquaculture Association, Sitka, AK, 2007 – Project Manager, assisted NSRAA with preliminary design of elements of a new coho salmon production facility located at the former site of a pulp mill in Sitka, Alaska.

Cedar River Sockeye Hatchery, Seattle WA, 2006–2012 – Project Engineer for preliminary design and oversight reviews of sockeye salmon hatchery on the Cedar River east of Seattle. The project was designed to produce approximately 34 million sockeye fry for release into the Cedar River system entering Lake Washington.

Water Treatment Equipment, Sheldon Jackson Hatchery, Sheldon Jackson College, Sitka, AK, 2003 – Project Engineer for assistance with equipment acquisition and installation to upgrade water quality at existing research and educational hatchery.

Fish Ladder Replacement, Solomon Gulch Hatchery, Valdez Fisheries Development Association, Valdez, AK – Project Manager for design of a new fish ladder at a relatively large pink and coho salmon hatchery.

Yana River Hatchery, Magadan-Nikkeiren, Joint Venture, Magadan Province, Russian Far East – Project Engineer from conceptual design through construction of a hatchery facility designed to produce 30 million chum salmon fry and 800,000 coho salmon fingerlings for release to the Sea of Okhotsk.

Kasilof Salmon Hatchery, Alaska Department of Fish and Game, Kasilof, AK – Project Engineer for design of water system improvements for sockeye and king salmon incubation facility, including a new water intake structure, a settling and filtration system, and additional adult holding facilities; significantly reduced water quality problems that had seriously impacted the success of the hatchery's operations.

Chinook Expansion, Hidden Falls Hatchery, Alaska Department of Transportation and Public Facilities, Baranof Island, AK – Project Manager, schematic design through construction services for $2.0 million in improvements to water supply system and fish rearing facilities, including installation of large-diameter siphon and addition of (38) 20-ft-dia tanks.

Brian J. Vinci, Ph.D., P.E.

Senior Engineer

EXPERIENCE

Chelan County Public Utility District Fisheries Bioengineering and Fish Health Services, 2007 to Present

Chiwawa Hatchery Pilot Reuse System Design, Design Engineer—Completed the process engineering design for a steelhead rearing system based on water reuse technologies. Sub-tasks included the incorporation of existing infrastructure to allow new technology and water conservation measures. Project included the preparation of a conceptual design report and drawings and specifications for the public bid process. Worked with PUD engineers and the PUD's selected A/E firms to complete the bid documents. Commissioned the facility and provided operational support during the first year of operation.

Chelan Falls Rearing and Acclimation Facility Rearing Tank Design, Design Engineer—Completed the rearing tank design for a Chinook salmon rearing and acclimation facility based on dual-drain circular tank technology. Sub-tasks included the incorporation of radial flow settling units and volitional and forced release design features. Project included the preparation of a conceptual design report and drawings and specifications for the public bid process. Commissioned the facility and provided operational support during the first year of operation.

USFWS Region 5 Fisheries Bioengineering and Process Engineering, 1999 – Ongoing

Region-wide Hatchery Evaluation and Planning, Project Manager—Project manager for a region-wide study of the existing conditions, capacity, and needs of the hatcheries and technology centers in the Northeast region. In cooperation with internal staff and FWS staff, developed a feasibility study report for each facility that fully details the program, priority needs, and presents conceptual designs for facility improvements. Feasibility reports were successfully used to secure funding for priority projects identified.

Craig Brook NFH Wastewater Treatment Design, Project Manager—Project manager for the process design of a wastewater treatment system to treat 2,400 gpm of effluent from this flow-through salmon culture facility. Worked as part of a team to develop a design that addresses solids and nutrient removal, pathogen containment, fish exclusion, and manure management.

White River NFH Hatchery Renovation Design, Task Manager—Managed the process engineering for multiple water treatment projects at this hatchery. Sub-tasks included the re-design of all hatchery mechanicals and the renovation of existing infrastructure to incorporate new technology and water conservation measures. The partial water reuse system designed incorporated conservation hatchery protocols and water conservation strategies. The system was constructed and commissioned in 2003. The system design was documented and reported in a scientific journal publication. The design and construction of the partial water reuse system was awarded the Association of Conservation Engineers Conservation Engineering Award of Merit in 2005.

Recirculating Aquaculture Systems Design, Franklin, ME—Process Design Engineer for eight separate production systems to enable the facility to culture 200+ salmon families. Seven recirculating systems, ranging in size from 1,000 to 5,000 L/min, were designed for the salmon breeding program. A disinfected surface water source and three wells onsite provide makeup water at a range of salinities (0–35 ppt) to all systems, satisfying individual bioplan requirements. Recirculating systems include microscreen filtration, biological filtration, carbon dioxide removal, supplemental oxygenation, ozonation, and ultraviolet treatments. The wastewater treatment system designed for the facility includes solids filtration, thickening, and storage; fish and egg escapement prevention; and effluent disinfection.

Project Role:

Recirculating Aquaculture System Specialist

Education:

Ph.D., Biological and Environmental Engineering

M.E./B.S., Agricultural and Biological Engineering

Registrations/Certifications:

Professional Engineer, NY, PA

Office:

West Virginia

Years of Experience:

22

Years with The Freshwater Institute:

15

Key Areas of Experience:

Bioengineering

Northwest Hatchery Facility Design

Environmental Regulations of Fisheries Facilities

TETRA TECH

Bob Mussetter, PhD, PE

Principal Hydraulic Engineer

Dr. Mussetter has over 30 years of experience in analysis and design for a broad range of water-resource and civil engineering projects. His primary area of expertise involves integration of hydrology, hydraulic engineering, and river mechanics with fluvial geomorphology to solve river stability, flooding, and environmental problems. His experiences includes projects throughout the United States and internationally involving a broad range of stream types and physical environments, varying in scope from collection and analysis of field data through development and application of mathematical models to evaluate sediment transport in both sand-bed and gravel-bed systems. He has extensive experience with the full suite of hydrologic, hydraulic and sediment transport models, including HEC-HMS, HEC-RAS (including the developmental, beta-test Version 4.2), HEC-6 and HEC-6T, RMA-2V, FLO-2D, and SRH-2D, and many other similar models. Dr. Mussetter is nationally recognized as an expert in hydraulic and sediment transport analysis, and in that context has conducted several Independent Technical Reviews of related studies for the Sacramento, Seattle and Los Angeles Districts of the Corps of Engineers.

Project Role:

Geomorphology

Intake Screen Design Criteria

Education:

Ph.D./1989/Civil Engineering

M.S./1982/Civil Engineering

B.S./1976/Civil Engineering

Registrations/Certifications:

Registered Professional Engineer: 1983/Colorado, 1984/Arizona, 1984/Montana, 1994/New Mexico, 1998/Idaho, 1995/South Dakota, 1999/ California, 2002/Texas, 2005/Wisconsin, 2006/Louisiana

Professional Affiliations:

American Society of Civil Engineer

American Water Resources Association

American Academy of Water Resources Engineers (Diplomate)

American Geophysical Union

Office:

Fort Collins, Colorado

Years of Experience:

35

Years with Tetra Tech:

21

RELEVANT EXPERIENCE

San Clemente Dam Retrofit Study, Carmel River, Carmel, California (2007) Principal Engineer and Project Manager for a detailed study of the potential impacts on flooding, river stability and instream habitat in an 18-mile reach of the Carmel River associated with various options for retrofitting San Clemente Dam to meet seismic safety standards. Project responsibilities included study plan development, supervision of subcontractors for topographic and bathymetric surveys and reservoir sediment sampling, collection of sediment and other physical data, hydraulic (HEC-RAS) and sediment transport (HEC-6T) modeling, and interpretation of model results. His responsibilities also included extensive coordination and communication with agencies and interest groups concerned with public safety, water supply, instream habitat and endangered species issues. The study was performed for the California Department of Water Resources and California-American Waterworks Company.

San Clemente Dam Removal and Carmel River Reroute, California: Design Build (Ongoing) Engineer-of-Record for design of the reconstructed Carmel River channel through the former impoundment of San Clemente Dam, as part a design-build team led by Granite Construction and Kleinfelder. The work is culmination of the decisions made from the studies performed for the above project description, and is also being performed for the California-American Waterworks Company. Specific responsibilities include hydrologic analysis, 1-dimensional and 2-dimensional hydraulic modeling, sediment transport analyses, and use of the results to design a stable stream channel that provides passage for steelhead in the reconstructed segment of the river.

Two-dimensional Hydrodynamic and Sediment-transport Analysis of the Sacramento River in the Vicinity of the M&T Pump Intake at RM192.5 (2011) Principal Engineer and Project Manager for a study to evaluate hydraulic and sediment transport conditions in the vicinity of the M&T pump intake at RM 192.5 on the Sacramento River near Chico, CA, and to design habitat-friendly channel protection measures to mitigate the effects of sediment deposition on pumping and fish screen operations. Project responsibilities included managing hydrologic (HEC-FFA), hydraulic (UNET, HEC-RAS, RMA-2V) and sediment transport analyses of existing conditions and with-design conditions that consisted of series of eight spur dikes that are intended to prevent further bank erosion and bar development at the Mouth of Big Chico Creek. Coordinated physical modeling of the site with subconsultant Colorado State University. The project was conducted as part of a CALFED grant for Ducks Unlimited.

Project Manager and Principal Engineer, San Joaquin River Restoration Program and Settlement Agreement, Various Locations, CA, California Dept. of Water Resources (Ongoing) Project Manager and Principal Engineer for a multi-year IDIQ contract with the California Department of Water Resources to provide water resources engineering and geomorphology services to support restoration for the upper 150 miles of the San Joaquin River. Project elements have included: development of HEC-RAS, Steady and Unsteady models of the river and bypasses, appraisal-level design and cost estimates for restoration, including fish screens and fish passage structures, analysis of non-damaging flow capacities for the levees and flood damage assessments,.

Hydraulic and Sediment-transport Evaluation, Uintah Water Conservancy Plumping Plant, Utah (2009) Project Manager and Principal Engineer for a hydraulic and sediment-transport evaluation to assist in design of the Uintah Water Conservancy Pumping Plant on the Green River near the Ouray National Wildlife Refuge in Utah. Project consisted of the two-dimensional modeling of the area to evaluate the sediment-transport and local scour conditions at the site and development of recommendations for bank protection measures that are compatible with the needs of endangered fish species while protecting the pumping plant and associated infrastructure.

Sediment-transport Analysis of the Gila River at the Proposed AWSA Diversion Site (2014) Principal Engineer and QA/QC for a study to evaluate the hydraulic, geomorphic and sediment-transport conditions of the Turkey Creek project reach. The evaluation included updates to the hydrologic analysis that was conducted for previous studies and a site reconnaissance of the project reach to identify the most suitable location for the diversion structure and to conduct sediment sampling. The evaluation also included topographic and bathymetric surveys, development of hydraulic and sediment-transport models, and an assessment of suspended-sediment loads and incipient motion conditions. The hydraulic modeling was performed using HEC-RAS and the sediment-transport modeling was conducted using HEC-6T and included a 50-year simulation of existing (baseline) and with-project conditions. Project was completed under a subcontract with Bohannan Huston for the New Mexico Interstate Stream Commission.

Katie Chamberlin

Managing Environmental Planner

Ms. Chamberlin has 10 years of experience, specializing in federal, state, and local environmental permitting and regulation, as well as in preparation of state and federal environmental documentation related to waterfront development, sediment management, and transportation. She has managed complex Environmental Impact Statements (EISs) and Environmental Impact Reports (EIRs) for the National Park Service and the U.S. Army Corps of Engineers (USACE) in the San Francisco Bay Area and Sacramento Delta, respectively. She has significant experience in developing permitting strategies for projects located in the coastal zone, and routinely leads permitting efforts related to waterfront development and maintenance projects for numerous marinas, ports, and ferry operators throughout California. Ms. Chamberlin formerly worked as a Federal Project Manager for the Washington State Department of Ecology, where she reviewed projects for compliance with Section 401 of the Clean Water Act (CWA).

EDUCATION

M.A., Marine Affairs, University of Washington, 2004

B.A., International Studies, University of Washington, 2002

Project Experience

Marina Maintenance Dredging and Restoration

City of Martinez, California

Ms. Chamberlin led the environmental permitting process for replacement of a breakwater wall, maintenance dredging, and upland placement of dredged material at the Martinez Marina. She worked with the Dredged Material Management Office to obtain a Section 404 Nationwide Permit from USACE, Section 401 Water Quality Certification from the San Francisco Bay Regional Water Quality Control Board (RWQCB), and a Minor Permit from the San Francisco Bay Conservation and Development Commission (BCDC). She successfully completed California Endangered Species Act (CESA) consultations for longfin smelt (*Spirinchus thaleichthys*) and delta smelt (*Hypomesus transpacificus*) with the California Department of Fish and Wildlife, and federal Endangered Species Act (ESA) consultations for salt marsh harvest mouse with the U.S. Fish and Wildlife Service (USFWS) as well as for salmonids with the National Marine Fisheries Service (NMFS). Working closely with USFWS, Ms. Chamberlin also negotiated and developed the mitigation plan for salt marsh harvest mouse (*Reithrodontomys raviventris*) habitat at a nearby park site.

Project Experience (Continued)

San Francisco Bay to Stockton Navigation Improvement Study *Port of Stockton* *Stockton, California*	Ms. Chamberlin is assisting the Port of Stockton by providing regulatory and permitting support, assisting in developing the California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) document, and providing general technical support for the San Francisco Bay to Stockton Navigation Improvement Study. The project involves deepening the federal navigation channels that span from the San Francisco Bay to the Port of Stockton. In this role, Ms. Chamberlin provides ongoing coordination and review related to the project's impacts on ESA and CESA-listed species and their habitat, sediment management issues, salinity mitigation, and other complex regulatory permitting issues.
Sacramento River Deep Water Ship Channel Supplemental EIS/Subsequent EIR *USACE* *San Francisco, California*	Ms. Chamberlin led the development of the Sacramento River Deep Water Ship Channel (SRDWSC) EIS/EIR. The project involved deepening the SRDWSC to -35 feet mean lower low water for a span of 35 miles. In this role, Ms. Chamberlin was the primary point of contact with USACE and the Port of West Sacramento and managed the team of authors of the EIS/EIR. Ms. Chamberlin also coordinated with the USFWS, NMFS, and California Department of Fish and Wildlife on ESA and CESA issues, respectively, associated with the deepening project.
West Complex Rail Line Extension *Port of Stockton* *Stockton, California*	Ms. Chamberlin is leading the permitting process for the Port of Stockton's West Complex Rail Line Extension project. The project involves permanent fill of waters of the United States and freshwater emergent wetlands in order to construct two railway crossings. The project area is considered potentially suitable habitat for the giant garter snake, a federal and state threatened species. Ms. Chamberlin led the consultation with the USFWS to address potential project impacts to the giant garter snake.
San Francisco Bay Long-term Management of Strategy Facilitation *USACE* *San Francisco, California*	Since 2009, Ms. Chamberlin has facilitated the San Francisco Bay Long-term Management Strategy (LTMS) program, which is focused on dredging and sediment management policies in the San Francisco Bay. Ms. Chamberlin facilitates meetings, prepares technical white papers, and coordinates symposia on various technical issues key to the concerns of the LTMS, including beneficial reuse of dredged sediment, the protection of endangered and threatened species during dredging and upland placement activities, and dredging policy, among others.

TETRA TECH

Dan Helt, PE, PLS

Survey Manager/Project Engineer

Dan Helt is experienced in both civil engineering and land surveying aspects of construction and land development projects. He has designed and prepared both small and large federal, municipal, commercial, and residential grading and drainage plans, as well as utility plans and project associated public improvement plans. Mr. Helt has prepared a variety of hydrology and hydraulic documents for review of analysis and compliance with codes and standards. He has prepared and reviewed specifications, calculations and other basis of design documents.

Mr. Helt has performed field boundary and topographic surveys, as well as construction staking, certification and monitoring, and ALTA/ACSM surveys. He has considerable experience researching boundary and chain of title information, and preparing legal descriptions.

Dan Helt has extensive knowledge in the use of Autodesk's Civil 3D software for both conceptual and detailed design studies, as well as the production of construction plan sets. He also has significant experience using Hydraflow and Hydraflow Express for flow modeling and storm routing and HEC-RAS, USEPA SWMM and Storm and Sanitary Analysis for stormwater system design and modeling.

EXPERIENCE

Boundary Surveys for NRCS Easements, Natural Resources Conservation Services, CA 2012-Ongoing – Survey Project Manager and Surveyor of Record responsible for providing boundary surveys for the Natural Resources Conservation Services (NRCS) Wetland Restoration and Protection (WRP) Easement Program. Tetra Tech was contracted by the NRCS to provide boundary surveys, legal descriptions and exhibits, and GIS data for 33 separate sites in 12 Northern California counties. Project sites range in size from 11 to 2871 acres and are mostly located in agricultural crop or grazing land. The survey work consists of performing field boundary surveys to define the parent parcel, and topographic surveys to define the WRP easement boundary. Once the boundaries are defined, legal descriptions and plats are produced to accompany warranty deeds, thus creating the easements. The final stage of the project includes monumenting the angle points of the easement. Tetra Tech will install easement witness posts at 500 foot intervals along the boundary of the easement. Once these tasks are completed, Tetra Tech will file Records of Survey for the boundaries in the county in which the WRP easement is located. Critical to this project is adherence to an aggressive schedule of 90 days for completion of each site's survey tasks. Mr. Helt's ability to organize field and office personnel, as well as dynamically track and change the project schedule with changing site and weather conditions, and the changing schedules of the NRCS and landowners, has been paramount to the continued success of the project.

Air National Guard Installation Boundary Mapping, National Guard Bureau, Various Bases, 2012-Ongoing – Survey Project Manager and Surveyor of Record for the southwestern portion of this national contract to establish boundary line locations, set monuments and file the appropriate documentation for existing Air National Guard bases across the United States. Some of the contracted tasks include courthouse and facility records research,

Project Role:

Survey Lead
Sediment Basin Civil Grading

Education:

B.S., Civil Engineering, Cal Poly, San Luis Obispo, 2003

Registrations/Certifications:

Professional Engineer, California, No.C69347

Professional Land Surveyor, California, No.8925

Professional Affiliations:

American Society of Civil Engineers

California Land Surveyors Association

Office:

San Luis Obispo, CA

Years of Experience:

11

Years with Tetra Tech:

Three

and field reconnaissance. Tetra Tech will be required to field tie existing property and controlling corners to geodetic coordinates. Additional tasks include data reduction, boundary resolution, calculations, mapping and setting final corner monuments for the subject properties. Of particular importance to the ANG is the organization of record information, along with the conversion and/or cataloguing of that information and the established boundary in GIS for use with SDSFIE 3.0, as mandated by the Air Force. Tetra Tech will also be responsible for helping the ANG develop a standard operating procedure so that personnel can better manage their GIS records keeping, as the real property boundaries associated with their various facilities and assets change in the future.

Control Network Establishment Survey Naval Air Station (NAS) Fallon, NAVFAC SW, Fallon, NV, 2014 – 2015 –Survey Manager responsible for overseeing the establishment of new horizontal and vertical control monuments and new values to existing control monuments at NAS Fallon. New monuments were set at key locations, to provide indivisibility and convenience of location for future construction projects. The new and existing monuments were observed with Static GPS and digital level loops meeting Federal Geodetic Control Committee (FGCC) standards for establishment of horizontal and vertical control networks and level loops. The data was then post processed using Trimble Business Center, performing a minimally constrained horizontal adjustment and a fully constrained vertical adjustment. A report detailing the survey procedure, the coordinates of the new points, the considerations in the adjustment, and the errors in the network was prepared. Other deliverables included an overall map for Fallon's Engineering and GIS Department to show graphically the establishment of the points and their locations, and datasheets showing photos of the monuments, a sketch of location, and coordinates of the point for use by installation personnel and distribution to contractors.

Templeton to Atascadero Connector, County of San Luis Obispo, Templeton, CA, 2014–Ongoing – Survey Manager responsible overseeing topographic and right-of-way survey services, and for coordinating with UPRR for survey site access. Tetra Tech is currently providing design services for a multi-use pathway including completing the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) processes, right-of-way acquisition, permits, construction documents and grant administration. The ultimate goal of the pathway network is to provide connectivity between Templeton and Atascadero, facilitating safe and attractive transportation between these two towns and encouraging alternative transportation modes.

Topographic Mapping and Site Survey for P-327 F-35C Operational Training Facility, Naval Air Station (NAS) Lemoore, NAVFAC SW, Lemoore, CA, 2014 –Survey Manager responsible for providing topographic mapping and location of underground utilities in support of future construction of the FY15 F-35C Joint Strike Fighter Operational Training Facility. Mr. Helt attending a project kick-off meeting with NAVFAC to meet with personnel, review the scope of work, and coordinate access for ground personnel, as well as flyover clearance for the aerial data acquisition phase of the project. Field Survey work of hardscape areas was performed along with the setting of aerial targets. Essential to the successful completion of this project was the seamless and precise integration of the aerial topographic survey with the field surveyed data.

Map Checking Services, City of Pismo Beach, Pismo Beach, CA 2013–Ongoing – Contract City Surveyor responsible for providing map checking and certification services to the City of Pismo Beach. Responsibilities include plan checking Parcel Maps, Tract Maps, Certificates of Compliance and easement submittals for the City, and redlining submitted check prints in order to address necessary changes and/or omissions based upon the requirements of The Subdivision Map Act and local City Ordinances.

TETRA TECH

Richard Hensel, P.E.
Senior Electrical Engineer

Richard is an electrical and controls systems engineer with 22 years of experience in municipal utility, energy management, and industrial projects. Richard's electrical and controls design experience includes projects involving SCADA systems, water and wastewater automation, telemetry, power generation and distribution, and equipment power. His controls design and programming experience includes projects utilizing Programmable Logic Controllers (PLCs), communications networks, database servers, and graphics stations for process monitoring and control.

EXPERIENCE

Chief Joseph Hatchery, Colville Confederated Tribes, Bridgeport, WA 2008-2011 – Electrical Engineer. Performed the power system design and ongoing construction support for the hatchery facility and water supply The Hatchery is designed to produce 2.9 million salmon per year. Three separate water supply sources are being constructed, consisting of ground water wells, a reservoir outfall, and reservoir relief pump station. Also designed the power distribution and lighting systems for the hatchery building, visitor's center, fish ladder, relief pump station and equipment additions to the existing Chief Joseph dam spillway.

Mobile Wastewater Pumping System, City of Spokane, WA 2010-2011 – Electrical Engineer. Designed the power and control components for a trailer-mounted pumping system. Features include operation on a trailer mounted generator, variable frequency drives, and motor connection equipment that can support simultaneous operation of multiple combinations of two submersible pumps, each of varying sizes ranging from 100 hp to over 200 hp. The drives include selector switches that allow the parameters to be configured automatically for each combination. A simple float-based control system allows for duty-standby, fixed lead-lag or automatic alternation without the need for a PLC.

Kootenai Twin Rivers Sturgeon and Burbot Hatchery, Bonners Ferry, ID, 2013-2014 – Electrical Engineer. Provided control system, instrumentation, and SCADA system design for new site development and multi-building hatchery complex within existing Tribal campground property. Hatchery was for Sturgeon and Burbot rearing at the confluence of the Kootenai and Moyie Rivers. In addition to rearing and water treatment processes in the main hatchery, the site includes ground water well pumps, two river intake pump stations, each consisting of triplex variable speed submersible pumps, a booster pump station with filtration equipment, and a standby generator. The control system is based on a distributed PLC architecture running on a fiber optic Ethernet network. The SCADA system integrates the process controls with aspects of the building automation system (BAS).

Water Filtration Plant Chemical Feed SCADA, City of Everett, WA, 2007-2008 – Electrical Engineer provided SCADA programming for the upgrade to the Soda Ash, Alum and Liquid Polymer feed system at the Water Filtration Plant. Richard developed the program for the new PLC that was installed for the Hypochlorite System used to control the new chemical feeders. A new touch panel PC running a Wonderware SCADA software was installed in the chemical feed area to monitor and control the chemical feed pumps.

Water Treatment Plant SCADA, John W North Water Facility, City of Riverside, Grand Terrace, CA, 2008 – Electrical Engineer; provided the SCADA system design for the balance of plant systems, including a 1200

Project Role:

Electrical Systems Assesment
Power Supply and Conservation Electricaland Controls Concepts and Final Design

Education:

BS Electrical Engineering, University of Washington, 1992

MS Electrical Engineering, University of Washington, 1999

University of Washington, Network Engineering, Certification, 2007

Registration/Certifications:

Professional Engineer-Electrical
Washington, 2002, No. 38424
California, 2008, No. E18510
Oregon, 2014, No. 89631PE

Office:

Seattle, Washington

Years of Experience:

22

Years with Tetra Tech:

8 (8/2006)

Key Areas of Experience:

Wastewater, water system, industrial, and power generation projects

Design of electrical power and control systems

Plant control and SCADA system programming, start-up, and commissioning

PLC and embedded controller programming

combined hp booster pump station, sodium hypochlorite pretreatment, 1500 kW standby generator, membrane pre-filtration, and motor operated valves. Responsibilities included managing PLC control panel fabrication, developing Schneider-Telemechanique Quantum PLC and Wonderware HMI programming for all balance of plant systems, design of Ethernet and Modbus RS-485 serial networks, coordination with the City's existing radio telemetry infrastructure, integration with the membrane treatment vendor's control system, and start-up commissioning. Also provided on-site assistance to the electrical contractor and training to City personnel for system operation and software maintenance.

Irvine Ranch Water District As-Needed Contract, Irvine, CA, 2009-2010 – Electrical Engineer assisted in development and deployment of PLC programs based on District standard for water distribution SCADA system. Work included development of control strategies and PLC programs to control pump station and reservoir facilities.

Water Treatment Facility, Moclips River Estates, Quinault, WA, 2000-2002 – Project Electrical Engineer for this water treatment system, consisting of a well house, treatment building, booster pump station, and 95,000-gallon reservoir. The well house, located 1,200 feet from the treatment building, included 480V power and controls for a 15hp well pump. All monitoring and controls for the well pump, booster pumps, reservoir, and treatment building were designed to be handled by a single PLC. On-site monitoring and control set point adjustments were made through a touch screen type operator interface. A facility auto dialer provides alarm indication to off-site operations personnel. The design combined the convenience and flexibility benefits of modern automation technology with the client's desire to minimize complexity and maintenance costs.

Westridge Pump Station, City of Anaheim PUD, CA, 2012-present – ElectricalEngineer for evaluation of the existing hydraulics and control system to determine the reason for, and corrective actions of large discharge pressure swings. Project included hydraulic and mechanical equipment analysis as well as troubleshooting and reprogramming of the existing controls.

Gabbert Road Water Booster Station, City of Gresham, OR, 2000-2002 – Electrical Design Engineer and electrical project manager for this new booster station. The station is designed to operate in an alternate reservoir fill mode in addition to the normal pressure boosting mode. Developed a control system configuration that allowed precise control of pressure by variable speed control of a lead 10hp and lag 30hp pump using a process controller. The station design fully automated by telemetry. Emergency power can be provided by a portable generator via kirk-key interlock with the main service breaker.

Machias Water Booster Pump Station, Snohomish PUD, Everett, WA, 2000-2002 – Project Engineer for this water booster pump station. The station consisted of (2) 60 hp VFD driven pumps with provision for (3) additional 60 hp pumps. The design included emergency generator receptacle and manual transfer switch to allow operation of critical station equipment by a mobile generator. Designed the control equipment to include an automatic adjustment of the DC undervoltage trip setting of the VFDs to allow reliable operation when running on generator power.

Water Filtration Plant Clearwell Addition, City of Everett, WA, 2005-2007 – Electrical Engineer responsible for the Allen Bradley Controllogix PLC programming and start-up support for the Backwash Pump Station. The Backwash Pumps were programmed to start and stop when commanded during a filter backwash cycle. All Operator Interface panels and the new PLCs were connected on a new fiber optic Ethernet network. The new Controllogix PLC communicated with the Plant's older Siemens 505 PLC using an Ethernet/IP communications module.

Water Filtration Plant PLC Replacement, City of Everett, WA , 2013-Present – As the Electrical Engineer Richard contributed to the design for the PLC conversion project in progress at the Water Filtration Plant's hypochlorite disinfection facility. As the lead control system programmer he is also responsible for the programming and commissioning of the new high-capacity replacement PLC. The new PLC is a redundant controller and communicates over an industrial Ethernet network with several touch panel operator interface terminals located throughout the Plant, as well as with a pair of SCADA master workstations located in the operations room.

TETRA TECH

Tim Tipton, P.E., S.E.
Senior Structural Engineer

Tim began his career in engineering in early 2007 as an engineering intern for Tetra Tech, where he was signed full time after graduating from Seattle University. Since graduation, his work has brought him a variety of project experience involving structural design, specifications and drawing development.

EXPERIENCE

Kootenai Sturgeon Burbot Hatchery, Fish Conservation Aquaculture Program, Bonners Ferry, Idaho, 2013 – Structural design engineer for the expansion of an existing hatchery as well as the design of a new hatchery. Structures included two pre-engineered vehicle storage buildings, masonry hatchery building, wood construction staff residences, below grade concrete influent basin, masonry influent pump station, below grade concrete effluent basin and two river intakes. Performed design on the staff residence and the hatchery building, coordinated structural drawings with all disciplines, and provided construction administration.

Cannery Creek Hatchery Expansion, Prince William Sound Aquaculture Corp, Valdez, Alaska, 2013 – Structural Design Engineer for the expansion of the Cannery Creek Hatchery. The expansion consisted of decommissioning eight 100' long raceways and capping them with a new structural floor for the 100'x100' incubation and processing rooms. The new building is a pre-engineered metal building and is supported on a combined system of existing raceway walls and new footings. A new set of raceways was designed to replace the old raceways. Analyzed the foundation system with RISAFoot using the loads supplied by the metal building manufacturer. Coordinated the metal building with the new foundation, a new stair tower, and the architectural and mechanical systems.

Chief Joseph Hatchery, Confederated Tribes of the Colville Reservation, near Bridgeport, WA, 2009-2013 – Design Engineer for structural engineering for the Chief Joseph Hatchery and evaluation of the existing Chief Joseph Dam on the Columbia River. Evaluation work included the existing 165-ft-deep and 220-ft-tall concrete dam monolith and a previously designed 48-ft-diameter and 80-ft-deep secant pile shaft, both of which were modeled using finite element analysis. Performed structural design of the Hatchery including raceways, vaults, platforms, hatchery building, and storage building. Most of the design was completed and verified using RISA-3D. The main structural elements in this project included concrete footings, elevated slabs, shear walls, concrete and steel columns and beams, metal roof decking with steel joist girders, and plywood roof decking with glulam girders and lumber purlins. This project was large and had a diverse amount of structural systems and materials.

DIPAC Design Services, Macaulay Fish Hatchery Expansion, Juneau, Alaska, 2011-2012. – Structural design Engineer for the expansion of the Macaulay Fish Hatchery, which consisted of three structures: the raceway building, a pedestrian bridge from the existing hatchery to the raceway building, and the warehouse building. Structural design consisted of concrete foundations for the pre-engineered raceway and warehouse buildings, concrete and aluminum design of the raceways, structural steel design of the pedestrian bridge and structural steel design of the viewing platform within the raceway building. The structural analysis of both pedestrian bridges was performed using RISA-3D.

Sandy Hatchery Improvements, Oregon Department of Fish and Wildlife, Sandy, Oregon, 2009-2011 – Structural Design Engineer on the design of an addition to the Sandy Fish Hatchery. Design included the concrete foundation

Project Role
Pump Station Structural Design
Recirculation Pumps Enclosures

Education
B.S.C.E, Seattle University, 2007

Registration/Certification
Professional Engineer:
CA, #77785, 2010;
WA, #50303, Civil,v2013;
Structural, 2014

Professional Membership
ASCE
AISC
ACI

Office
Seattle, Washington

Years of Experience
6

Years with Tetra Tech
6

Key Areas of Experience:
Structural Steel

Structural Concrete

Structural Timber

Structural design for:

Industrial projects

Commercial projects

Environmental projects

for an in-river inflatable weir, a 48' long weir across the river, a concrete retaining wall, and the concrete fish ladder. The new concrete fish ladder was integrated into the existing concrete fish ladder.

Kitoi Bay Hatchery Expansion, Kodiak Regional Aquaculture Association, Kodiak, Alaska, 2011 – Structural Design Engineer for an addition to the existing two-story wood bunkhouse at the Kitoi Bay Hatchery. Design included a two-story addition on one side of the structure and a one-story addition on the opposite side, including a wrap-around porch. The addition consisted of wood shear walls and continuous concrete footings to resist high wind and snow loading. The design accounted for additional loads imposed on the existing structure.

Cedar River Sockeye Hatchery, City of Seattle, Four Corners, Washington, 2008-2011 – Structural Design Engineer for a new Sockeye Hatchery for the City of Seattle. Performed design on an adult holding raceway with an integrated spawning shed. There are four 60' raceways with electrical crowders. The spawning shed is wood framed with glulam roof beams. In addition, a wood framed single-story storage building and a below-grade concrete vault were included in the designed.

Pillar Creek Hatchery Expansion, Kodiak Regional Aquaculture Association, Kodiak, Alaska, 2012 – Structural Design Engineer for 27'x16' one-story equipment building. The equipment building is wood framed and is supported above grade by six concrete columns on spread footings.

Port Hadlock Wastewater Treatment Facility, Jefferson County Department of Community Development, Port Hadlock, Washington, 2013 - Structural design engineer on the design team for a 0.5 mgd wastewater reclamation plant currently under design. The plant includes an influent pump station, below grade headworks, membrane bioreactor treatment process facility, UV disinfection, percolation ponds, mechanical equipment building and an administration building. Challenges included designing a partially below grade concrete treatment facility that met the process requirements. Performed analysis on the administration building, which consists of light-gage metal stud walls, metal roof diaphragm, and flat-strap tension braces. Analyzed the building using all applicable AISI codes, including a full wind and seismic analysis. Prepared and delivered drawings, specifications, and calculations to the client.

Amtrak Maintenance Facility, Seattle, WA, 2010 – Design Engineer for structural engineering for the Maintenance Building at the Amtrak Cascades Yard in Seattle. Coordinated with the Architect, contractor, and client to produce calculations and drawings. The Maintenance Facility is a 652-ft-long by 82-ft-wide pile supported concrete structure. Analysis and design of the structure included driven grout piles, concrete mats, walls, elevated composite slabs, slabs-on-grade, masonry shear walls, steel columns and beams, and cast-in-place anchors. The lateral system consisted of special reinforced concrete moment frames and special masonry shear walls. Design accounted for train and vibratory equipment loading.

Amtrak Operations Building, Seattle, WA, 2010 – Junior Design Engineer for structural engineering for the Amtrak Operations Building at the Amtrak Cascades Yard in Seattle. Coordinated with the Senior Structural Engineer and Architect to produce calculations and drawings. The Operations Building is a 3-story, 38,000-sf office building. The structure is steel framed with a composite concrete floor system. Analysis and design of the structure included the composite floor system, steel columns, and the lateral system and connections. The lateral system consisted of special steel-braced frames. Structural analysis was carried out using STAAD and RISA.

King County Metro Transit Atlantic/Central Bus Base Expansion: Operations Building Renovation and Expansion, King County Dept. of Transportation, Seattle, WA, 2009 – Structural Design Engineer for the Atlantic/Central Operations Building renovation and expansion portion of this multi-facility bus base expansion project. The project includes renovation of the existing 24,000 sf operations building and approximately 40,000 sf of expansion to house the operations administration and driver support for two bus bases, a Transit Police facility, transit service quality unit, and training facilities. Performed preliminary design of a two-story, ordinary concentrically-braced frame, structural steel, and deep foundation using RISA-3D.

Seattle Fleets and Facilities Building A, Seattle DOT Metro Transit, WA, 2009 – Design Engineer for structural engineering on an HVAC replacement project for the City of Seattle. The project included replacement of three roof-mounted HVAC units. Design included evaluation of the existing two-way roof slab and installation of additional steel beams beneath the slab to support the new units.

TETRA TECH

John McGlenn, P.E.
Vice President

John McGlenn is Chief Engineer of Tetra Tech with project experience spanning over 30 years, including design and construction of a wide range of projects throughout the Northwest and beyond. He has been Project Manager or Principal-in-Charge for both civil and structural projects, including Fish hatcheries, reservoirs and reservoir covers, piers and related waterfront structures, roads and bridges, parking garages, office and commercial buildings, heavy maintenance facilities, warehouses and schools, parks and recreational facilities, and wastewater treatment plants. John has taught Structural Design at Seattle University and Lateral Forces Design at the University of Washington. For nine years he prepared and graded portions of the structural engineers' licensing exam for the Washington Board of Registration. John has served on a number of conservation, wildlife, and ecological committees, including the State Fish and Game Commission.

EXPERIENCE

Walla Walla Spring Chinook Hatchery, Bonneville Power Administration and Confederated Tribes of the Umatilla Indian Reservation, Milton-Freewater,OR, Current – Principal-in-Charge for analysis and design of architectural, electrical/controls, HVAC/plumbing; and structural efforts for incubation, early rearing, grow-out and related support facilities. The design includes river intake pump station, utility water supply systems, groundwater supply system and water quality for domestic use on-site; effluent ozone-gas generation and side stream disinfection, storage, handling and chemical feed system and adult broodstock collection and handling at the Nursery Bridge fish ladder facility.

Kootenai Sturgeon and Burbot Hatchery, Kootenai Tribe of Idaho, Bonners Ferry, ID, 2014 – Principal-in-Charge for final design and construction administration of the $16 million Twin Rivers and Tribal Hatcheries, including civil/site, water supplies, structural, landscape, architecture, mechanical and electrical controls.

Cedar River Sockeye Hatchery, City of Seattle Public Utilities King County, WA, 2010 – Project Manager for conceptual planning and design for this 34 million egg sockeye salmon facility located in the Lake Washington watershed east of Seattle. One of the first major sockeye hatcheries in Washington, the project includes extensive monitoring and evaluation programs to be incorporated into adaptive management of the operating facility. Seattle Public Utilities, who is responsible for water supply in the Seattle metropolitan area, is preparing the design of a hatchery designed to restore the runs of sockeye in the Cedar River, a river that has historically maintained the largest sockeye runs south of Alaska. The hatchery is part of the Cedar River Habitat Conservation Plan, an agreement among a number of federal, state, and local agencies, tribes, commercial fishing interests, and sports fishing organizations, which is intended, among other things, to mitigate the impacts of the construction of the City of Seattle water supply facilities on the Cedar River around the turn of the century.

Chief Joseph Dam Hatchery, Confederated Tribes of the Colville Reservation, Omak, WA, 2013 – Principal-in-Charge for development of conceptual plan through final design and construction of a new Chinook hatchery, modifications to existing and design of new off-channel acclimation

Project Role:

Senior Advisor, Fisheries Facilities Planning and Design

Education:

M.S., Civil Engineering, 1966, University of Washington

B.S., Ceramic Engineering, 1960, University of Washington

Registration/Certification:

Civil Engineer: Alaska, 1977; Colorado, 1985; Idaho, 1987; Montana, 1990; Oregon, 1994; Texas, 1992; Utah, 1991; Washington, 1968; Wisconsin, 1992; Wyoming, 1993

Structural Engineer, Oregon, 1994; Washington, 1970

Professional Affiliations:

Fellow, American Consulting Engineers Council

Lifetime member, American Society of Civil Engineers

Structural Engineers Association of Washington

Office:

Seattle, Washington

Years of Experience:

41

Years with Tetra Tech:

32

Areas of Experience:

Project Management

Design/Build

Wastewater/Hazardous Waste Facilities

Piers and Marine Facilities

Fisheries Facilities

Highway Bridges

Commercial and Industrial Buildings

facilities for fall and winter fish rearing and release into the Okanagan and Columbia Rivers. Overall supervision of project to ensure consistence with Genetic Management Plan and requirements of the NW Power Planning Council funding and scientific parameters.

Hatchery Research Center, Oregon Department of Fish & Wildlife, Alsea, OR – Principal-in-Charge and Project Manager for programming and schematic design phases for this project to convert an existing hatchery to a research facility to study the interaction of hatchery fish with wild fish. The facility will test modified hatchery techniques to improve the health and survivability of hatchery fish. State of the art techniques using simulated streams and feeding methods will be incorporated into the design.

Makah Fish Hatchery, U.S. Fish and Wildlife Service, **Neah Bay, WA** – Principal-in-Charge for task order under IDIQ contract to evaluate the existing intake screens and develop conceptual designs for new intake screens that meet all current state and federal intake screen criteria. The project also included final design and construction (under a design build contract) of gravity flow piping improvements to experimental tanks, an accessible ramp and emergency repairs to an electric fish weir. The project was completed on time and under budget.

Kootenai River Native Fish Restoration and Conservation Aquaculture Step 1 and 2, D.J. Warren and Associates, Inc., Bonners Ferry, ID, 2006 – Principal-in-Charge for planning and preliminary design of a new $12M sturgeon and burbot aquaculture research and production facility, under a program funded under the BPA 3-Step process. The project is part of a major collaborative effort led by the Kootenai Tribe of Idaho, involving state, federal and tribal resource managers, to restore naturally reproducing populations of white sturgeon and burbot to the Kootenai River. The new facility will have river water intakes on the Kootenai and Moyie Rivers, as well as a groundwater supply system. The surface water supplies will require filtration, disinfection, degassing and precise water temperature control systems to meet various life stage spawning, incubation and rearing criteria.

Penticton Sockeye Hatchery Design, British Columbia, Okanagan Nations Alliance, Penticton BC, 2014 – Principal-in-Charge for site evaluation and planning phase for a new 8 Million egg sockeye hatchery in central British Columbia. Project elements include development of a 2,500 gpm well water supply system, central degassing headbox, 50 kitoi box incubators, 26 rearing raceways, large energy efficient water chilling system and innovative fry transfer piping system.

Sandy Hatchery Passage and Intake Study, Oregon Department of Fish and Wildlife, Sandy, OR – Principal-in-Charge for planning and design of variety of improvements at ODFW's Sandy Hatchery. Project elements included a 23 cfs hatchery intake screening system, replacement of barriers to fish passage in Cedar Creek with fish friendly structures, a trap and sort facility for handling adult fish and 60,000 cubic foot acclimation pond design.

Snettisham Salmon Hatchery, Alaska Department of Transportation , Snettisham, AK – Principal-in-Charge overseeing the schematic design through preparation of operations and maintenance manuals for an approximately US $7 million remotely located incubation and grow-out facility with major elements, including incubation building, rearing raceways, water supply system, adult fish return facilities, staff housing, and food storage facility.

Washington Salmon Enhancement Program, Washington Department of Fisheries, WA – Developed cost estimating tools for a wide range of new hatchery and rearing facilities, from small to large and simple to complex, using parameters such as flow, volume of tanks, and pounds of production.

Hidden Falls Hatchery Renovation, Alaska Department of Transportation near Sitka, AK – Principal-in-Charge for Architectural/Engineering design and bioengineering to renovate multiple level lake water intake, rearing tanks, hatchery building, net pen system, and effluent treatment

Cassimer Bar Step 1 Master Plan, Confederated Tribes of the Colville Reservation, Confluence of Okanagan and Columbia Rivers, WA – Principal-in-Charge for renovation and expansion of the existing artificial production facilities at Cassimer Bar Hatchery, collection of broodstock at sites throughout the Okanogan River Subbasin, acclimating smolts before release, and experimental reconditioning steelhead kelts. Extent and suitability of receiving habitats and the contribution of Canadian steelhead stocks to Upper Columbia steelhead stocks will also be investigated. The Master Plan focuses on the development of viable summer steelhead runs in three tributaries of the Okanogan River: Omak Creek, Loup Creek, and Salmon Creek. These streams were identified in the Okanogan Subbasin Management Plan (NPCC 2004) as having the greatest potential for re-establishment of natural-origin populations through habitat improvement and restoration.

TETRA TECH

Hamid R. Naderi, P.E.

Vice President

Hamid Naderi's 33 years of experience includes management and technical leadership on a variety of high profile structural projects. As Tetra Tech's Director of Structural Engineering in the Northwest, he is responsible for managing workflow; technical oversight for standard details, specifications, analysis and design calculations of all structural engineering products; discipline training; and mentoring staff. As a designer he has worked on elevated/surface water storage tanks, industrial buildings, parking garages, chemical facilities, federal correctional facilities, and bridges.

Hamid's design analysis is enhanced by the use of computer modeling with software programs such as PCI Mat, Risa -3D, and Intergraph Microstation for 3D Industrial Design. Heavily involved in design/build projects with a former employer, he is adept at constructability and cost assessments and very experienced in providing on-site construction engineering support. In all design/build projects, he was involved in value engineering and evaluating different design concepts and providing cost comparison analysis for optimum solution. He was also the main contact for all field problems during construction of the projects.

EXPERIENCE

Chief Joseph Dam Hatchery, Confederated Tribes of the Colville Reservation, Bridgeport, WA, 2010 - As lead structural engineer, oversaw the detail design of several structures, including the administration/visitor center; main hatchery building; river intake, raceway, and spawning structures; and shop and maintenance facility.

Queen Anne Water System Improvement, Seattle Public Utilities, WA, 2006 - As lead structural engineer supervised the detail design effort for replacing two existing water tanks and designing ring foundation, construction shoring and concrete vaults for the one larger diameter tank and related pump station and valves. Project design required complete seismic calculation of the ring foundation and of the impact of new excavation and installation of new foundation on the adjacent existing Fire Station Building.

Equalization Storage Facility and Street Reconstruction, City of Blaine, WA, 2007 - Structural engineering quality control for a $4 million project that included a 400,000 gallon sanitary sewer flow equalization storage facility and reconstruction of 2,500 lf of Marine Drive.

Brightwater Conveyance System, North Creek Facilities, King County DNRP WTD, 2008 - Designed pile foundation and the concrete superstructure for the odor control facility. Also, performed structural quality control for entire facilities which included diversion structure, flow monitor structure, drop structure and reclaimed water structure.

South Magnolia CSO Control Project, King County DNRP Wastewater Division, Seattle, WA, 2013 - Led the structural team for detail design of a 1.9 mg cast-in-place reinforced concrete Combined Sewer Overflow (CSO) facility currently under design. The main CSO storage tank is 136' long x 86.5'wide and features one isolated and three partially separated bays for sequential filling. To accommodate sequential filling, weirs were provided at the lower end of each bay. In order to resist bouncy forces and passing through a liquefiable soil layer directly under the structure, this tank is supported by a 12' thick mass concrete structure. The roof of the storage tank is designed to carry a combination of AASHTO HL-93 traffic loading, ancillary equipment building and between 2-4 feet of earthen cover for landscape planting. The facility is located in an environmental and geological sensitive region adjacent to Puget Sound where soft fill soils and a high

Project Role

Project Manager

Education

M.S., Civil Eng. in Structure, Wayne State University, 1988

M.S., Civil Eng. in Hydraulics, University of Iowa, 1990

B.S., Civil Engineering, University of Iowa, 1980

Registration/Certification

Professional Engineer: Alaska, Arkansas, Arizona, California, Florida, Georgia, Illinois, Indiana, Iowa, Minnesota, Montana, Nebraska, Oklahoma, Pennsylvania, South Dakota, Tennessee, Texas, West Virginia, Washington

Cold Region Engineering Course

Office

Seattle, Washington

Years of Experience

33

Years with Tetra Tech

8

Key Areas of Experience:

Structural Engineering including concrete, steel and masonry structures

Above- and below-grade liquid containment structures

Heavy industrial structures such as mining and petrochemical facilities

Design-Build

Construction Engineering

groundwater level both combine to create challenges in resisting uplift and liquefaction during a seismic event. Average interior depth of the storage tank is approximately 22 feet. The facility utilizes tipping buckets for flushing of settled debris common in retention basins, thereby requiring a corridor of large lift slab and access platforms for bucket maintenance and removal. Additional structures include reinforced cast-in-place concrete upper and lower diversion structures and an odor control vault.

King County Kirkland Pump Station Project, King County DNRP Wastewater Division, Seattle, WA, 2010 — As a lead structural engineer worked on the upgrade of the Kirkland Pump Station and Force Main to replace aging pump station equipment and to increase the capacity of the pump station. Part of the existing structure was utilized and the remaining structure was added to house the additional pumps and generator equipment. 3' diameter secant pile system were used for shoring and dewatering the foot print of the structure for the construction of the below grade new wet well structure. Also the secant piles were designed to resist all the lateral earth and seismic forces. A partial new CMU building was added to house the new standby generator, pumps and electrical control panels. Project challenges included designing in such a way as to allow continual operation of the station while retrofitting existing structure and nearly doubling the square footage of the facility

Winslow Wastewater Treatment Plant Upgrade, City of Bainbridge Island, WA, 2009 - Design involved liquid process improvement as well as class A biosolids upgrade of an existing 2.4 mgd to a 3.6 mgd facility. As lead structural engineer supervised the detail design effort for solid handling structure, blower / generator building, aeration basin improvement and headwork structures.

West Point Treatment Plant, Multi-Use Facility Building 717, King County DNRP WTD, Seattle, WA – Structural Engineer for seismic analysis. Existing building was to be retrofitted to house new COGEN equipment and a mezzanine floor added to the structure. This modification required a complete seismic evaluation of the existing structure. Project was cancelled at 30% design, due to over price bid of adjacent and necessary Co-Gen project.

East Side CSO Tunnel Project, City of Portland, Bureau of Environmental Services, OR, 2006 - Designed various underground structures associated with alignment of 5 miles of 17- to 22-foot-diameter tunnel on the east side of the Willamette River. Design included vortex drop structures, junction and flow diversion structures, outfall structures, and access manholes ranging in size up to 70 feet in depth.

Wastewater Treatment Plant Facility, Jefferson County Department of Community Development, Port Hadlock, WA, 2013 - Led the structural design team for a 0.5 mgd wastewater reclamation plant currently under design. The plant includes an influent pump station, headworks, membrane bioreactor treatment process, UV disinfection, percolation ponds, mechanical equipment building and an administration building. Concrete structural elements such as wall top beams and tie struts also serve as walkways and as miscellaneous mechanical and electrical equipment support. Administration building was designed with cold form metal stud building and opens web steel joist system. Mechanical building is a concrete masonry building with open web steel joist roof members.

Amtrak Maintenance Facility, Seattle, WA, 2010 – Led the detail structural design effort for the Maintenance Building at the Amtrak Cascades yard in Seattle. The Maintenance Facility is a 652-ft-long by 82-ft-wide pile supported concrete structure with pre-engineered metal building. Assisted in analysis and design of the structure which included driven grout piles, concrete mats, walls, elevated composite slabs, slab-on-grade, masonry shear walls, steel columns and beams, and cast-in-place anchors. The lateral system consisted of special reinforced concrete moment frames and special masonry shear walls.

Juneau Seawalk, City & Borough of Juneau, AK, 2008 – Lead structural engineer performed detail design of a 17-ft-wide x 730-ft-long elevated boardwalk supported by 16" diameter steel pipe piles driven to bedrock. The gravity framing system is 12'x 6' wood decking supported by a series of 27" x 8 ¾" glulam beams. The lateral system is composed of field-welded steel moment frames in transvers direction and battered piles in longitudinal direction. Annually, it is estimated that more than 500, 000 people use this boardwalk along Miner's Cove, from the cruise ship dock to downtown Juneau.

TETRA TECH

Steve Kraushaar, P.E.
Senior Civil Engineer

Steve Kraushaar has over 35 years of experience in the planning, design and construction of a wide variety of civil engineering projects. These include projects related to stormwater planning and facilities design, fisheries design, pump station and hydraulic structure design, wastewater treatment and collection systems facility planning and design, and hydraulic and hydrologic modeling. Steve also has several years' experience as a senior civil engineer for a municipality of 55,000 persons, responsible for review of engineering planning studies and development plans. He has been the designated City Engineer for the City of Gervais, Oregon since 1993.

EXPERIENCE

Kootenai Sturgeon/Burbot Hatchery, Kootenai Tribe of Idaho, Bonners Ferry, ID, 2014 – Lead Civil Engineer for final design of the $16 million Twin Rivers and Tribal Hatcheries, including water intakes off the Kootenai and Moyie Rivers, intake pump stations and force main to the Hatchery, influent and effluent treatment basins, hatchery effluent piping, and site design.

Chief Joseph Hatchery, Colville Confederated Tribes, Omak, WA, 2013 – Lead Civil Engineer. Assisted with design and construction administration of a new Chinook hatchery, consisting of modifications to new off-channel acclimation facilities for fall and winter fish rearing and release into the Okanagan and Columbia Rivers.

Bonneville Hatchery Wastewater Treatment Plant Improvements, Bonneville, OR, 2011 – Lead Civil Engineer for evaluating ODFW's Bonneville Hatchery waste loads entering the Bonneville Lock and Dam Southshore Sanitary Facilities. The purpose of the study was to identify upgrades necessary to address aging equipment and provide appropriate reliability and redundancy in conformance with NPDES permit requirements and Oregon Department of Environmental Quality (ODEQ) regulations.

Cedar River Sockeye Hatchery, Seattle Public Utilities, Seattle, WA 2012 – Civil Project Engineer for construction engineering for this 34 million egg sockeye salmon facility located in the Lake Washington watershed east of Seattle. Seattle Public Utilities, responsible for water supply in the Seattle metropolitan area, managed the design to restore the runs of sockeye in the Cedar River, a river that has historically maintained the largest sockeye runs south of Alaska.

Minto Fish Collection Facility Site Development, US Army Corps of Engineers, Lyons, OR, 2010 – Project Manager for site development and lead engineer for wastewater design of Minto Fish Collection Facility near Lyons, Oregon. Wastewater efforts include permitting assistance and design for an on-site sand filter system sewage disposal system for the facility. The design includes pumping and conveying sewage from the existing facility to the new property across the highway for treatment and disposal. A new sewage pump station will have duplex pumps and controls, pressure pipe, back flow preventers and a control system. The disposal system will be sized to treat sewage from a future manager residence on the new property as well as flows from the existing facility, in accordance with Marion County flow projection criteria. The complete system will meet or exceed county and state requirements. Also provided design criteria and system components for the water system by model,

Project Role:

Pumping Systems
Facility and Site Piping

Education:

B.S., Civil Engineering, University of Colorado, 1977

Registration/Certification:

Civil Engineer, Colorado #22364, 1981

Civil Engineer, Oregon #15332, 1990

Professional Engineer, Civil, Washington, 48614, 2011

Office:

Portland, Oregon

Years of Experience:

35

Years with Tetra Tech:

22

Areas of Experience:

Water and Wastewater System Planning and Design

Pump Station Design

Fisheries Design

Drainage System Planning and Design

Hydraulic and Hydrologic Modeling

Floodplain Studies

Street and Roadway Design

Commercial and Residential0 Land Development

capacity, and brand, all meeting or exceeding county and state regulations. The water system uses two existing wells and was designed to provide potable water for both the fish collection facility and for the new property and caretaker's residence north of Highway 22.

Water Supply Sediment Pond and Hatchery Effluent Water Quality Improvements, U.S. Fish and Wildlife Service, Quinault National Fish Hatchery, WA, 2010 – Project Engineer for preparation of a preliminary design report and final design documents for improvements to an existing water supply sediment pond and hatchery effluent water quality at the Quinault National Fish Hatchery. The improvements are intended to make it easier for the hatchery to comply with NPDES requirements without interruption of the hatchery water supply to incubation and rearing facilities.

Hatfield Marine Science Center Effluent Discharge, Newport, OR, 2010 – Project Manager for design of a chlorination and dechlorination disinfection system for salt water exhibit and aquatics laboratory effluent discharged to Yaquina Bay. The system consisted of influent pumping, sodium hypochlorite and bisulfite metering systems, chlorine residual monitoring, fiberglass chlorine contact tanks, static mixing, and discharge piping.

Sandy Hatchery Supply Pipe Replacement, Oregon Department of Fish and Wildlife, Sandy, OR, 2011 – Design Engineer for preparation of final design drawings and specifications for replacement of the hatchery supply pipe including 1000 feet 30-inch diameter PVC pipe, valves and connections.

Silver Creek Intake and Supply Line, City of Silverton, Silverton, OR, 2011 – Project Manager for design and permitting for the upgrade and replacement of the water intake pump station structure located along Silver Creek and approximately 2,300 lineal feet of supply line from the intake structure to the water treatment plant. The project includes a predesign report to identify project opportunities, benefits, costs, alignment, permitting requirements, and other relevant information as needed to be used to support and identify the project elements.

Springfield Millrace Stormwater Outfall Relocation, City of Springfield, OR, 2008 – Project Manager for the design of the relocation of approximately 350 feet of 66-inch stormwater pipe including the outfall at the Middle Fork of the Willamette River. The pipe is owned by the City of Springfield and the project involves review by the City as well as the US Army Corps of Engineers.

Rock Creek Influent Pump Station Discharge Valve Actuator Relocation, Clean Water Services, Current – Project Manager for design of the relocation of four 36-inch knife valve actuators from the lower level of the dry well to the mezzanine level of the influent pump station. The purpose of the project was to provide improved maintenance access to the electrically powered actuators.

Royal Woodlands East Sewer Rehabilitation, City of Beaverton, OR, Current – Project Manager for predesign, design and construction administration for rehabilitation and/or replacement of sanitary sewer, drainage, and water system improvements within a 60 year old subdivision.

Royal Woodlands West Sewer Rehabilitation, City of Beaverton, OR, Current – Project Manager for predesign, design, and construction administration for approximately 5,800 lineal feet of replacement 8- and 10-inch sanitary sewer line including manholes and miscellaneous appurtenances, approximately 6,340 lineal feet of sewer service line replacement, approximately 2,665 lineal feet of 8-inch water line replacement, and approximately 2435 lineal feet of 10-inch through 24-inch storm drain installation. The project includes approximately 3,500 square feet of riparian area enhancement.

Webb Mitigation Pump Station, Big River Construction, Cornelius, OR, 2008 – Project Manager for design for the reconstruction of the existing Webb Flood Control Pump Station with two new 200 hp 28,500 gpm propeller pumps and dual 30-inch steel discharge pipes. The new cast-in-place concrete pump station included a pile foundation, screened forebay and pump roof with roof hatches for pump removal.

Columbia Way Stormwater Control Project, City of Vancouver, Vancouver, WA, 1999 – Project Manager for the design of a 5,300-gpm pump and control gate system retrofitted into a 48-inch stormwater outfall serving the Mill Plain area, including Pearson Area Park and a portion of State Route 14. The project eliminated flooding of the Area Park and SR 14 caused by high Columbia River levels.

TETRA TECH

Erik Nordholm, P.E.
Civil Engineer

Erik has 17 years of experience in design, construction, and surveying on sewer, water, and street projects. While with Tetra Tech, Erik has worked on the planning and design of water and wastewater treatment facilities, pump stations, fisheries, storm water and street improvement projects. Erik has extensive experience in the use of Autodesk Civil 3D software as well as hydraulic modeling experience in the areas of gravity pipelines and water distribution networks.

EXPERIENCE

Walla Walla Spring Chinook Hatchery, Bonneville Power Administration and Confederated Tribes of the Umatilla Indian Reservation, Milton-Freewater, OR, Current – Project Design Engineer for analysis and design of architectural, electrical/controls, HVAC/plumbing; and structural efforts for incubation, early rearing, grow-out and related support facilities. The design includes river intake pump station, utility water supply systems, groundwater supply system and water quality for domestic use on-site; effluent ozone-gas generation and side stream disinfection, storage, handling and chemical feed system and adult broodstock collection and handling at the Nursery Bridge fish ladder facility.

Kootenai Sturgeon/Burbot Hatchery, Kootenai Tribe of Idaho, Bonners Ferry, ID, Current – Project Engineer for final design of the $16 million Twin Rivers and Tribal Hatcheries, including water intakes off the Kootenai and Moyie Rivers, intake pump stations and force main to the Hatchery, influent and effluent treatment basins, hatchery effluent piping, and site grading and storm water design.

Kitoi Bay Hatchery, Kodiak Regional Aquaculture Association, Kodiak, AK, Current – Project Engineer assisted in conducting an evaluation of Kitoi Bay Hatchery and providing recommendations for system upgrades with budget estimates to increase hatchery production. Worked on the design and hydraulic modeling of upgrades to the 20 cfs water supply piping system and new vacuum degassing columns.

Penticton Sockeye Reintroduction Project, Okanagan Nation Alliance Enterprise Ltd, Westbank, BC, Current – Project Engineer for design of hatchery improvements for possible annual production of up to 8 million sockeye salmon to support long-term reintroduction of the species into the upper Okanagan River system.

Chief Joseph Dam Hatchery, Colville Confederated Tribes Bridgeport, WA, 2013 – Project engineer for the design of a new $50 million Chinook hatchery. Competed in 2013, the hatchery will produce up to 2.9 million Chinook salmon annually. Design efforts included the 40 cfs well water pumping and conveyance system, 60 cfs river water intake screen and conveyance system, site grading design, and site piping design. Erik also worked on the design on two acclimation sites, each of which included intake screens, 15 cfs pump stations and a conveyance pipeline.

Cedar River Sockeye Hatchery, Seattle Public Utilities, Seattle, WA 2012 – Civil Project Engineer for construction engineering for a 34 million egg sockeye salmon facility. Work included construction management and design clarifications.

Sandy Hatchery Supply Pipe Replacement, Oregon Dept. of Fish and

Project Role:
Pumping Systems
Facility and Site Piping

Education:
B.S., Civil Engineering, Oregon State University, 1997

Registration/Certification:
Professional Engineer: Oregon #57186, 2003

Office:
Portland, Oregon

Years of Experience:
17

Years with Tetra Tech:
15

Areas of Experience:
Wastewater Collection and Treatment Facilities

Pump Station Design

Water Treatment, Distribution and Storage

Street and Roadway Design

Stormwater Planning and Design

Hydraulic Analysis & Modeling of Pipeline Systems

Construction Observation / Contract Administration

Wildlife, Sandy, OR, 2011 – Design Engineer for preparation of final design drawings and specifications for replacement of the hatchery supply pipe including 1,000 feet 30-inch diameter PVC pipe, valves and connections.

Minto Fish Collection Facility Site Development, US Army Corps of Engineers, Lyons, OR, 2010 –

Project Engineer for site development and wastewater design. Efforts include permitting assistance and design for an on-site sand filter system sewage disposal system for the facility.

Water Supply Sediment Pond and Hatchery Effluent Water Quality Improvements, U.S. Fish and Wildlife Service, Quinault National Fish Hatchery, WA, 2010 – Project Engineer for preparation of final design documents for improvements to an existing water supply sediment pond and hatchery effluent water quality at the Quinault National Fish Hatchery. The improvements are intended to make it easier for the hatchery to comply with NPDES requirements without interruption of the hatchery water supply to incubation and rearing facilities.

Silver Creek Intake and Supply Line, City of Silverton, Silverton, OR, 2011 – Project Engineer for design and permitting for the upgrade and replacement of the water intake pump station structure located along Silver Creek and approximately 2,300 lineal feet of supply line from the intake structure to the water treatment plant. The project includes a predesign report to identify project opportunities, benefits, costs, alignment, permitting requirements, and other relevant information as needed to be used to support and identify the project elements.

Water Intake Pump Station, City of Molalla, Molalla, OR, 2011 – Project Engineer for predesign and design of upgrades to the three existing vertical turbine intake pumps and building which were relocated after the floods of 1996. In addition to providing two new or rehabilitated 100-hp pumps, this will include new VFDs or other pump control devices, HVAC system and mechanical modifications to the piping and valves inside the building.

Cascade Crossing Transmission Project, Portland General Electric, OR, 2012 – Project Engineer assisting in the design to develop road crossing, specifications, cost estimates, and erosion and sediment control plans. Work included assisting in evaluating road crossing risks and stream simulation data collection at field sites located in Oregon.

Barnaby Creek Culvert Replacement, Confederated Tribes of the Colville Reservation, Inchelium, WA, 2011 – Project Engineer for a culvert replacement project near Inchelium, WA to provide adult and juvenile fish passage into Barnaby Creek. Responsible for analysis and design of the replacement of 97 inch span by 66 inch rise corrugated metal culvert.

Upper Hoh Road Culvert Replacements, Jefferson County, Jefferson County, WA, 2010 – Project Engineer for hydraulic analysis and site grading design for the replacement of three culverts to improve fish passage and reduce flooding. The new culverts were three sided, precast concrete structures with granular rock channels.

Meacham Creek Habitat Enhancement, Umatilla Tribe of Oregon, 2010 – Project Engineer for the design of a new channel alignment to reconnect the channel with the historic floodplain to reestablish natural channel functions and fish habitat. Responsible for the layout of the new channel alignment, development of bank stabilization structures, design of the new channel profile, incorporation of fish habitat features into the channel design, preparation of the construction logistics plan, preparation of the construction specifications package, and preparation of the project cost estimate at all design levels. Project design package included 27 drawings detailing the construction of the new channel, construction of the new floodplains, installation of the bank stabilization structures, installation of the fish habitat features, construction sequence, access, and backfill of the existing channel.

Royal Woodlands West Sewer Rehabilitation, City of Beaverton, OR, Current – Project Engineer for predesign, design, and construction administration for approximately 5,800 lineal feet of replacement 8- and 10-inch sanitary sewer line including manholes and miscellaneous appurtenances, approximately 6,340 lineal feet of sewer service line replacement, approximately 2,665 lineal feet of 8-inch water line replacement, and approximately 2435 lineal feet of 10-inch through 24-inch storm drain installation. The project includes approximately 3,500 square feet of riparian area enhancement.

Rock Creek Ranch #3 Pump Station Improvements, Clean Water Services, Current – Project Manager for predesign, and design of a complete mechanical, electrical and controls upgrade to the existing 150 gpm wastewater pump station.

TETRA TECH

Philip D. Tunnell, P.E.

Design Engineer

Philip Tunnell has experience in many facets of water/wastewater engineering. His technical design experience includes preparing plans, specifications, and cost estimates for reservoirs, pump stations, wells, pipelines, and chlorination facilities, as well as performing analysis of existing systems including pump station operations, and feasibility studies for reservoir siting. He has experience in construction administration, including overseeing the construction of pipelines, reservoir rehabilitation, and pump station upgrades. Philip Tunnell has considerable drafting experience and is proficient with the current versions of AutoCAD. He also has experience in hydraulic modeling. He has used and is familiar with the H2ONET computer program. In addition, Philip Tunnell is familiar with other computer programs including Excel and PowerPoint. Rounding out Philip Tunnell's experience is work he has done in inspection, construction administration, shop drawing review, and plan checking.

EXPERIENCE

Westridge Pump Station, City of Anaheim, Anaheim, CA, 2012 – Project Engineer for evaluation of existing pump station pumping efficiency. Evaluation considered replacing four existing pumps of varying capacity with three or four pumps of different capacities to more efficiently pump common low flows while maintaining higher domestic flow and fire flow capacity. Objectives also included evaluation of control algorithms to reduce pressure fluctuations when pumps turn on and off.

I-5 Water Main Relocation Florence Avenue and Valley View Avenue Segments, Santa Fe Springs, CA, 2013, On-going – Project Lead Engineer for design of the relocation of approximately 4,800 linear feet of 8-inch (Florence) and 2,900 linear feet of 12-inch (Valley View) water main. These projects were required due to the widening of the I-5 Freeway and the impacts on frontage streets and ramps. Each project includes bore and jack construction under the I-5 Freeway. Many issues made these projects complex as existing frontage roads and most other utilities were being relocated on various schedules. An innovative setup was implemented to make the Plans easier to read given the amount of existing and relocated utilities and roads, whereby two separate plan views and a profile are shown on each sheet, to separate the original or existing conditions on one plan view from the future conditions on the second. The projects included preparation of complete bid documents including preparation of Plans, Specifications, Cost Estimate, required permit applications (from State and multiple Cities), all in accordance with relevant legal guidelines, including CalOSHA, CDPH, NPDES, SWPPP and others. Construction phase services include shop drawing review and approval, response to all RFIs, design revisions per field conditions, and providing As-Built drawings.

I-5 Water Main Relocation Carmenita Road Segment, Santa Fe Springs, CA, 2012-2014 – Project Lead Engineer for design, construction management, and construction inspection services for relocation of approximately 13,500 linear feet of 12-inch and 16-inch water main. This project was required due to the widening of the I-5 Freeway and the impacts on frontage streets and ramps. The project included three bore and jacks for construction under the I-5 Freeway, under Carmenita Road, and under the railroad. Many issues made this project very complex including hydrocarbon contaminated soils, other simultaneous construction, congested utilities, moving existing streets in various phases of

Project Role:

Pumping Systems
Intake Screen
Facility and Site Piping

Education:

B.S. Mechanical Engineering, Colorado School of Mines, Golden, CO, 2003

Registrations/Certifications:

Professional Mechanical Engineer, California, 2011, No. 35934

Professional Affiliations:

N/A

Office:

San Dimas, CA

Years of Experience:

10

Years with Tetra Tech:

Seven

Key Areas of Experience:

Reservoirs

Pump Stations

Wells

Pipelines

Modeling

construction, and heavy truck traffic on Carmenita Road. The design phase of the project included preparation of complete bid documents including initial utility mapping requests, and preparation of Plans, Specifications, Cost Estimate, required permit applications (from State, City, and Railroad), all in accordance with relevant legal guidelines, including CalOSHA, CDPH, NPDES, SWPPP and others, and overseeing bid opening and Contractor selection. The construction management phase included all contract administration duties including shop drawing review and approval, all RFIs, reviewing field change requests and issuance of Field Orders, reviewing and processing Contractor Change Orders, design revisions per field conditions, coordination with Caltrans and other utilities, and providing As-Built drawings. During construction, he coordinated field inspection, and conducted weekly progress meetings with the agency, contractor, and related utility representatives, including providing meeting minutes for each meeting.

State Route 91 HOV Water Main Relocation, City of Riverside, Riverside, CA, 2012 – Project Designer for Caltrans' plan to add High Occupancy Vehicle lanes to State Route 91 that required the City of Riverside relocate two water mains. The relocation required a bore and jack tunneling under the freeway for a 24-inch carrier pipe as well as bridge crossing over the freeway and another bridge crossing over a railroad. Work included geotechnical bores/analysis; traffic control plans; permitting for CalOSHA, Caltrans, and coordination with BNSF railroad; four bid document review submittals; potholing; and construction services. A very aggressive project schedule was adopted in order for the relocations to be completed prior to Caltrans construction work on the freeway. The schedule allowed for 70 days for design, 36 days for bidding, and another 75 days for construction.

Carlsbad Conveyance Pipeline – Flow Control Facility, Poseidon Resources, Carlsbad, CA – Lead Design Engineer for design and layout of flow control facility site, connecting a 54-inch conveyance pipeline to San Diego County Water Authority pipelines. The facility includes above grade and buried 54-inch steel pipe connecting two turnout vaults (one 96-inch and one 66-inch) to the main pipeline, including flow metering and automated flow control valve, chloramination equipment, and all mechanical appurtenances with cathodic protection, with flows ranging from 15 to 150 CFS. Buried turnout vaults and above grade buildings included HVAC systems and all structural and electrical coordination. One turnout vault is buried under public right-of-way and the other structures are on the SDCWA-owned site, which was improved as part of the design. This design-build project is a partnership with Kiewit Shea Desalination.

Water Reclamation Plant No. 10 Secondary Effluent Pump Station, Coachella Valley Water District, Palm Desert, CA, On-going, est. 2015 – Project Lead Engineer for design of a secondary effluent pump station, including approximately 8,800 linear feet of piping for the suction and discharge lines and all piping appurtenances. This 21 mgd capacity pump station pumps secondary effluent from the existing SE ponds on site, and discharges either to percolation ponds for settling/ground recharge, or back to the headworks and aeration basins to aid in operation during low incoming flow periods. The pump station includes six VFD-controlled vertical turbine pumps in a wet well, including a motor operated sluice gate and traveling screen at the entrance. There are three 7 mgd pumps and a 3 mgd jockey pump to handle the range of flows to the percolation basins. There are two 5 mgd pumps that discharge to the headworks/aeration basins. Power and controls are in a separate electrical building along with a 1,250 kW emergency generator. The suction and discharge piping range from 8- to 30-inches, at depths of more than 25 feet, and include a large flow diversion vault and several smaller vaults housing motor operated isolation valves and flow meters. Other upgrades at the site include overflow and inlet structures at the percolation ponds, conversion of the existing pump station into a storage facility, and new sliding gates at the flocculators and tertiary filters. All related electrical and structural design was also coordinated.

Miscellaneous Booster Upgrades, City of Pomona, Pomona, CA, 2009 – Engineer involved in construction management for various pump replacements and installing various new pumps in existing facilities including two 60 hp 1,000 gpm vertical turbine pumps; two 100 hp 1,000 gpm vertical turbine pumps; one 150 hp 3,500 gpm vertical turbine pump; and one 150 hp 1,800 gpm horizontal split case pump, related piping and appurtenances. The improvements included civil, mechanical, and electrical.

TETRA TECH

Ryan Maas, P.E.
Structural Engineer

Ryan Maas has participated in a wide variety of structural engineering projects, including failure investigations, structure inspections, condition assessment and repair of existing structures and building envelopes. As an Engineering Intern at the CN Railroad he performed analytical bridge ratings on existing steel and timber structures, assisted in field testing bridge performance and performed damage assessment due to vehicular impact. His work at Tetra Tech has included detailed structural design of a variety of structures for the Freeport-McMoRan Copper & Gold Bagdad mining facility, among which were a 215-foot-diameter elevated tailings thickener tank and various pump stations. Other projects include structural design of water distribution facilities at fish hatcheries throughout Washington and Alaska, as well as design of sewage storage, treatment and pumping facilities.

EXPERIENCE

Kootenai Sturgeon Burbot Hatchery, Fish Conservation Aquaculture Program, Bonners Ferry, ID, 2013 – Structural Design Engineer for the expansion of an existing hatchery as well as the design of a new hatchery. Structures included two pre-engineered vehicle storage buildings, masonry hatchery building, wood construction staff residences, below grade concrete influent basin, masonry influent pump station, below grade concrete effluent basin and two river intake structures. Performed design and analysis of reinforced concrete influent and effluent basin. Performed design and analysis of reinforced masonry pump station building. Performed design and analysis of concrete foundations for two pre-engineered vehicle storage buildings. Performed design and analysis of concrete river intake structure and steel debris deflector. Used AutoCAD to produce structural plans, sections and details based on structural calculations and coordination with other disciplines.

Kitoi Bay Hatchery Building Mezzanine, Kodiak Regional Aquaculture Association, Kitoi Bay, AK, 2013 – Structural Design Engineer for the design of an elevated aluminum mezzanine and elevated headbox in an existing hatchery building. Challenges included integrating the mezzanine structure and headbox into the existing operational hatchery which was space limited.

Penticton Sockeye Hatchery, Okanagan Nation Aquatic Enterprises Ltd, Penticton, BC, 2013 – Structural Design Engineer for the design of a reinforced concrete below grade settling basin, steel degassing tower and concrete outlet structure for the Penticton Sockeye Hatchery. Challenges included integrating the design with that of another consulting firm.

Port Hadlock Wastewater Treatment Facility, Jefferson County Department of Community Development, Port Hadlock, WA, 2013 – Structural design engineer on the design team for a 0.5 mgd wastewater reclamation plant currently under design. The plant includes an influent pump station, below grade headworks, membrane bioreactor treatment process facility, UV disinfection, percolation ponds, mechanical equipment building and an administration building. Determined structural design criteria for the treatment facility and headworks, including seismic hydrodynamic effects. Designed the reinforced concrete treatment facility and headworks in accordance with ACI350 procedures for environmental structures. Performed gravity and lateral analysis for the flexible diaphragm, reinforced masonry mechanical building. Used AutoCAD to produce structural plans, sections and details based on

Project Role
Structural Engineer
Pumping Systems
Intake Screen

Education
M.S., Structural Engineering, University of Washington, 2011

B.S., Civil Engineering, Illinois Institute of Technology, 2010

Registration/Certification
Professional Engineer, California, #C82349, 2013

Office
Seattle, Washington

Years of Experience
Two

Years with Tetra Tech
Two

Key Areas of Experience:
Structural Steel

Structural Concrete

Structural Timber

Foundation Design

Structure Failure Investigation

Bridge Rating and Field Testing

Structural design for:

- Industrial projects
- Commercial projects
- Environmental Projects

structural calculations and coordination with other disciplines. Challenges included designing a partially below grade concrete treatment facility that is structurally attached to the masonry mechanical building.

South Magnolia CSO Control Project, King County DNRP Wastewater Division, Seattle, WA, 2013 – Structural Design Engineer for detail design of a 1.9 mg cast-in-place reinforced concrete Combined Sewer Overflow (CSO) facility. The main CSO storage tank is 136' long x 86.5'wide and features one isolated and three partially separated bays for sequential filling. To accommodate sequential filling, weirs were provided at the lower end of each bay. In order to resist bouncy forces and passing through a liquefiable soil layer directly under the structure, this tank is supported by a 12' thick mass concrete structure. The roof of the storage tank is designed to carry a combination of AASHTO HL-93 traffic loading, ancillary equipment building and between 2-4 feet of earthen cover for landscape planting. The facility is located in an environmental and geological sensitive region adjacent to Puget Sound where soft fill soils and a high groundwater level both combine to create challenges in resisting uplift and liquefaction during a seismic event. Average interior depth of the storage tank is approximately 22 feet. The facility utilizes tipping buckets for flushing of settled debris common in retention basins, thereby requiring a corridor of large lift slab and access platforms for bucket maintenance and removal. Additional structures include reinforced cast-in-place concrete upper and lower diversion structures and an odor control vault. Determined structural design criteria for the tank, including seismic hydrodynamic effects. Utilized the 3D finite element capabilities of RISA 3D to analyze the reinforced concrete structures. Designed reinforced concrete structures in accordance with ACI350 procedures for environmental structures. Used AutoCAD to produce structural plans, sections and details based on structural calculations, coordination with other disciplines and client direction.

Wet Weather Clarifier Wear Strip Repairs, City of Portland Bureau of Environmental Services, Portland, OR, 2013 – Prepared a technical memorandum that discussed the failures of the wear strips in the rectangular wet weather clarifiers at the Columbia Boulevard Wastewater Treatment Plant. The preparation of the report included an engineering analysis of the existing wear strips, determination of probable failure mechanisms and development of alternatives for structural modifications to the wear strips. Challenges included limiting the construction impacts to maximize availability of the clarifiers and designing modifications in such a way as that they can be performed on an as needed basis by either a contractor or in house staff.

Pullen Creek Streamwalk Phase 1, Corvus Design Inc., Skagway, AK, 2013 – Structural design engineer for the design of a 60' single span glulam pedestrian bridge, fishing platform and rockery walls. Challenges included integrating the structural design with the natural features and landscape design of the Pullen Creek Streamwalk.

Holbrook Basin Potash Mine, American West Potash, Holbrook, AZ, 2012 – Structural design engineer for the feasibility study for the Holbrook Basin Potash Mine. Developed initial layout drawings of structures and performed preliminary 3D structural analysis in order to determine material quantities for each structure. Structures included elevated conveyors, change house, laboratory, administration building, warehouse, machine shop, truck wash, electrical shop, guard house, two thickeners, mill building, sylvite building, rail car inspection, rail car wash and three bulk storage buildings. Total material quantities for the project are 89,000 cubic yards of concrete and over 18,000 tons of structural steel.

Thickener Circuit Expansion, Freeport-McMoRan Copper & Gold, Bagdad, AZ, 2012 – Structural design engineer on the design team for the detail design of the foundation for the thickener tank, an elevated circular steel structure 215 feet in diameter with a conical bottom. The tank is supported on five tiers of steel columns for a total of 160 columns oriented radially in multiple rings. A slurry inside this tank is stirred by an agitator which has an arm of 105 feet long. A 10-ft-diameter center shaft supports the agitator and a maintenance walkway with spiral stair case. The foundations had to accommodate a sloping bedrock subsurface which daylighted across the diametrical center of the thickener. To minimize the potential for differential settlement, the bedrock was over-excavated and a blanket of engineered compacted fill was placed on top. Assisted in the design and analysis of the thickener foundation. Utilized RISA Foundation's 3D capabilities to analyze the complex foundation.

TETRA TECH

Craig Ziel, P.E.
Project Engineer

Craig Ziel's experience includes the design and preparation of construction documents for sewer, water, and storm pipelines, preparing grading and drainage plans for roads, mass grading, finish grading, and grading for Low Impact Development (LID) projects.

Craig is skilled in the use of AutoDesk's Civil 3D, as well as various hydraulic/hydrologic analysis software programs. He is qualified to prepare Stormwater Pollution Prevention Plans (SWPPP) for the purposes of eliminating pollutant discharges during construction. He is also experienced in preparing Water Quality Management Plans (WQMPs) for development and redevelopment projects.

EXPERIENCE

Carlsbad Seawater Desalination Conveyance Pipeline, Poseidon Resources Corporation, Carlsbad, CA, 2013 – Project Engineer responsible for providing the Stormwater Pollution Prevention Plan (SWPPP) for the 82,000 linear feet of pipeline that serves the product water from the planned 50 million gallons per day desalination plant in the City of Carlsbad. Pipeline diameters ranged from 24-inch to 54-inch welded steel pipeline operating at a maximum pressure of 800 psi. Seven flow control facilities were planned. The pipeline was routed through the cities of Carlsbad, San Marcos, Vista and Oceanside. In addition, there were two bridge crossings, Caltrans right-of-way crossing, railroad crossing, and several bore and jack crossings located throughout the project. The project is a design-build project with a fast paced schedule. The SWPPP was prepared in phases in order to allow for construction to begin with the first portion of the pipeline and then updated to include the additional segments.

Boundary Surveys for NRCS Easements, Natural Resources Conservation Services, CA, 2012 - Ongoing – Project Engineer responsible for providing boundary survey legal descriptions for the Natural Resources Conservation Services (NRCS) Wetland Restoration and Protection (WRP) Easement Program. Tetra Tech was contracted by the NRCS to provide boundary surveys, legal descriptions and exhibits, and GIS data for 33 separate sites in 12 Northern California counties.

Final Engineering Services for Margarita Tract 2428, Midland Pacific Homes, San Luis Obispo, CA, 2014 – Ongoing – Project Engineer responsible for providing final engineering design services for this 180-lot residential development within the City of San Luis Obispo. The improvement plans for Tract 2428 include the design of roads, sewer, water, and storm drain facilities. Hydrology/hydraulic studies were performed to support the on-site improvements. AutoCAD Civil 3D's Hydraflow Hydrographs was used to determine on- and off-site runoff flow rates and Hydroflow Storm Sewers was used to analyze the storm drain network. 100-year water surface elevations were determined for the existing drainage courses using HEC-RAS to verify that pads are set well above the flood elevation. Survey services provided involved the preparation of the final map, and will include setting monuments and property corners throughout the project area.

Stormwater and Safety Improvement Project at Central Los Angeles Recycling and Transfer Station (CLARTS), MWH Americas, Los Angeles, CA, 2013 – Project Engineer responsible for hydrology calculations at CLARTS, a large volume materials recycling facility and transfer station built over an old

Project Role:

Project Engineer/SWPPP

Education:

B.S., BioResource and Agricultural Engineering, California Polytechnic State University, San Luis Obispo, 2006

Registrations/Certifications:

Professional Engineer, California, 2009, No. 74743

Qualified SWPPP Developer/Practitioner, QSD/QSP

Professional Affiliations:

American Society of Civil Engineers

Office:

San Luis Obispo, CA

Years of Experience:

Seven

Years with Tetra Tech:

One

inert landfill. The improvements will include a new clarifier or hydrodynamic separator, storm drain infrastructure and Low Impact Development (LID) features. Bioswales and raised planter areas were sited to prevent conflict with existing truck circulation patterns and facility operations. Drop inlet filters were proposed at all new inlets in order to reduce the total suspended solids, heavy metals and other debris from entering the storm drain system and being conveyed to the Los Angeles River.

Santa Ana River Interceptor Relocation Project, Orange County Flood Control District, 2013 –Project Engineer responsible for preparing the Water Quality Management Plan (WQMP). Tetra Tech was contracted to provide preliminary and final design services for relocation of 19,500 linear feet segment of 54-inch trunk interceptor, 6,000 linear feet of 15- and 18-inch sewer mains, flow metering station and the decommissioning of the existing trunk interceptor segment for Orange County Flood Control District. Project responsibilities included the preparation of the WQMP for the project in accordance with the Orange County and the Santa Ana Regional Water Quality Control Board's requirement. The WQMP was a necessary permitting tool to ensure that appropriate Low Impact Development (LID) and Best Management Practices (BMPs) were selected to prevent hydromodification of the watershed.

La Palma & State College Intersection Widening, Anaheim, CA, 2013 – Project Engineer responsible for the preparation of the Water Quality Management Plan (WQMP) for the La Palma & State College Intersection Widening Project. WQMP for the project provided analysis and reporting of Low Impact Development (LID) and Best Management Practice (BMP) techniques that were incorporated into the project limits to mitigate the increased stormwater runoff. The WQMP incorporated catch basin and tree box filters due to the limited space available and to prevent conflict with existing traffic circulation patterns, buildings and underground utilities. Said improvements provide stormwater quality treatment in order to comply with the County of Orange National Pollution Discharge Elimination System (NPDES) program.

Carson Transfer Station Storm Water Quality Improvements, Waste Management, Carson, CA, 2013 – Project Engineer responsible for analyzing site hydrology at the Carson Transfer Station, and calculating design flow rates and volumes for treating the design storm. The existing facility is approximately 6.1 acres, of which more than 90 percent is covered by impervious surface. Carson Transfer Station lacks permanent structural Best Management Practices (BMPs) to help keep storm water runoff under the effluent benchmark limits, as mandated by the Industrial Storm Water General Permit. Mr. Ziel was also responsible for sizing filters and specified treatment media to address site specific pollutants of concern; locating BMPs to minimize impacts to site traffic/operations; and preparing improvement plans and site specific details for installing the proposed BMPs.

South Gate Transfer Station Storm Water Quality Improvements, Waste Management, South Gate, CA, 2013 – Project Engineer responsible for analyzing site hydrology at the South Gate Transfer Station and calculating design flow rates and volumes for treating the design storm. The existing facility is approximately 2.4 acres, of which more than 90 percent is covered by impervious surface. South Gate Transfer Station lacks permanent structural Best Management Practices (BMPs) to help keep storm water runoff under the effluent benchmark limits, as mandated by the State Industrial General Permit. Mr. Ziel was responsible for sizing the infiltration basin based on site specific percolation data; placing BMPs in specific locations to preserve the exiting site traffic and operations; utilizing the existing pervious areas to treat and infiltrated stormwater runoff; and preparing improvement plans and site specific details for installing the proposed BMPs.

Air National Guard Installation Boundary Mapping, National Guard Bureau, Various Bases, 2012 - Ongoing – Project Engineer for the southwestern portion of this national contract to establish boundary line locations, set monuments and file the appropriate documentation for existing Air National Guard bases across the United States. Some of the contracted tasks include courthouse and facility records research, and field reconnaissance. Tetra Tech will be required to field tie existing property and controlling corners to geodetic coordinates. Additional tasks include data reduction, boundary resolution, calculations, mapping and setting final corner monuments for the subject properties. Tetra Tech will also be responsible for helping the ANG develop a standard operating procedure so that personnel can better manage their GIS records keeping, as the real property boundaries associated with their various facilities and assets change in the future.

TETRA TECH

Ike Pace, P.E., C.C.P.
Cost Engineer

Ike Pace has 18 years of experience managing and performing cost engineering in support of numerous projects for federal, state, municipal, and private clients. In execution of cost estimating task orders, Mr. Pace has provided cost engineering support for numerous recreation, water resources management, river restoration, fish passage, flood control and flood mitigation analysis projects. These projects have enabled him to gain valuable experience with Micro-Computer Aided Cost Estimating System, Microsoft Projects, and Crystal Ball, including preparation of cost estimates and cost and schedule risk analyses on virtually all types of projects across the nation. Mr. Pace has provided cost engineering support on projects ranging from conceptual alternative analysis level; to feasibility level; to engineering and design level; to final plans and specifications level for use as the independent government estimate when comparing contractor construction bids.

Project Role:
Cost Estimator

Education:
BS, Civil Engineering, 1996

Registration/Certifications:
Professional Engineer, CA #59152

Certified Cost Professional #64484

Office:
Irvine, CA

Years of Experience:
18

Years with Tetra Tech:
17

Key Areas of Experience:
Cost Engineering

EXPERIENCE

John Day Dam Mitigation – Ringold Springs Fish Hatchery, US Army Corps of Engineers, Portland District, Mesa, WA, 2012 – Cost Engineer responsible for review and quality control of a detailed MII MCACES cost estimate, abbreviated risk analysis, and cost engineering appendix. This work was in support of the construction work designed to increase the amount of fish that could pass through the Ringold Springs Fish Hatchery. The project design features included earthwork, demolition of some existing facilities, bio-filtration swales, storm drains, septic system, potable water well, water supply intakes, process water supply lines, process water discharge lines, distribution tower, fish ladders, sorting ponds/facilities, holding ponds, return flume, incubation building, pollution prevention pond, rearing ponds, electrical system, and paving.

Fort Peck Dam Water Temperature Control Curtain, US Army Corps of Engineers, Omaha District, Valley County, MO, 2012 – Cost Engineer responsible for review and quality control of a detailed MII MCACES cost estimate and cost engineering report. The project proposed the installation of temperature curtains that would pass warmer water from the upper portion of the water column to the intake are of the existing outflow from the dam. Extensive use of dive crews were estimated for placement of the curtain structure. Design features included wharf construction, buoy, chain support system, curtain placement, concrete anchors, ballast lines, buoyance lines and ice boom placement.

San Joaquin River Mendota Pool Bypass Restoration Project, California Department of Water Resources, Mendota, CA, 2010 – Cost Engineer responsible for preparation and development of a detailed cost estimate. The project will include a new dam per ASDSO requirements within the Fresno Slough to replace the Mendota Dam and a new bi-furcating structure and fish screen upstream within the San Joaquin River to divert water to the Fresno Slough Pool. Project elements include cofferdams, tremie concrete, secant pile cut-off wall, ground improvements, reinforced concrete dam structure with steel tainter gates, earthen embankment, structural steel closures and fish screen, electo-mechanical hoist operating equipment.

Wynoochee Dam, Section 1135 Fish Restoration Project, US Army Corps of Engineers, Seattle District, Lake Quinault, WA, 2003 – Project Engineer. The project consisted of replacing a portion of the penstock with an Eicher Screen to bypass fish into a pressurized pipeline, which dumped the fish into an open

channel flume and then into the river tailwater. He prepared the Design and Cost Estimate Appendix for the project alternatives. He developed design drawings of the fish bypass and other project features and MCACES cost estimate.

Cape Fear Fish Passage, US Army Corps of Engineers, Wilmington District, NC – Project Manager responsible for preparation and development of a detailed MII MCACES cost estimate and cost engineering report. The project includes removal and salvaging an existing fish ladder, demolition of steel piling, construction of steel retaining wall and return, construction of anchorage and flow deflection sheeting; and placement of geotextile, underlayer stone, armor stone and weir stone.

Donna to Brownsville Levee Rehabilitation Design, Hidalgo and Cameron Counties, TX – Senior Project Manager for the engineering analyses and design of a 65.0-mile levee rehabilitation along Rio Grande for the U.S. International Boundary and Water Commission. The engineering analyses and design were performed in accordance with the FEMA 44 CFR 65-10 and the U.S. Army Corps of Engineers criteria to allow for future certification of levee. Tetra Tech produced five sets of construction plans, technical specifications, construction estimates, and design reports.

East Garden Grove – Wintersburg Green Channel Cost Estimate for the County of Orange, Huntington Beach CA – Project Manager responsible for review and quality control of a detailed cost estimate and cost engineering report. Design features of the project include channel excavation; riprap slope protection; geotextile fabric; sheet piling; soil-mix columns; bridge removal; utility relocations; disintegrated granite; wood post fencing; chain link fencing; signs; reinforced concrete; sub-grade drainage systems; tree plantings; inlet drainage structures; and Filterra drainage units.

Red Rock Dam Rehabilitation, for the U.S. Army Corps of Engineers, Rock Island District, Des Moines, IA – Project Manager responsible for preparation and development of a detailed MII MCACES cost estimate and cost engineering appendix. The rehabilitation for Red Rock Dam includes; motor rehabilitation; brake replacement; cleaning and greasing of couplings, bearings, and pinions; helical and worm gear inspections; replacement of drive shaft pillow block bearings; wire rope replacement; new limit switch coupling; new access hatches; new seal clamp bars; sand blasting and painting; new traveling hoist system and bulkhead; new control panel; and new lighting system.

FEMA Levee Certification, County of Ventura, CA – Project Manager for providing engineering services for approximately 9.3 miles of levees, in compliance with FEMA's nationwide levee certification program. It includes extensive data collection, field inspection, hydrologic and hydraulic analysis, geotechnical investigation, structural and system analyses, and preparation of construction plans, specifications and estimate based on U.S. Army Corps of Engineers design guidance for the repair of the ASR-2 Floodwall and the Sespe Creek Levee. Mr. Pace prepared several critical documents and a levee brochure for the County to convey information to the stakeholders and public. He was also instrumental in formulating possible partnership paths between the County and the Corps for Corps built levees needing improvements.

Colorado River Ecosystem Restoration Project for the US Army Corps of Engineers, Sacramento District, Mesa County, CO – Project Manager responsible for preparation and development of a detailed MII MCACES cost estimate and cost engineering appendix. The project includes invasive species removal, bank restoration, re-vegetation, boat ramp, and twelve recreational outlook sites.

Tres Rios Del Norte Ecosystem Restoration Project for the US Army Corps of Engineers, Los Angeles District, Tucson, AZ – Cost Engineer. Mr. Pace was responsible for preparation and development of a detailed MII MCACES cost estimate, and cost and schedule risk analysis. The project, located along an 18-mile stretch of the Santa Cruz River, includes measures for ecosystem restoration, infrastructure support, flood damage reduction, water supply and recreation. The cost estimate was certified by the Cost Dx through the agency technical review process.

Potomac Park Flood Protection Improvements for the US Army Corps of Engineers, Baltimore District, Washington D.C. – Cost engineer responsible for review and quality control of a detailed MII MCACES cost estimate and abbreviated risk analysis for the flood protection improvements at three locations within Washington D.C. At two of the sites levees are proposed to be constructed, and at the third site a floodwall is proposed. Other design features of the project include asphalt demolition and placement, water main replacement, manhole installation, tree removals, stop log structures, and landscaping.

W. PAUL GRANT, P.E.
PRINCIPAL GEOTECHNICAL ENGINEER

EDUCATION

M.B.A., Business, University of Washington, 1996
M.S., Civil Engineering, University of California, Berkeley, 1971
B.S., Civil Engineering (Summa Cum Laude), University of Vermont, 1970

PROFESSIONAL REGISTRATIONS

Professional Engineer: Washington (20099), 1978; Alaska (4261), 1977; California (23000), 1973

PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers, 2004 – 2007 Seattle Section President, 1993-1996 Seattle Section Board
Puget Sound Engineering Council – 2007-2010 President
ASCE GeoInstitute Seattle – Distinguished Service Award 2012
ASCE Technical Committee Chair on Lifeline Earthquake Engineering (Seattle Section) 1990-1991
Consulting Engineers Council of Washington, 1992-94 Board of Directors
International Society for Soil Mechanics and Foundation Engineering
Earthquake Engineering Research Institute
Seismological Society of America
Structural Engineers Association of Washington
American Public Works Association
Tau Beta Pi
Chi Epsilon
Washington Society of Professional Engineers – 2006 (Professional) Engineer of the Year Award

Paul is the President and co-founder of PanGEO and has over 40 years of experience in conducting and directing geotechnical and earthquake engineering studies for both public and private sector projects located throughout the United States. He has successfully managed multi-year geotechnical engineering contracts for federal, state, and local agencies. He has participated in various Value Engineering Studies and constructability reviews for public sector clients resulting in construction cost savings in excess of several million dollars. He has conducted extensive research in earthquake engineering and has received numerous research grants from the U.S. Geological Survey, the U.S. Nuclear Regulatory Commission, and the National Science Foundation. On a state and national level, he has participated on committees developing earthquake criteria for the design of new structures or the rehabilitation of existing facilities. Mr. Grant has received numerous awards for engineering excellence from the American Society of Civil Engineers and the American Council of Engineering Companies. He also received the 2006 Professional Engineer of the Year Award from the Washington Society of Professional Engineers.

EXPERIENCE

Chief Joseph Dam Hatchery, Bridgeport, Washington. Principal-in-charge of geotechnical and hydrogeology studies to provide nearly 50 cfs of water for a fish hatchery for the Confederated Colville Tribe that was constructed on the right bank of the Columbia River, just downstream of the Corps of Engineers Chief Joseph Dam. Preliminary planning for the hatchery identified three potential sources of water for the hatchery: 1) Water from the reservoir from the dam, 2) Water from a relief tunnel underlying the right abutment of the dam, and 3) Water from a well field approximately 2 miles upstream from the dam. Besides developing recommendations for the foundations for the hatchery and associated buildings and roadways, the major geotechnical challenges of the development was in developing recommendations to secure and transmit water from the three different sources without impacting the stability or groundwater regime at the dam and the right abutment of the dam. These concerns stem from the fact that while the left abutment of the dam is founded on rock, the right embankment is underlain by pervious flood deposits, which resulted in the construction of the drainage relief tunnel to control seepage at the right abutment. After the dam construction was complete and the reservoir brought to its operating level, flows in the relief tunnel were approximately 90 cfs, which raised concerns about the stability of the right abutment. Subsequently, the Corps installed approximately 4,000 linear feet of upstream drainage blanket, which reduced flows in the relief tunnel to about 20 cfs. The geotechnical challenge of removing water from the relief tunnel focus upon developing construction schemes to construct a pipeline leading to and into the relief tunnel that does not disrupt the groundwater levels adjacent to the tunnel or flows within the tunnel. Schemes considered for

this work ranged from micro tunneling to ground freezing. Other geotechnical challenges included the design and construction of pipelines down the face of the right abutment slope without compromising the stability of the dam. The pipeline design required special provisions to detect and collect potential leakage and other measures to stop flow within the pipeline in the event of a major breach of the line.

Mr. Grant also assisted in preparing an EIS for the fish hatchery program. He was responsible for providing input on the Earth section, including a discussion of the geology, seismicity, climatology and hydrogeology of the region as well as specific location of the project, providing discussions of the impacts of the project and mitigating measures to reduce impacts. Major issues affecting the earth section of the EIS included slope stability as related to existing facilities at Chief Joseph Dam as well as slope stability at the acclimation ponds located adjacent to the Okanogan River. Another major concern was the potential effects of groundwater withdrawal for the hatchery and its potential effects on other groundwater uses. Mr. Grant's studies concluded that the project would not compromise slope stability because lined ponds would be used at the hatchery and acclimation sites and special above-ground pipelines with shutoff valves would be used over the embankment slopes at Chief Joseph Dam to reduce the potential for instability associated with any leakage of the lines. Finally, he indicated that the well field supplying water to the hatchery would be controlled by recharge from the Rufus Woods Pool and not an adjacent aquifer.

Seismic Improvements, Makah National Fish Hatchery, Noah Bay, WA. Project manager. A site specific response analysis was conducted to develop earthquake ground motions consistent with events having return intervals of 475 and 2,475 years. Because of its location on the coast, the earthquake performance of the site is dominated by the potential occurrence of subduction zone earthquakes. Consequently, the site specific analyses were conducted using three subduction zone events that were only modified for amplified effects to match expected rock motions at the site. The results of the analyses were about 20% lower than standard design curves, indicating that conventional design parameters could be used for the site evaluations.

Middle Fork Nooksack River Water Intake Study, Whatcom Co., WA. Principal-in-charge of geotechnical studies to develop preliminary plans to remove an existing concrete dam on the Middle Fork of the Nooksack River and to reconstruct the water intake structure for the City of Bellingham in one of the concrete monolith structures that will form a constriction in the channel but yet will allow fish passage. Project challenges included determining the depth to bedrock in the area of the new channel construction and along the alignment of the water intake line, the presence of recent alluvium with car size boulders in the river channel and the juxtaposition of differing bedrock materials underlying the left and right banks of the river. Geotechnical recommendations were developed for design and construction of the concrete monoliths comprising the channel constriction as well as for construction of the new water intake tunnel. Recommendations were also developed as construction sequencing notes for the design drawings, which were complicated by the high water levels in the channel and the presence of large boulders in the channel. The recommendations included pre-excavating the boulders from the channel to allow the installation of sheet piles to achieve a lined temporary channel for diversion of the river.

Lyle Falls Fishway Improvements, Lyle, WA. Principal-in-charge and project manager of geotechnical studies for extensive improvements to the Yakama Nation's fishway on the Klickitat River. The improvements included a new 400 foot long transportation channel, new fishway entrance and exits, a unique fish lift facility, adult capture and sorting facilities, an equipment and control building, new water intake supply lines, and various roadway and grading improvements. Significant engineering challenges included the presence of shallow, hard bedrock over much of the site requiring special blasting provisions to avoid damaging existing facilities. Other challenges includde 20 foot deep excavations through both rock and alluvium in close proximity to the Klickitat River.

Canyon Creek Fish Ladder, Dungeness Fish Hatchery, Sequim, WA. PIC and project manager for renovations of the Canyon Creek Fish Ladder and Intake which provides water supply to the Washington Department of Fish and Wildlife's hatchery. Improvements included a fish ladder to restore passage into Canyon Creek and remedial measures to address undermining and scour beneath the Canyon Creek Intake Dam. Project complications include physical constrictions of the narrow rock canyon within which the Dam and Intake were constructed and the location of a County Bridge immediately above the intake. Because the new intake would require a 20 to 30 foot deep rock cut extending within a few feet of the bridge abutment, hydraulic breakers and rock bolting were recommended to minimize disturbance to the rock mass. Because the dam had been undermined by seepage and scour, a diversion dam was recommended which would allow excavation beneath the intake to be conducted in the dry as well as construction of a cutoff wall to extend at least 6 feet below the apron. With these improvements, more water would be available for the intake and fish ladder and the likelihood of scour beneath the dam would be greatly reduced.

Joe Miller

Managing Scientist

Mr. Joe Miller is a fisheries scientist with extensive experience interpreting fisheries resource issues within biological, regulatory and hatchery production frameworks. He specializes in developing strategic approaches to achieve production goals and meet compliance trajectories for hatchery projects. Mr. Miller has played a key role in gaining support from regulators, tribes and other stakeholders for innovative hatchery designs, including water reuse, that meet stakeholder objectives and comply with Endangered Species Act (ESA) regulations. He has held senior management positions at the Washington Department of Fish and Game and Chelan Public Utility District and has been responsible for implementing regulatory and hatchery compensation components of two major Habitat Conservation Plans (HCPs). In these capacities, Mr. Miller has been responsible for securing regulatory and fish manager approvals for hatchery operations and improvements at multiple facilities. Mr. Miller has also managed large-scale hatchery monitoring and evaluation programs that support both conservation and harvest objectives.

Education

M.S., Fisheries, University of Washington, 1998

B.S., Fisheries, University of Washington, 1995

Registrations/Certifications

American Fisheries Society

Professional History

Anchor QEA, Managing Scientist, 2013 to present

Chelan Public Utility District, Fisheries Manager, 2011 to 2013; Hatchery Program Manager, 2009 to 2011; Senior Biologist, 2008 to 2009

Washington Department of Fish and Wildlife, Regional Program Manager, 2005 to 2008

National Park Service, Fish Biologist, 2001 to 2005

National Marine Fisheries Service, Endangered Species Act Biologist, 2000 to 2001

Project Experience

Walla Walla Spring Chinook Hatchery

Bonneville Power Administration
Mission, Oregon

As a sub-consultant to Tetra Tech, Mr. Miller is leading the science portion of the NPCC Steps 2 and 3 processes for the Walla Walla Master Plan based on demonstrated expertise evaluating hatchery operations within regional fisheries management contexts and developing and interpreting monitoring and evaluation plans to make science-driven decisions. The design selected for the Walla Walla facility uses an innovative circular design that improves rearing conditions for juvenile fish.

Chiwawa Steelhead Water Reuse

Chelan Public Utility District
Chiwawa River, Washington

As the Client Project Manager, Mr. Miller worked closely with the engineering and fish health experts from the Freshwater Institute to develop a partial water reuse system for steelhead at the Chiwawa Acclimation Facility. Mr. Miller was able to obtain approvals from state, federal and tribal managers for project implementation despite the fact that there were no other examples where ESA-listed steelhead had been reared in a production facility using water reuse system.

Chelan Falls Acclimation Program

Chelan Public Utility District
Wenatchee, Washington

As Hatchery Program Manager, Mr. Miller led the implementation of a new summer Chinook acclimation program on the Chelan River. The program required the determination of biological objectives, consensus agreement on a basis-of-design, and design and construction of an $8 million hatchery facility for 600,000 smolts. Using adaptive management principles and scientific evidence provided by fisheries scientists and engineers, Mr. Miller modified the facility design to a non-conventional circular configuration that resulted in improved

	smolt performance.
Rocky Reach and Rock Island Habitat Conservation Plans *Chelan Public Utility District* *Wenatchee, Washington*	Serving as Fisheries Manager at Chelan Public Utility District (PUD), Mr. Miller successfully guiding Chelan PUD to its first 10-year "No-Net-Impact" milestone. The HCPs mitigate salmon and steelhead project mortality with hatchery and habitat compensation using a consensus-based, decision-making framework. The HCPs represent the conservation and enhancement interests of multiple state, tribal, and federal signatories while providing long-term ESA coverage for Chelan PUD's hydropower production.
Multiple Hatchery Genetic Management Plans *Chelan Public Utility District* *Wenatchee, Washington*	As Senior Fisheries Biologist, Hatchery Program Manager, and Fisheries Manager, Mr. Miller successfully negotiated and managed the delivery of Hatchery Genetic Management Plants (HGMPs) for two of Chelan PUD's ESA-listed spring Chinook and steelhead hatchery programs. Mr. Miller also played a significant role in developing HGMPs for non-listed summer Chinook and sockeye programs in the Upper Columbia Basin. Mr. Miller's ESA expertise has also played a critical role in identifying situations where new HGMPs are not warranted.
Hatchery Recalculation *Chelan Public Utility District* *Wenatchee, Washington*	As fisheries manager, Mr. Miller was responsible for ensuring that Chelan PUD's hatchery production levels were adjusted in concert with the first 10-year anniversary of the HCPs. Mr. Miller and his technical staff developed the quantitative, science-based analyses to incorporate project survival estimates and hatchery performance criteria into a compelling narrative for change. Ultimately, all of the HCP signatories approved Chelan PUD's recalculated values, and Chelan's production levels were reduced significantly.
Okanagan Nation Alliance Sockeye Mitigation *Chelan Public Utility District* *Penticton, British Columbia*	As Senior Fisheries Biologist, Hatchery Program Manager, and Fisheries Manager, Mr. Miller managed the design and delivery of a multimillion dollar mitigation package for Chelan PUD's sockeye compensation requirements. This provided funding for a $10 million hatchery facility designed to release 5 million sockeye fry and a monitoring and evaluation program designed to support reopening and repopulating Skaha Lake, which has been blocked to anadromous passage for nearly 100 years.
Blackbird Island Pond Acclimation Facility *Collaborative effort between Trout Unlimited, Chelan Public Utility District, and Washington Dept. of Fish and Wildlife*	Anchor prepared engineering plans for the inlet, pump station, and outlet to Blackbird Pond Acclimation Facility adjacent to the Wenatchee River in Leavenworth, WA. The intake is a 1.5-cfs Pump Rite screen set into the Wenatchee River, which feeds into a pump station to lift water into a pond used for steelhead rearing. The pond mimics natural rearing conditions where fish feed on available invertebrates, are exposed to predation, and receive surface water flow from the Wenatchee River. This pilot project raises between 25,000 and 50, 000 ESA-listed steelhead smolts each year. Mr. Miller lead the monitoring and evaluation effort associated with the use of the new pond.

Nicolas Duffort

Environmental Planner and Biologist

Nicolas Duffort is an environmental planner and biologist with Anchor QEA. Mr. Duffort has prepared or performed habitat assessments, vegetation surveys, wetland delineations, mitigation plans, and special status species consultations for projects throughout California, with a focus on riparian, wetland, coastal, and open water habitats. He provides biological and construction monitoring services for a variety of projects with the potential to affect sensitive habitats and species. Mr. Duffort has extensive knowledge of federal, state, and local regulations, including familiarity with policies administered by the U.S. Army Corps of Engineers (USACE), the Regional Water Quality Control Board (RWQCB), the California Department of Fish and Wildlife (CDFW), the California Coastal Commission (CCC), the San Francisco Bay Conservation and Development Commission (BCDC), and the California State Lands Commission (CSLC).

EDUCATION

University of California, Santa Cruz, B.A., Environmental Studies, 2005

Project Experience

Travis Air Force Base South Gate Improvement

Reyes Construction
Fairfield, California

Mr. Duffort co-authored the restoration and revegetation plan to address California tiger salamander (*Ambystoma californiense*) habitat impacts resulting from the U.S. Air Force's Travis Air Force Base South Gate Improvement Project. The U.S. Air Force's project entailed roadway improvements to facilitate access to Travis Air Force Base. These activities resulted in 1.95 acres of temporary disturbance to the federal threatened California tiger salamander. Mr. Duffort developed a restoration and revegetation plan to address these impacts; the plan went to review and approval by the U.S. Fish and Wildlife Service (USFWS).

Project Experience (Continued)

NIMITZ Marine Facility Research Vessel Berthing Pier Replacement
University of California
San Diego, California

Mr. Duffort was responsible for preparing the majority of the Environmental Assessment/Environmental Impact Statement for replacement and renovations to the NIMITZ Marine Facility wharf and pier, with the University of California San Diego and U.S. Navy acting as the California Environmental Quality Act/National Environmental Policy Act lead agencies. Resource topics evaluated by Mr. Duffort included aesthetics; biological resources; Coastal Zone Management Act compliance; geology and soils; hazards and hazardous materials; hydrology and water quality; and cumulative impacts. The impact analysis included an evaluation of noise impacts from pile driving to Essential Fish Habitat (EFH) and protected marine mammals. Mr. Duffort also assisted the U.S. Navy with National Marine Fisheries Service consultations for project impacts to EFH and the federal threatened green sea turtle (*Chelonia mydas*).

Martinez Marina Renovation
City of Martinez
Martinez, California

The Martinez Marina Renovation project includes two separate but related elements: installation of a new breakwater and marina dredging of 45,000 cubic yards of sediment. For both elements of the project, Mr. Duffort prepared the permit applications to obtain USACE, RWQCB, and BCDC approval. Mr. Duffort also assisted with preparing the upland habitat delineation, including conducting multiple vegetation surveys, and leading the project's federal and state Endangered Species Act consultation efforts for delta and longfin smelt (*Spirinchus thaleichthys*), salmonids, and salt marsh harvest mouse (*Reithrodontomys raviventris*). He authored a Combined Biological Assessment and Mitigation Plan addressing potential endangered salt marsh harvest mouse habitat impacts and mitigation at a nearby park site for submittal to USFWS.

Rough and Ready Island Wetland Delineation
Port of Stockton
Stockton, California

Mr. Duffort acted as the lead biologist in delineating the jurisdictional resources present on the Port of Stockton's Rough and Ready Island (otherwise known as the West Complex). He prepared a Jurisdictional Delineation Report summarizing the findings of the field effort, which was submitted for approval by USACE, RWQCB, and CDFW. The findings of the delineation will be used by the Port of Stockton in avoiding and minimizing impacts to jurisdictional resources associated with future development projects proposed on Rough and Ready Island.

Project Experience (Continued)

West Complex Rail Line Extension
Port of Stockton
Stockton, California

Mr. Duffort prepared jurisdictional agency permit applications for the West Complex Rail Line Extension Project located on the Port of Stockton's Rough and Ready Island. The project requires permanent fill of waters of the United States and freshwater emergent wetlands in order to construct two railway crossings. Mr. Duffort prepared permit applications to USACE, RWQCB, and CDFW. Mr. Duffort is also assists with USFWS consultations to address potential project impacts to the state and federal threatened giant garter snake (*Thamnophis gigas*).

Bair Island Seawall Repair
California Recreation Company
Redwood City, California

Mr. Duffort prepared jurisdictional agency permit applications for the Bair Island Seawall Project located at Bair Island Marina in Redwood City, California. The project includes removal of the existing seawall coating and application of a new coating to ensure the long-term viability of the wall and prevent much more significant repairs. Mr. Duffort prepared a Joint Aquatic Resources Permit Application for submittal to USACE and RWQCB. The permit applications and project impact analysis included an evaluation of potential noise impacts, and development of avoidance and minimization measures to address these impacts.

Julia King

Senior Biologist

Julia King is a senior biologist with 20 years of professional experience in biological consulting, specializing in field investigations to determine the presence of wetlands and special-status plants and animals. She has expertise in the flora and fauna of Northern California, including terrestrial, freshwater aquatic, and estuarine environments. Ms. King has experience in the Sacramento Valley, San Joaquin Valley, San Francisco Bay Area, and Sierra Nevada foothills, and has led special-status species investigations in a broad range of habitats, including serpentine, vernal pool, alkali sink, chaparral, valley and foothill grassland, and riparian soil associations. She is a highly trained and experienced wetland scientist, and her expertise includes the delineation of wetlands, Clean Water Act Section 404 and Section 401 permitting, mitigation planning, and the creation, restoration, and monitoring of wetland and riparian habitats. She has performed wetland delineations on sites up to 15,000 acres and prepared both Nationwide and Individual permits for development and infrastructure projects.

Education

B.S., Botany, University of California, Davis, 1993

Project Experience

Monterey Peninsula Water Supply Slant Test Well Project (MPTWP)

California American Water Company
Marina, CA

The MPTWP includes the drilling of three monitoring wells and one slant well for the first phase of the CalAmerican Desalination Plant Project. Ms. King performed daily surveys of the project area during construction of the monitoring and test wells to ensure that mitigation measures were followed to protect special-status plants and animals. She coordinated with contractors in the field to maintain established construction boundaries specified by agencies.

Carmel River Lagoon Water Augmentation Project

Carmel Area Wastewater District
Carmel, CA

The Carmel River Lagoon Water Augmentation project involved investigations of lands adjacent to the Carmel River and lagoon to determine the potential locations for the placement of a proposed water percolation test pond for the Carmel Area Wastewater District (CAWD). The lands where the placement of the percolation pond were analyzed with consideration of avoiding wetlands and special-status species such as red-legged frog.

Ms. King led habitat assessment and mapping exercises for the early planning phases, including site selection for water percolation test ponds. She conducted field surveys and mapped the existing habitats located to the south of the CAWD facility, linking signatures on aerial photographs to vegetation types observed on the ground.

Project Experience

BART to Livermore Extension Project

Bay Area Rapid Transit
Livermore, CA

The BART to Livermore Extension Project, which is being developed in partnership with the City of Livermore, consists of a 4.8-mile San Francisco Bay Area Rapid Transit District (BART) extension along I-580. Ms. King conducted wetland delineation field work and prepared reports for submittal to the U.S. Army Corps of Engineers (USACE) for five project sites ranging from 5 to 140 acres along the corridor, including portions of Arroyo Las Positas, Altamont Creek, and seasonal and alkali wetlands. Ms. King led botanical surveys to identify state and federally listed special-status plants, mapped populations identified using GPS, and summarized findings in botanical reports for submittal to regulatory agencies.

Stanford University Steelhead Habitat Enhancement Program

Stanford University
Palo Alto, CA

The Steelhead Habitat Enhancement Project (SHEP) involved the alteration to water control structures Los Trancos Creek and San Franciscquito Creek to improve instream water flows for the protection of salmonids. Stanford University requested template creation and organization of data gathered by Stanford University monitors at mitigation sites. The project scope included the preparation of the annual reports for mitigation monitoring at the riparian restoration sites and the herbaceous vegetation establishment at Felt Lake. Information gathered by Stanford University was incorporated into documents for annual reporting submittal to the USACE, Regional Water Quality Control Board, and California Department of Fish and Wildlife (CDFW).

Ms. King coordinated the production of a series of regulatory agency mitigation monitoring reports for post-construction conditions, riparian survivorship monitoring, project effectiveness, and CDFW Streambed Alteration Agreement compliance for the SHEP. Ms. King analyzed field data to provide survival results for riparian mitigation sites, conducted peer reviews, consolidated data from Stanford sources, and prepared text for mitigation monitoring reports.

CalAmerican Coastal Waters Project

California American Water Company
Marina, CA

The CalAmerican Coastal Waters Project consists of a proposed desalinization plant and the associated delivery infrastructure to be situated between Marina and Carmel, California. Due to the increased water flow requirements in the Carmel River to meet regulatory agency requirements, water draws from the river have been reduced. Alternate water sources are needed to meet domestic needs in the Carmel Valley, which the desalinization plant is intended to fulfill. The scope of work for the biological resources included surveys in the CEMEX dunes lands due to the known high likelihood of special-status plants and animals surveys.

Ms. King led special-status plant surveys of more than 500 acres of coastal dune habitat associated with the CEMEX lands to the north of Marina State Beach using GPS to map state and federally listed species. She coordinated the production of special-status species maps to be used in the planning process to assist in the placement of project infrastructure. Constraints were identified within the project area, and avoidance of special-status species was accomplished.

Pradeep Mugunthan, Ph.D., P.E.

Managing Engineer

Dr. Mugunthan has more than 12 years of experience in performing hydrodynamic, sediment transport and water quality evaluations. He is also experienced in working with stakeholders and state and federal regulators on Clean Water Act, ESA and FERC-related environmental issues. He has led several studies on modeling flow, temperature and water quality to assess changes in environmental conditions and biological habitat in response to proposed management actions such as construction of dams for flood control and water resources management. Dr. Mugunthan has also led the development of several groundwater models, specifically focusing on groundwater-surface water interactions. He has designed monitoring programs to support model development and has performed numerous statistical evaluations of environmental data. He has presented his evaluations to various stakeholders and regulators, and has provided strategic technical support for his clients on water quality management and National Pollutant Discharge Elimination System (NPDES) permitting issues.

Education

Ph.D., Civil and Environmental Engineering, Cornell University, 2005

M.S., Civil and Environmental Engineering, Carnegie Mellon University, 2001

B.E., Mining Engineering, Anna University, Chennai, India, 2000

Licenses/Certifications

Registered Professional Engineer, State of California (No. 6486, Chemical)

Project Experience

Onondaga Lake Water Quality Model *Department of Water Environment Protection* *Onondaga County, New York*	Dr. Mugunthan was the technical lead for hydrothermal and water quality modeling. He was responsible for development, calibration, and validation of a complex water quality modeling framework for eutrophic Onondaga Lake. The model is being used for various managerial decisions, including an evaluation of the efficacy of treatment upgrades to the Syracuse Metropolitan Wastewater Treatment Plant, diversion of the wastewater effluent to the adjacent Seneca River, and point and non-point source actions in the watershed. This model is also being used by the state regulators for the development of phosphorus load allocations to the lake.
Mid-Columbia Coho Restoration Project *Yakama Nation* *Wenatchee and Methow Watersheds, Washington*	Dr. Mugunthan was the technical lead for discharge evaluation and data collection guidance to determine the environmental impact of acclimation ponds that will be used for reintroducing coho salmon in the tributaries of the Columbia River System. His responsibilities included determining acclimation-related phosphorus loads and studying the impacts to the Wenatchee River through mechanistic modeling. He authored water quality evaluations in the NEPA document for the project. He also provided NPDES permitting strategy support for proposed discharges in the lower Wenatchee River.

Sacramento River Deepwater Ship Channel Deepening Project *U.S. Army Corps of Engineers, San Francisco*	Dr. Mugunthan served as the technical writer for the draft SEIS/SEIR sections relating to salinity impacts of proposed deepening of the Sacramento River Deepwater Ship Channel. He translated the results of 3-D hydrodynamic modeling and scenario evaluations, and drafted analyses assessing overall impacts into the EIS.
Spokane Hatchery Water Quality Studies *Washington Department of Fish and Wildlife (through a subcontract to Tetra Tech, Inc.)* *Spokane, Washington*	Dr. Mugunthan was the technical lead for developing a water quality program to collect water quality and flow data from Spokane Hatchery as part of a hatchery redevelopment project. Data from this study will be used for supporting redevelopment of the hatchery and will support the NPDES permit application for the hatchery.
Chehalis Basin Strategy: Reducing Flood Damage and Enhancing Aquatic Species *Office of Financial Management, State of Washington*	Dr. Mugunthan was the technical lead for the development of two water quality models to simulate temperature and dissolved oxygen changes in the Chehalis River from a proposed multi-purpose reservoir in the Upper Chehalis River. The evaluations were used to support a biological model for assessing fish habitat changes in the Chehalis River.
Cushman Hatcheries Water Quality Evaluations *Tacoma Power* *Mason County, Washington*	Dr. Mugunthan was the technical lead for evaluating water quality impacts of discharges on the Skokomish River and on Hood Canal from two proposed fish hatcheries that were required to meet Federal Energy Regulatory Commission licensing requirements for generating hydroelectric power at Cushman Dam. Dr. Mugunthan conducted water quality evaluations and authored sections of the engineering report that was required for obtaining the NPDES permit.

Presentations and Publications

Mugunthan, P., G. Ferguson, C. Andonaegui, and J.R. Rhea, 2011. Evaluating the Water Quality Impacts of Discharges from Proposed Fish Acclimation Ponds in a 303(d) Listed Water Body in Central Washington. Presented at the Water Environment Federation's Impaired Waters Symposium 2011, Miami, FL. January 12-13, 2011.

Mugunthan, P., J.R. Rhea, D. Glaser, K. Russell, L. Zheng, and J.J. Mastriano, 2008. Development and Calibration of a Water Quality Management Model of Eutrophic Onondaga Lake, NY. Presented at the World Environmental & Water Resources Congress 2008, Honolulu, HI. May 12-16, 2008.

Mugunthan, P., and C.A. Shoemaker, 2006. Assessing the Impact of Parameter Uncertainty for Computationally Expensive Groundwater Models. *Water Resources Research*, 42, W10428, doi:10.1029/2005WR004640.

Mugunthan, P., C.A. Shoemaker, and R.G. Regis, 2005. Comparison of Function Approximation, Heuristic, and Derivative-based Methods for Automatic Calibration of Computationally Expensive Groundwater Bioremediation Models. *Water Resources Research,* 41, W11427, doi:10.1029/2005WR004134.

McDonough K.M., D.C. Lambert, P. Mugunthan, and D.A. Dzombak, 2005. Processes Governing Flow and Chemical Characteristics of Discharges from Free-draining, Underground Coal Mines. *Journal of Environmental Engineering* 131(10):1361-1368.

Mugunthan, P., C.A. Shoemaker, and R.G. Regis, 2004. Time Varying Optimization for Monitoring Multiple Contaminants under Uncertain Hydrogeology. *Bioremediation Journal* 8(3-4):129-146.

Oregon Hatchery Research Center

Issue 1

Winter 2006-2007

OHRC PROGRESS

A State of the Art Laboratory in a Natural Environment

OREGON HATCHERY RESEARCH CENTER

OHRC Mission

- Understand mechanisms that may create differences between hatchery and wild salmon and steelhead
- Develop approaches to best manage differences to meet fishery and conservation objectives
- Help Oregonians understand the role and performance of hatcheries in responsibly using and protecting Oregon's native fish

OREGON Fish & Wildlife

Oregon State University OSU

OHRC: A FLAGSHIP RESEARCH FACILITY

The Oregon Hatchery Research Center is a unique and dynamic facility located next to Fall Creek in the Oregon Coast Mountain Range near the town of Alsea between the cities of Corvallis and Waldport.

The center will help scientists and researchers answer questions related to fish recovery and hatchery programs.

The nearly eight million dollar Research Center is similar to several other facilities in the Pacific Northwest, but includes a unique feature, four parallel artificial streams in which to do research.

The four artificial streams are 200 feet long and 25 feet wide. Gravel, tree branches and root wads help simulate a natural stream environment.

Water moving through the artificial streams can be recirculated to augment flows during periods of low stream discharge or whenever increased flows are required. Habitat conditions are replicated in each channel, so if scientists observe something happening to fish in one channel, they can see whether the same thing occurs in another under the same conditions.

They can also slightly alter the conditions in one channel relative to another to find out what impact that has on fish.

Currently, there are 44 tanks - in a variety of diameters - that make up the tank farm. There is room for expansion of up to 88 tanks or more. Scientists will be able to rear individual families of fish, or groups of fish under replicated conditions.

Four refurbished raceways from the old hatchery are located in front of the new 18,000-square-foot building. These raceways will

(Continued on page 5)

ADVISORY COMMITTEE A "NATURAL RESOURCE" FOR SENIOR SCIENTIST

As the senior scientist for the Oregon Hatchery Research Center, Dr. David Noakes knows he doesn't walk alone in managing the state-of-the-art facility. In addition to the Oregon Department of Fish and Wildlife and Oregon State University professionals who work at the center, Dr. Noakes can rely on the OHRC Advisory Committee to help achieve his goals. The committee is made up of 15 individuals representing federal and local government agencies; sport and commercial fishing industries; watershed, tribal and education (K-12) organizations; resource producers (agriculture, timber, gravel); conservation interest groups;

(Continued on page 2)

Noakes' Notes

Dr. Noakes and long time supporter, Wayne Giesy talk at the opening ceremony.

At the Oregon Hatchery Research Center we are studying the differences between wild and hatchery salmon and trout. These same questions are among the most fundamental in the area of science known as EvoDevo (Evolutionary Developmental biology)—the interface of evolutionary biology and classical studies of development or embryology.

This approach investigates the relative contributions of genes, the environment, and the interactions between genes and the environment. Almost everyone has a strongly held opinion on the distinctions between hatchery and wild fish, despite a lack of critical experimental evidence. Hatchery fish may be exposed to artificial selection and domestication, in addition to striking differences in their early rearing environment. Wild fish are exposed to natural selection, and different environmental conditions. We are investigating how these differences in genes and environments can produce differences between the fish. We are able to conduct controlled experiments, on a scale not possible at other institutions, to keep Oregonians at the forefront of responsible management of native fishes.

David L. G. Noakes has more than 30 years experience at universities in Canada, the USA, Japan, China, Iceland, England, Korea and Scotland. He is currently a Professor in the Department of Fisheries and Wildlife at Oregon State University and is the Senior Scientist at the Oregon Hatchery Research Center. His teaching and research focus on fish behavior, ecology and evolution.

"The more people that give us insight and conduct research here, the better. There's no limit to what we can do here."
Dr. David Noakes, Senior Scientist, Oregon Hatchery Research Center

Advisory Committee

(continued from page 1)

and public-at-large and science-at-large representatives. The committee, appointed by ODFW and OSU, advises Dr. Noakes on activities and functions related to the operation and maintenance of the OHRC.

"The committee is a valuable resource for assisting with developing policies and procedures and providing helpful insight on goals and expectations for the facility," said Dr. Noakes.

Recently, the committee developed three subcommittees on operations, research and outreach and developed goals and objectives for each committee.

"It is a really exciting opportunity for the committee to be involved with all aspects of the OHRC, and we look forward to a long and productive working relationship," said Cindy Heller, a public -at-large committee member.

OHRC Outreach Opportunities

The Oregon Hatchery Research Center receives, on average, two organized tours a week, or over 100 organized visits per year. One example of the type of interaction and educational opportunities provided during these sessions was a visit of 63 elementary school kids from an after school program in Waldport.

The kids were separated into four groups.

Each made observations in the stream channels, including identifying spawning areas, fish hiding areas, fish feeding areas and rearing areas for benthic invertebrates.

The groups shared their findings and then created maps from the observations made in each simulated stream. The simulated stream channels provided an excellent educational opportunity.

For tours, contact:
Ryan Couture
OHRC Facility Manager
2418 East Fall Creek Road
Alsea, OR 97234
(541) 487-5510
ryan.b.couture@state.or.us

OHRC Completes "Shakedown"

A thorough "shakedown" of the Hatchery Research Center occurred over the past year to test, adjust and improve all fish rearing components.

The "shakedown" tested and verified all water supplies and drains, flows and water chemistry, electronic systems, uniform characteristics among tanks and replicate stream channels and fish performance in tanks and replicate stream channels.

The OHRC has an extensive and elaborate water intake cleaning system that redirects river water through a series of pipes to the silt settling pond and the research raceways.

According to contractors, there is an estimated eight miles of underground piping that supports the OHRC.

Testing and updating the water intake cleaning system included increasing the size of the drive motors and installing a spray bar system to supplement the brush cleaners. A large log, donated by Weyerhaeuser, was placed in front of the intake structure to help deflect debris. The embankment around the intake was stabilized with about 50 yards of boulders.

Four refurbished raceways in front of the OHRC building

A communications system is being installed at the center that will use video cameras to monitor fish movements and behavior in the simulated streams, fish ladder and wet lab. The video feed will be linked to the interpretive center. This system will allow staff and visitors an opportunity to watch salmon spawning without interfering or being detected.

"These cameras will help researchers document the behavior patterns of adult and juvenile hatchery and wild fish as they interact with each other and their habitats in the simulated stream channels," said Ryan Couture, OHRC facility manager .

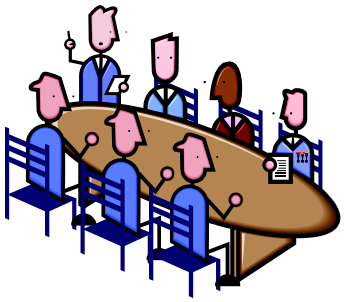
The cameras will work under extremely low light conditions and will provide complete coverage of the four simulated channels.

Images captured are planned to be available for public viewing at OHRC, OSU, Hatfield Marine Science Center and the Internet.

"The research goals of this facility are critical to future management of salmon and steelhead in Oregon."
Dan Edge, Chair, Oregon State University Department of Fisheries and Wildlife

OHRC Advisory Committee Members

Judy Gordon, federal government
Mark Labhart, local government
Dennis Richey, sport fishing
Bruce Buckmaster, commercial fishing
Stan Van de Wetering, tribal
Chris Vandenberg, resource producers
Tom Davis, watershed councils
Bill Hansumaker, education K-12
Cindy Heller, public-at-large
Dr. Wayne Hoffman, public-at-large
Dr. Thomas Ebert, science-at-large
Dr. Jeff Hard, science-at-large
Barry McPherson, science-at-large
Dr. Ben Stout, science-at-large
Tom Gilg, conservation



ENGINEERING FIRM WINS NATIONAL AND STATE AWARDS FOR OHRC DESIGN

Tetra Tech/KCM won the 2006 Carl V. Anderson Award of Merit—a national-level award—for designing the Oregon Hatchery Research Center.

The presentation was made in October at the Association of Conservation Engineers (ACE) awards ceremony in Erie, Penn.

The award is the second highest award given by ACE and recognizes engineering design practices that best exhibit the goals and objectives of ACE as judged by peers and associates.

In addition to the national recognition, Tetra Tech/KCM was also the recipient of two state-level awards.

In January, Tetra Tech/KCM was presented with the 2006 Grand Award for Engineering Excellence by the Oregon Chapter, American Council of Engineering Companies for Engineering.

They also received the 2006 Gold Award for Contribution to the Engineering Profession, by the Washington Chapter, American Council of Engineering Companies.

The Oregon Department of Fish and Wildlife's goal was to convert a "well used" production hatchery into a state-of-the-art research center that would provide a scientific basis for modified hatchery practices and programs so that negative impacts on wild populations are eliminated or controlled to a known and accepted level.

The OHRC tank farm provides a location for rearing larger groups of fish for experiments using different lineages, spawning and rearing conditions.

Tetra Tech/KCM was selected by ODFW to perform civil, architectural, biological and engineering services including programming design, bidding, construction administration and closeout services.

Tetra Tech/KCM's design team included four highly-regarded fisheries scientists to bridge the gap between science and engineering.

Included were a previous ODFW senior scientist, a University of Washington fisheries professor specializing in salmon research, a genetics consultant associated with the University of Idaho and an environmental scientist with the University of Idaho with expertise in natural stream habitat.

Tetra Tech/KCM was created in 1943 and works with clients to develop or improve water, wastewater, transportation and surface water management systems, buildings and structures ranging from military facilities to hatcheries, aquariums, visitor centers and zoos.

Shade cloth suspended above the artificial streams to replicate shade.

(Continued from page 1)
allow comparisons of experimentally-reared fish with traditional hatchery rearing.
The new research building houses the visitor and interpretive center that offers a place for K-12 youth and the public to learn about hatcheries as a fish management tool, and about fish ecology and watershed processes.
An in-house wet and dry lab allows for additional experiments and fish processing. Additionally, the building includes dormitory-style living quarters that provide rooms for up to 24 researchers, students and natural resource professionals conducting long-term projects or attending conferences.

It Takes A Team

To operate the OHRC facility requires staff to live onsite. Ryan Couture, OHRC facility manager, Joseph O'Neil, assistant manager, and Joyce Mahr, technician, work together to oversee maintenance and safety, conduct education and outreach activities, and provide fish-culture guidance

Ryan Couture (left) and Joseph O'Neil (right)

Mahr "sweeps" debris from one of the raceways

OHRC Current Research Projects

Isotopic Analysis of Diets
We are collaborating with scientists from the EPA Corvallis Laboratory in a study of diets and growth in juvenile steelhead. We are feeding juveniles on diets with high and low isotopic composition and tracking changes in muscle tissue and mucus of the fish. This allows us to calculate growth rates, and to calibrate this technique to determine diet switching in wild fish. The results will be applied to studies on the effectiveness of salmon carcass placement in Oregon watersheds. Mucus can be used as an alternative to invasive tissue sampling from wild fish.

Effects of Early Rearing on Brain Structure in Steelhead
This research was initiated to test findings reported from rainbow trout in California (Marchetti et al 2004, 2006). Results from rainbow trout showed larger and more complex cerebellum brain structures for fish reared on gravel, compared to those raised on bare substrate. Those results lead to the hypothesis that early rearing experience would alter brain structure associated with orientation and movement of fish. Fish reared in gravel (= "natural") substrate would thus enjoy an advantage in survival and growth, compared to those reared on bare hatchery substrates. We reared steelhead under a much greater range of conditions, for much longer periods of time, to test the predictions from that hypothesis. We reared fish at three different temperatures (cold, ambient, warm), with and without formalin or ultraviolet sterilization of water, in conventional hatchery trays and in simulated stream gravel. The results from this study will help us understand the effects of early experience on later survival and migratory behavior of salmon and trout.

Genetics of Growth and Survival
We are collaborating with Professor Michael Banks of the Hatfield Marine Science Center to measure the genetic basis for differences in survival and growth of salmon and trout.
We collect small tissue samples from adults and juveniles so we can assign parents and progeny to fish in the simulated stream channels, in hatchery tanks, and in natural populations. We track the survival and growth of identified juvenile fish in relation to their feeding behavior, habitat choice and social interactions. This information can be used to better manage hatchery production, or wild breeding populations.

(Continued on page 6)

"Investing in fish is investing in Oregon's economy, as well as the state's future."

Governor Ted Kulongoski

ODFW
3406 Cherry Ave NE
Salem, OR 97303

OREGON HATCHERY RESEARCH CENTER

Construction of the Oregon Hatchery Research Center made possible by these supporters.

Oregon Hatchery Research Center

The OHRC was featured on Oregon Public Broadcasting's Oregon Field Guide November 2, 2006. The episode highlighted the unique features of the facility and the important research that will take place here. Dr. David Noakes and Ryan Couture were interviewed for the episode and provided an inside perspective on this one-of-a-kind facility. Go to http://education.opb.org/programs/ofg/episodes/view/1805 to view the story.

The OHRC was also the cover story on Oregon State University's Agricultural Progress, Spring 2006, Volume 52, Number 1. Reprints of the article are available from the OHRC, or the article can be downloaded from the OSU information website http://extension.oregonstate.edu/oap/story.php?S_No=160&storyType=oap&page=1

WORK IN PROGROSS: KIOSKS

Kiosks are located on the path that borders Fall Creek. Soon informational graphics will be mounted to the kiosks highlighting local wildlife and fish populations.

(Research continued from page 5)

Handling, Food Deprivation and Stress in Steelhead Smolts

Experiment was designed and conducted in collaboration with Dr. Carl Schreck and the Fish Coop Unit at OSU – Fisheries and Wildlife Department. Experiment has been completed, data have been analyzed and a manuscript is being written.

OHRC on the web: http://www.dfw.state.or.us/OHRC/

The Oregon Hatchery Research Center is a new facility on Fall Creek, in the central Oregon Coast Range.

The mission of the Oregon Hatchery Research Center is to:

- Understand mechanisms that may create differences between hatchery and wild salmon and steelhead
- Develop approaches to best manage differences to meet fishery and conservation objectives
- Help Oregonians understand the role and performance of hatcheries in responsibly using and protecting Oregon's native fish

The Oregon Hatchery Research Center received $7.8 million total funding:

- $4 million from Ballot Measure 66 capital funds
- $1.125 million from the OWEB Restoration and Protection Research Fund
- $1.875 million from ODFW
- $.84 million from the ODFW Fish Restoration and Enhancement Program

Research will provide information to help:

- Use hatchery fish responsibly to support viable populations of wild fish and sustain sport, commercial and tribal fisheries
- Understand biological processes and management implications on landscape scales
- Identify hatchery practices that minimize the impact of hatchery facilities on the natural environment

The OHRC staff includes:

- A Senior Scientist to oversee research and operations, identify research priorities, plan and conduct research, collaborate with fishery professionals and students, and coordinate with an advisory team
- A facility manager, assistant manager and one technician to operate the facility, oversee maintenance and safety, conduct education and outreach activities, and provide fish-culture guidance

For more information about the Oregon Hatchery Research Center:

- Call the center at 541-487-5510
- Visit the website at **http://www.dfw.state.or.us/OHRC/**

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Hatching Wild Ideas

HATCHING NEW IDEAS ABOUT WILD SALMON

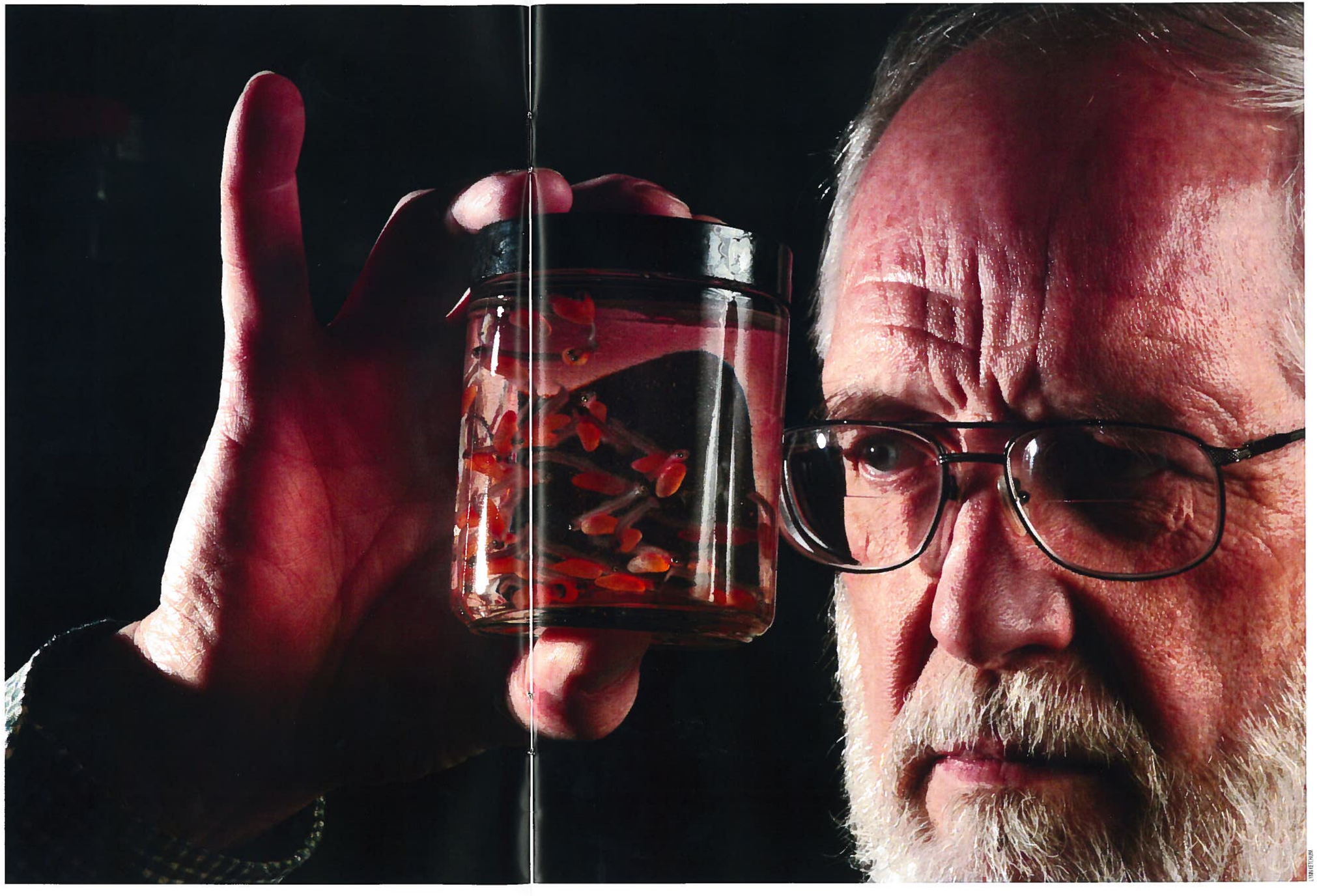
BY CAROL SAVONEN

Nestled in a steep green valley outside of the tiny Coast Range community of Alsea, a new research fish hatchery is a far cry from the typical production hatchery that turns out salmon fingerlings by the ton.

The jade-colored water of Fall Creek flows into the hatchery and through a fish trap before it splits into four virtually identical stream channels. These parallel channels look like natural streams, filled with river-rounded gravel, broken tree limbs, and identically placed meanders and pools. The streams look so natural that dippers fly in and scout the stream beds for aquatic insects crawling in the submerged pebbles.

The new Oregon Hatchery Research Center is designed to study the influences of hatchery salmon and steelhead trout on their wild relatives. The $7.5 million state-of-the-art facility opened in October, 2005, as a joint venture between the Oregon Department of Fish and Wildlife (ODFW) and Oregon State University's Department of Fisheries and Wildlife. Here, scientists, students, and citizens will be able to study hatchery and wild fish together.

Wild salmon runs are threatened or endangered in two-thirds of their ranges in Oregon, Washington, Idaho, and California. Fisheries scientists often attribute salmon decline in our region to the "Four H's"—habitat loss, harvest, hydropower, and hatcheries. If you examine



David Noakes, director of the Oregon Hatchery Research Center, examines newly hatched steelhead trout.

(PHOTOS: LYNN KETCHUM)

closely any of these factors, you'll find a tangled web of issues.

Today, more than 70 percent of Oregon's salmon start life not in streams but in a fish hatchery. Hatchery salmon have been compared to farm animals, bred to be the biggest, the earliest returning, or the brightest colored. The characteristics that make them a desirable catch for people do not necessarily help them survive better in the wild.

"Farmed" salmon and "hatchery" salmon are not the same. Hatchery salmon live most of their lives in the wild, while farmed salmon are raised in captivity and fed manufactured food.

Scientists often attribute salmon decline to the "Four H's"—habitat loss, harvest, hydropower, and hatcheries.

Hatcheries have helped boost salmon numbers and maintain viable fisheries, stopping or reversing salmon decline in some areas and sometimes playing a crucial "stop-gap" role in restoring wild runs.

But many studies have shown that hatchery-bred salmon may harm native fish by spreading diseases or by contaminating their genetic fitness for conditions in a particular watershed. Hatchery fish have been found to compete with wild fish, by using up available food and habitat. Raised in raceways, munching on fish chow, these fish become easy targets for predators.

Though hatchery and wild salmon each have their proponents, most fisheries scientists are coming to realize that both are needed, explained Carl Schreck, OSU fisheries professor and member of the Oregon Cooperative Fish and Wildlife Research Unit at OSU. Scientists need to learn enough to produce hatchery fish in a way that is compatible with remnant wild fish stocks, he said.

"We have to learn how to do aquaculture successfully to be able to rehabilitate endangered wild fish," said Schreck, who serves on the science

Water from Fall Creek flows into four parallel experimental channels, protected by netting from fish-eating birds.

Fish trapped at the research center are measured and recorded before they are released into the experimental channels for observation.

team advising the state government's Oregon Plan for Salmon and Watersheds. "We have to develop ways of rearing salmon very different from old production methods. We have to learn to do no harm to wild stocks."

Gil Sylvia, a natural resource economist with OSU's Coastal Oregon Marine Experiment Station, thinks the new facility will help illuminate economic aspects of salmon management.

"We all want to save the salmon… but at what cost? We need a healthy ecosystem for both its human use and for nature," said Sylvia. "So much money in Oregon goes to salmon—close to $1 billion per year, including lost hydropower revenues, so we need to find the biggest bang for our buck to increase salmon populations. Will it be to reduce commercial fishing? To increase spill over the dams? Do hatchery fish actually compete with wild fish? Should we make them more like wild fish or make them so different they don't interact? These are the kinds of questions that we would hope to be able to answer."

A hatchery dedicated solely to research, teaching, and extension is very rare, according to David Noakes, the research director of the new hatchery. "Most all other hatcheries are 'production' hatcheries," he said. "Their sole objective is to produce fish, much like a factory produces products. Production hatcheries generally don't research new ideas; they don't do experiments. But our new facility is designed and planned from scratch to answer research questions."

"Salmon are symbolic, almost totemic, in people's minds. Everyone here seems to hold strong opinions about salmon."

Noakes, who came to OSU from Canada's University of Guelph, is one of the world's leading experts on fish biology and behavior. "In terms of fish, the Pacific Northwest is much more productive than northeast Canada," he said. "Salmon and trout play an integral role in the ecosystem here in a way that they don't back East. The salmon were mostly gone from eastern North America a century ago. It is fascinating that the Pacific Northwest has an ecosystem with migratory salmon coming in from the ocean, carrying their influence inland.

"Salmon have different implications for people here," he continued. "They are symbolic, almost totemic, in people's minds. Everyone here seems to hold strong opinions about salmon."

Research conducted at the Oregon Hatchery Research Center may help bring more scientific evidence to some of those opinions. A new research building with outdoor tanks and raceways provides a laboratory for experiments, and an interpretive center, living quarters, classrooms, and conference rooms make it easier to involve researchers and students.

Talk to any OSU or ODFW fish researcher, and they'll tell you they're most excited about the four experimental streams at the new research hatchery.

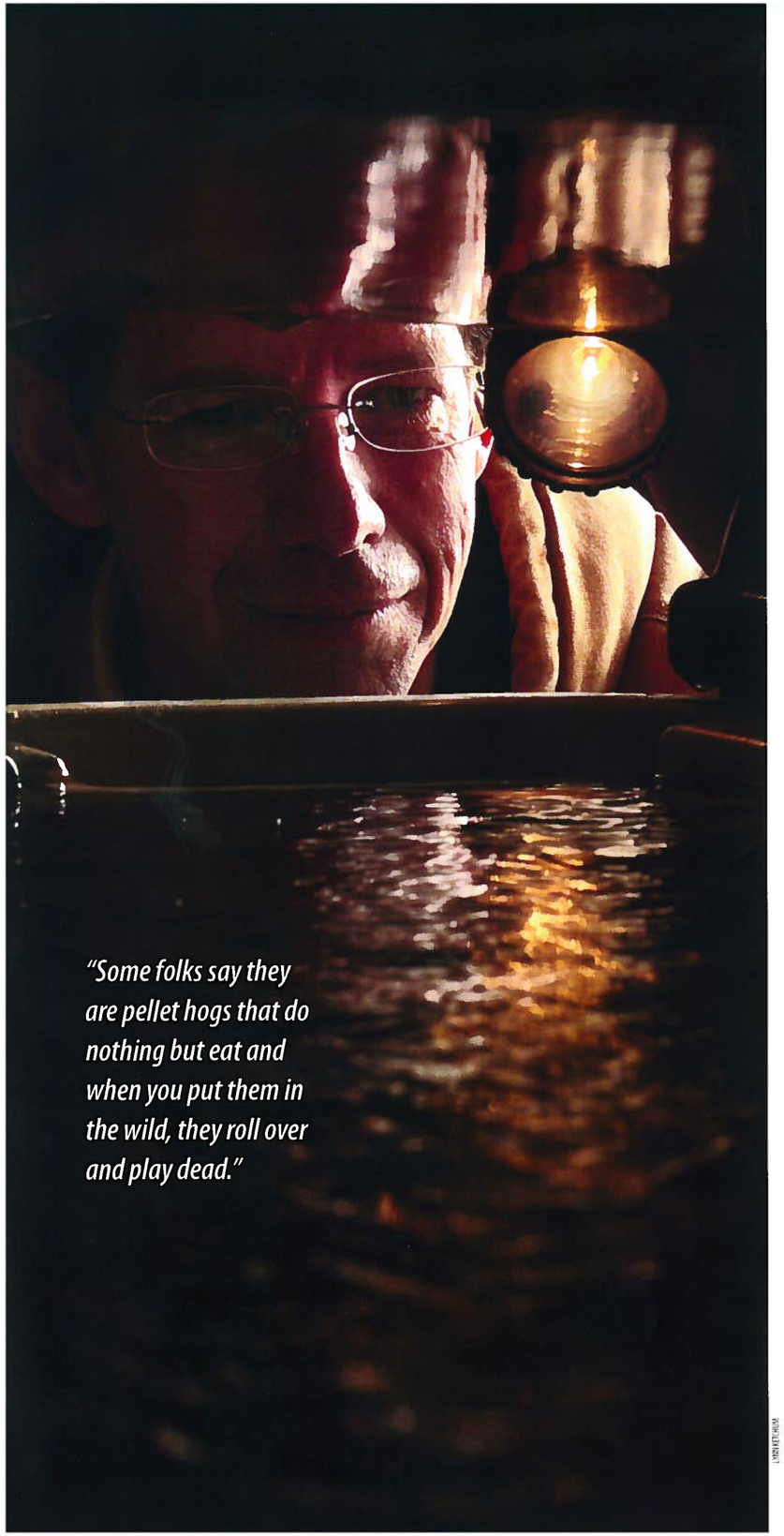
"Other artificial stream channels are not like this," said OSU Extension fish ecologist Guillermo Giannico. "These are natural looking, with meanders, downed wood, stream gravel. They mimic many hydrological processes. Most other artificial streams are more like wide cattle troughs with a little gravel sprinkled on the bottom."

These natural-style stream channels make it possible to observe wild and hatchery fish together, observations that might improve hatchery and wild fish management. This is integral to the center's ambitious mission—to conduct studies that will shed light on the differences and interactions between hatchery and wild salmon and steelhead. Once differences are better understood, managers can further develop practices that help conserve wild stocks.

With their eyes on the future, young steelhead emerge from eggs incubated at the hatchery research center.

Research is just beginning at the new hatchery. Resident ODFW hatchery staff are testing basic hatchery functions as well as rearing fertilized salmon eggs, raising young salmon and trout under varying temperature regimes, and recording where wild and hatchery adult steelhead spawn in the artificial stream channels. The staff is testing sanitation methods using ultraviolet light versus formalin to combat disease on incubating eggs.

"We want to be asking questions all the time," said Noakes.

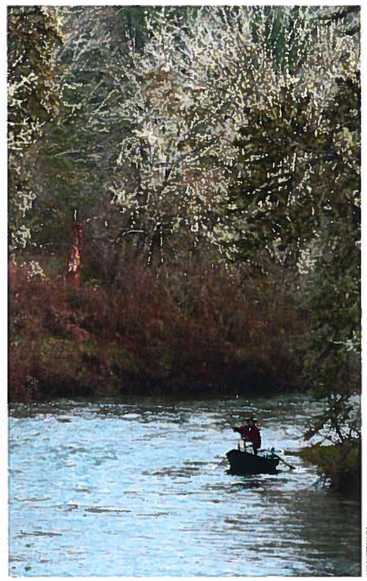


How do salmonids choose mates, spawn, grow up, travel, and compete for food? How do hatchery and wild fish interact as juveniles? As returning adults? Where do they spawn? Where do they go after they are released? Where do they spend time in the gravel and how do they develop under different temperature, disease, and food and light regimes?

"We can see how wild fish and hatchery fish compete."

"One of the questions we want to investigate is: Are hatchery fish competent?" Noakes said. "Some folks say they are pellet hogs that do nothing but eat and when you put them in the wild, they roll over and play dead. Others say that hatchery fish are the source of all evil, that they take over and crowd out wild fish. And many others see hatcheries as the only realistic option for supplementing and conserving fish species.

"We can see if hatchery fish will spawn with wild fish, or if they will crowd them out of spawning beds. We can compare juvenile growth rates and survival. We can see how wild fish and hatchery fish compete."



▲ New information may help researchers understand when and where hatchery fish can be caught without impacting wild runs.

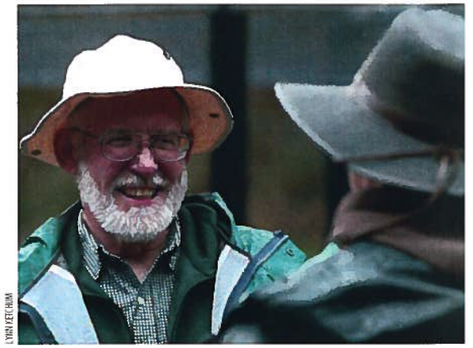
◀ Joseph O'Neil pores over the progress of young salmon in the Oregon Hatchery Research Center, where he is assistant manager.

Most hatcheries have an objective of producing as many young salmon as they possibly can. Is this the right way of doing business? Schreck sees the Oregon Hatchery Research Center as an excellent place to determine the optimal density for raising young salmon smolts. "Maybe we can test to see if it is more cost effective and successful to produce fewer high-quality, not high quantities, of fish at hatcheries," he said.

"I would be really interested in looking at the competition between hatchery and wild juvenile fish in those experimental streams," said Giannico. "Young salmonids compete for territories in streams. One could look at the effect that sequence of arrival to a territory, or relative size differences among fish, may have on the outcome of wild and hatchery fish competition for the best feeding spots in a stream reach. This kind of information could help design hatchery release strategies that minimize undesirable impacts on wild salmonids."

Noakes wants to make sure that the research at the center is interdisciplinary and far ranging. He's formed several advisory committees, including an advisory committee to review research proposals and a stream advisory committee with hydrologists, stream ecologists, and forest engineers.

Experimental streams mimic natural features with gravel bars, woody debris, and natural meanders and pools.



David Noakes sees the center as a place to bring together researchers, students, and the community.

"The more people that give us insight and conduct research here, the better," he said. "There's no real limit to what we can do here."

"I could see the center as a good place for watershed councils, conservation groups, commercial fishers, and angler groups to participate in workshops and other information sharing," said Giannico. "Local students will have a great opportunity to study natural science here, not only at the hatchery, but in the surrounding watershed itself."

Patience on the part of citizens and scientists will be required, as funding and results are not going to be instantaneous. "There's a huge potential here to benefit the people and fisheries of Oregon," said Schreck. "But people have to give it time to succeed. Salmon life cycles are long. It takes three to six years to follow one generation of salmon from egg to a spawning adult. None of this is quick."

Carol Savonen is a communications specialist in OSU's Department of Extension and Experiment Station Communications.

ITEM: CONSENT CALENDAR

2. CONSIDER AUTHORIZATION OF EXPENDITURE OF FUNDS FOR DESIGN OF SLEEPY HOLLOW STEELHEAD REARING FACILITY INTAKE UPGRADE

Meeting Date:	**March 16, 2015**	**Budgeted:**	**Yes**
From:	**David J. Stoldt General Manager**	**Program/**	**Protect Environmental Quality**
		Line Item No.:	**2-3-1-F**
		Account No.	**24-04-785812**
Prepared By:	**Larry Hampson**	**Cost Estimate:**	**To be provided (100% reimbursable)**

General Counsel Review: N/A
Committee Recommendation: N/A
CEQA Compliance: Exempt under §15262

SUMMARY: Staff recently received several proposals to design an upgrade to the Sleepy Hollow Steelhead Rearing Facility (SHSRF), complete environmental compliance documents, and acquire permits to construct the upgrade. A technical review committee composed of District staff and representatives of the State Coastal Conservancy (SCC) and National Marine Fisheries Service reviewed the proposals on March 11, 2015 and have recommended that _____ be selected based on their proposal (**Exhibit 2-A -** to be provided at or prior the Board meeting).

The SHSRF is in need of an upgrade in order to be able to operate at a wider range of Carmel River flows and with potential future changes in water quality conditions. A new or modified raw water intake would be designed to make it more accessible for maintenance and less susceptible to clogging. To improve system reliability and increase the periods when the facility can operate, a recirculating aquaculture system (RAS) would be designed that would allow the facility to switch from once-through flow mode (existing) to partial or full recirculating system during periods when river flow is not suitable for once-through mode. This design project has been selected for funding from Cal-Am Settlement Agreement funds administered by SCC. District expenses, including staff time, are eligible for reimbursement up to $450,000. Design and permit acquisition is expected to take about 18 months to complete.

RECOMMENDATION: Staff recommends approval of the expenditure of District funds to complete the Sleepy Hollow Steelhead Rearing Facility Raw Water Intake and Water Supply System Upgrade. If this item is adopted with the Consent Calendar**,** the General Manager would be authorized to enter into an agreement for services with _____for a not-to-exceed (NTE) amount of $_____. The District would seek reimbursement of expenses for this work from the State Coastal Conservancy under grant agreement 14-018.

IMPACTS TO STAFF/RESOURCES: Funds for work in this fiscal year are identified in the mid-year FY 2014-15 Budget Adjustment, Program Line Item 2-3-1-F, Design and permitting for new intake system. Grant Agreement 14-018 between the District and the State Coastal Conservancy allows the District to recover 100% of the District's costs.

BACKGROUND: The Sleepy Hollow Steelhead Rearing Facility (SHSRF or facility) is located at approximately river mile 17.5 on the west bank of the Carmel River (latitude: 36.443508, longitude: 121.715974), about one mile downstream of San Clemente Dam (see Figures 1 and 2). MPWMD has operated the facility since 1996 to raise young-of-the-year and juvenile steelhead rescued from portions of the Carmel River that dry up nearly every year due to stream diversions for municipal and private use. An average of about 16,000 steelhead are rescued each year, with a portion placed in the facility; however, up to about 40,000 steelhead have been reared during the dry season in a 900-foot long simulated natural channel consisting of riffle/pool sequences separated by weirs. An important operational feature of the facility is to replicate as closely as possible the natural conditions under which steelhead exist in the channel of the Carmel River.

Steelhead rescued from drying reaches of the river in spring and summer are transported to the facility where they are placed in quarantine before being transferred to the rearing channel. Although fish are initially sized, due to the difficulty of re-capturing fish when the channel is full and flowing, no additional sizing occurs. This can lead to predation because these fish are wild and can grow at significantly different rates. Steelhead are normally released back into the river and at the Carmel River lagoon in late fall or early winter after the river reconnects to the lagoon. The facility is then shut down for the winter.

Situated on a seven-acre site adjacent to the river, the facility consists of an enclosed river intake, pump system, cooling tower, channel, miscellaneous treatment tanks, and an administrative office. A horizontal drum screen in the channel bottom and pump system deliver continuous flow of about 900 gallons per minute (gpm) or about two cubic feet per second (cfs). Flow can be delivered directly to the channel or processed through a cooling tower for oxygenation and cooling. Additional off-channel systems are also fed from the raw water intake. There is no potable or domestic water supply available to the site; however, office facilities (sinks and toilet) use untreated river water. The intake and pump system were designed with three key assumptions: 1) that clear water (i.e., water free of sediment and debris) would be available from Carmel River flow; and 2) that a minimum of five cfs would be available at all times at the intake; and 3) that the flow rate would be a constant 900 gpm. The system cannot be operated during river flows below about four cfs or when sediment and debris is transported past the intake structure. Flow from the rearing channel is returned to the river in a pool about 200 feet downstream of the intake location.

Because reservoir storage capacity upstream at Los Padres Reservoir (RM 24.8) is limited, during dry and critically dry periods flow at the intake can drop below four cfs – a level at which pump cavitation can occur and cause failure in a matter of hours. In addition, organic material or sediment can clog the rearing channel and the drum screen in the bottom of the river channel at low flows. Even with frequent cleaning, reduced flow through the clogged screen can cause pump failure (due to cavitation). This problem will be exacerbated once San Clemente Dam is removed and more sediment and organic material begins to flow downstream. Furthermore, the

California Department of Fish and Wildlife (CDFW) and the National Marine Fisheries Services (NMFS) have requested that MPWMD release steelhead held in the facility later in the rainy season in order to provide more time for the re-watered downstream reaches to recover. Under current conditions, operating into the winter storm season would increase the possibility of system failure due to a clogged intake structure. In addition, at high flows, the intake structure is not accessible from the streambank and vehicular access into the facility can be restricted by heavy rains (the road condition has recently been improved greatly as a result of construction activities associated with the San Clemente Dam Removal Project).

MPWMD has previously carried out preliminary assessments of the facility and has reviewed several options for a new intake and pump system; however, the basic premise for these options was to modify the existing intake and pump system to operate at higher organic and sediment loads and at flows above five cfs (see the previous assessments available on the District's RFP web site). In 2013 and 2014, it became clear that operating at flows below five cfs would need to be considered. A partial or full recirculation system would be needed in order to operate during periods of low Carmel River flows.

The highest priorities for an upgrade at this facility are:

1) Improved access to the intake pumps and controls;
2) An improved fish screen that requires less maintenance (i.e., does not clog with leaves, sediment, or debris;
3) Reduce sediment input to river pumps and all other equipment downstream of the pumps;
4) Maintain a minimum of 2 cfs (900 gpm) flow to the rearing channel during operations, with the ability to deliver a peak flow of 3 cfs (1,350 gpm) for short periods;
5) Prevent degradation in the water quality of return flow to the Carmel River channel;
6) Allow more flexibility to operate the facility both at extreme low flows and during winter season high flows;
7) Operate the facility during any period for as long as it takes for suitable conditions to develop in the Carmel River in order to release reared fish back into Carmel River or lagoon.

With input from representatives of NMFS, SCC, and CDFW, the District developed a detailed scope of work to improve and/or relocate the existing raw water intake, design a recirculating aquaculture system, and acquire permits to construct the project. The District advertised for proposals beginning January 16, 2015. The initial deadline for proposal submittal was February 27, 2015. However, after a field visit, two groups requested a one-week extension to this deadline to March 6. The proposal review was then re-scheduled to March 11, 2015.

EXHIBIT
2-A Proposal by _____

ITEM: CONSENT CALENDAR

3. CONSIDER EXPENDITURE OF FUNDS FOR ADDITIONAL ASSISTANCE WITH IFIM TO ANALYZE INSTREAM FLOW REQUIREMENTS FOR THE CARMEL RIVER

Meeting Date:	**March 16, 2015**	**Budgeted:**	**Yes**
From:	**David J. Stoldt** **General Manager**	**Program/** **Line Item No.:** **Account No.**	**Augment Water Supply** **1-8-1** **5-7860.19**
Prepared By:	**Larry Hampson**	**Cost Estimate:**	**$50,000**

General Counsel Review: N/A
Committee Recommendation: The Administrative Committee reviewed this item on March 9, 2015 and recommended approval.
CEQA Compliance: N/A

SUMMARY: Staff proposes an amendment to an existing agreement for services with Normandeau Environmental Consultants (Normandeau) for assistance to test whether steelhead Habitat Suitability Criteria (HSC) developed by the California Department of Fish and Game (CDFW) for the Big Sur River can be applied to the Carmel River. This test is part of an ongoing project to apply the Instream Flow Incremental Methodology (IFIM) to address water rights issues and steelhead habitat management in the Carmel River. Normandeau would provide services as described in **Exhibit 3-A**, including field visits to the Carmel River, assessment of data, and a recommendation of appropriate HSC for the Carmel River. This is an important component of the analyses required for developing a revised set of instream flow requirements.

RECOMMENDATION: Staff recommends approval of the expenditure of up to $50,000 for additional assistance with developing an IFIM to revise instream flow requirements for the Carmel River. If this item is adopted with the Consent Calendar**,** the General Manager would be authorized to amend an agreement for services with Normandeau Environmental Services and increase that agreement from a not-to-exceed (NTE) amount of $50,000 to a NTE of up to $100,000.

IMPACTS TO STAFF/RESOURCES: Funds for the spring portion of this work are identified in the proposed FY 2014-15 Budget, Program Line Item 1-8-1, Other Water Supply Projects – IFIM feasibility studies. The estimated costs include $6,000 for study planning, $30,000 for field work, and $9,000 for Data Analysis and interpretation for a total cost of $45,000. These expenses include both spring and fall work (expenses for fall work would be budgeted in FY 2015-16). This amount presumes that the District will provide one staff person for field work and that CDFW will provide an additional field crew. CDFW has agreed to provide a crew for spring work. Staff is requesting an additional $5,000 as a contingency amount.

BACKGROUND: The Board previously approved an expenditure of up to $50,000 for IFIM assistance at their June 17, 2013 meeting. Since that time, staff and Normandeau representatives developed a draft Request for Proposals for a study and requested input from stakeholders including the National Marine Fisheries Service (NMFS), the California Department of Fish and Wildlife (CDFW), the Carmel River Steelhead Association, the Carmel Valley Association, Trout Unlimited, and the State Water Resources Control Board. As a result of this interaction, CDFW proposed to cooperate with MPWMD in developing Habitat Suitability Criteria (HSC) and suggested that recently completed work in the Big Sur River by CDFW could apply to the Carmel River.

HSC are an important component of instream flow modeling and are a description of the relative quality of aquatic habitat components, such as water depth, water velocity, substrate type, and instream or overhead cover, on a scale of 0 (not-suitable) to 1 (optimal), to the species of interest (Carmel River steelhead). Developing HSC for a stream can be labor intensive. Thus, using HSC from another stream can save time and cost in the development of an instream flow model.

IFIM is an accepted scientific approach to quantifying the effects to aquatic habitat from water diversions at various levels of instream flows. Results from this work can provide the basis for revising existing instream flow requirements necessary to protect steelhead and their habitat in the Carmel River. The District, NMFS, CDFW, and California American Water (Cal-Am) are interested in updating these instream flow requirements in order to best manage steelhead populations in the Carmel River.

EXHIBIT

3-A Normandeau Environmental Consultants Proposed Study Plan for Testing Transferability of Habitat Suitability Criteria in the Carmel River

NORMANDEAU environmental consultants

Memorandum

Thursday, March 12, 2015

TO: Larry Hampson, MPWMD
FROM: Mark Allen, Normandeau Associates
SUBJECT: Proposed Study Plan for Testing Transferability of Habitat Suitability Criteria in the Carmel River

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INTRODUCTION

Instream flow studies will be conducted in the Carmel River for assessing the potential effects of flow management alternatives on aquatic habitat for steelhead, *Oncorhynchus mykiss*, which are currently listed as Threatened in the Carmel River Basin (NOAA 2006). One important component of instream flow modeling is the Habitat Suitability Criteria (HSC), which are a description of the relative quality of aquatic habitat components, such as water depth, water velocity, substrate type, and instream or overhead cover, on a scale of 0 (not-suitable) to 1 (optimal), to the species of interest. HSC can be developed on-site or HSC can be 'borrowed" from studies conducted on other, preferably similar, watersheds. Although steelhead are widely studied along the west coast, very little HSC-specific data have been collected on streams draining the central or southern coast of California. HSC work conducted on the Big Sur River, approximately 20 miles south of the Carmel River, represents the only known source of recent HSC developed in this ESU (CDFW, in prep).

An early step in preparing for the upcoming instream flow assessment includes a determination of what HSC are most appropriate for use in the Carmel River. Will an existing source of HSC, such as those derived from the Big Sur River, be representative of steelhead habitat selectivity in the Carmel River, or will HSC developed from other locations, or from the Carmel River itself, be most appropriate? One way of answering this question is to conduct an HSC transferability test, which compares the performance of candidate HSC (such as the Big Sur HSC) in predicting the relative utilization of specific habitat locations

in the Carmel River by steelhead. This is accomplished by collecting a limited dataset of habitat characteristics in the Carmel River where steelhead are either present (e.g., occupied positions) or are absent (e.g., unoccupied positions). Transferable HSC are those that will consistently predict a higher suitability value for positions that are occupied by steelhead versus those positions that are not occupied by steelhead.

Although HSC transferability protocols are not universally standardized, the most widely accepted methodology is based on techniques described by Thomas and Bovee (1993), including adaptations proposed by Groshens and Orth (1994). Both publications utilize essentially identical analytical procedures, and differ mostly in field application and the method of defining habitat quality from the candidate HSC curves. Following is a description of the field methodologies and candidate HSC selection and definition process proposed for use in this transferability study.

CANDIDATE HSC CURVES

Once the field data is collected, there is little additional time or expense in assessing the performance of a multitude of candidate HSC curves. Although measurement of depth and velocity data is a standardized procedure, methods of assessing substrate and/or cover characteristics is highly variable among HSC studies, and consequently some candidate HSC curves may require collecting alternative substrate or cover codes in order to specifically assess those HSC datasets.

This study plan proposes to test the transferability of the following steelhead HSC datasets:

1. Big Sur River (in prep)
    a. steelhead fry <6cm , juvenile 6-9cm, 10-15cm
    b. depth, mean column velocity, distance to cover
2. Bovee (Bovee 1978)
    a. steelhead fry, juvenile (no sizes defined)
    b. depth, mean column velocity, "Bovee" substrate code
3. Trinity River (Hampton 1997)
    a. steelhead fry <5cm , juvenile ≥5cm

   b. depth, mean column velocity
4. Clear Creek (USFWS 2011)
   a. steelhead fry <8cm , juvenile ≥8cm
   b. depth, mean column velocity, cover

As stated above, the Big Sur HSC is the only dataset available from small to medium coastal streams in California. The Bovee HSC is the "standard" HSC dataset that has been used or assessed over the past 30 years, and is thus included as a general reference dataset. The Trinity River and Clear Creek HSC are both from larger streams than the Carmel River, but most other California datasets are from yet larger rivers (e.g., the Klamath and mainstem Central Valley rivers). Depth and velocity HSC curves for each of the fry and juvenile steelhead datasets are shown in Figures 1 and 2, respectively. It is anticipated that review of this study plan will lead to the addition or subtraction of one or more candidate HSC datasets.

STUDY SITE SELECTION

Discussions with MPWMD biologists and inspection of habitat mapping data suggested that channel gradient, substrate composition, habitat type proportions, and riparian characteristics showed significant changes in the anadromous reaches below Los Padres Dam. Such differences in habitat availability could influence the transferability of candidate HSC; consequently, HSC transferability effort is proposed to be partitioned among three study reaches: the 8.4 mi Below Narrows (BN) reach (lagoon to Scarlett Well), the 10.3 mi Above Narrows (AN) reach (Scarlett Well to San Clemente Dam), and the 6.3 mi Inter-Dam (ID) reach (San Clemente to Los Padres dams).

In order to focus sampling effort within discrete areas feasible for random unit selection and reasonable access to sampling units, each of the three reaches were divided into approximately one mile sub-reaches. Two of the sub-reaches in the AN reach were subsequently excluded from selection due to the predominance of man-made features (e.g., numerous swim dams and bankside homes), one sub-reach was also excluded from the ID reach due to its remote location (a 1-1.5 hour hike). Finally, the uppermost one mile below San Clemente Dam and the uppermost one-half mile below Los Padres Dam were excluded from selection due to reservoir-induced reductions in water visibility, which would

significantly limit effectiveness of direct observation (snorkel) surveys, particularly in deeper pools. Also, the sub-reaches below each dam displayed much increased gradient with narrow, confined channels that were significantly different than the remaining 20+ miles of Carmel River habitat.

One of the one-mile sub-reaches was then selected at random from among the eight available sub-reaches in the BN reach, one was selected from the seven available AN sub-reaches, and one was selected from the five available ID sub-reaches, for a total of three one-mile study sites.

Sampling within each study reach will then be conducted within randomly selected habitat units according to a habitat-stratified design. The CDFW Level-III habitat typing data was used to partition each habitat type into one of four habitat categories based on general depth and velocity characteristics, as follows:

Deep/Slow (D/S): pools with maximum depths ≥4 ft
Shallow/Slow (S/S): pools <4 ft deep or glides
Deep/Fast (D/F): runs or pocketwaters
Shallow/Fast (S/F): low-gradient riffles, high-gradient riffles, or step-runs

Sampling units will be selected randomly from within each of these four habitat categories according to an equal-area sampling design. The equal-area sampling design helps to account for the influence of habitat availability on the resulting HSC curves (or HSC transferability results) by ensuring that all possible habitat types are represented, and that variations in densities of steelhead fry and juveniles will be reflected in the resulting data. For example, if riffles (S/F) are sampled with the same effort (measured as surface area) as deep pools (D/S), and if densities of steelhead fry are greater in riffles than in pools, most of the HSC data will be representative of shallow and fast microhabitat, which reflects the fishes selectivity. In contrast, if a larger juvenile steelhead "prefers" deep/fast habitat, more HSC observations will occur in runs than in riffles or pools, thereby reflecting that life-stage's selectivity for areas that combine deeper and faster microhabitats.

A power analysis of HSC transferability data indicated that reliable test results required a minimum sample size of at least 55 observations of locations were the target species/life-stage were present (e.g., an "occupied" position), and at least

200 observations of locations where the species was not present (e.g., "unoccupied" positions). Consequently, available information on densities of steelhead in the Carmel River (provided by MPWMD biologists) was used to estimate how much habitat was required to achieve these minimum sample sizes for transferability testing. Mean densities of steelhead (fry and juvenile sizes combined) were calculated for each of the three reaches using data from 2006 and 2012, which were recommended as representing years with "average" densities. Mean channel widths were combined with the mean fish densities to estimate that approximately 4,000 to 5,000 ft^2 of sampled habitat may be necessary to achieve a minimum of 55 observations of steelhead fry and 55 steelhead juveniles in each reach. This area divided among the four habitat categories gives an estimate of 1,250 ft^2 per habitat per reach.

Measurements of fish focal positions (e.g., "occupied" positions) and measurements of habitat availability (e.g., "unoccupied" positions if not proximal to occupied positions) will be made along a series of three cross-sectional transects within each sampling unit (fewer for short units). Four habitat units of each habitat category with three transects per unit should result in the above sampling area goals, assuming fish densities and channel widths similar to 2006/2012 and a habitat availability measurement taken at approximately three ft intervals along each transect. Transects will occur within the lower, middle, and upper thirds of each sampling unit using systematic sampling with a random start, while maintaining a minimum of 15 ft between transects to ensure that fish observations made at one transect will not influence fish distributions in the next transect upstream.

Deep pools may be sampled using a different approach by first defining the extent of pool "head" (where velocities are present), pool "body" (typically including the deepest locations), and pool "tail" (area with decreasing depth and increasing velocity). Pool "body" transects may be intentionally placed across the deepest portion in order to better define steelhead's selectivity for deeper habitats, which are rare in smaller coastal streams. A maximum of three transects will be surveyed in each selected habitat unit to ensure that sampling effort is distributed among many individual habitat units, rather than all being placed in a few larger units.

The "effective search area" surveyed by a diver will be estimated as the length of a selected dive transect (left to right bank) times the search width, or distance upstream and downstream of the transect that the diver can effectively see a steelhead (estimated at each habitat unit). These sampling areas will be cumulatively totaled until the equal-area objective is achieved, at which point the cumulative number of occupied (55+) and unoccupied (200+) locations will be tallied to determine if the sample size goals are met.

The actual number sampling units per habitat category, or the number of transects per sampling unit, may be adjusted upward or downward from the above proposal depending on the fish densities and channel widths actually present during sampling in 2015, with the objective of producing a minimum of 55 occupied and 200 unoccupied measurements in each reach for both fry and juvenile steelhead.

FIELD DATA COLLECTION

When the transect interval is determined for a particular sampling unit, one diver carefully enter the transect and progress across the channel while scanning the water column for undisturbed steelhead. The focal position of each observed fish will be marked with a numbered lead weight and the following data will be transmitted to a downstream data recorder (or in some cases an underwater slate):

- fish species (assumed steelhead unless otherwise noted)
- fish size (cm FL, with reference to a wrist-mounted ruler)
- fish behavior (feeding, holding, roaming, disturbed [not sampled])
- focal height (distance above bottom or percentage of total water depth)

Microhabitat data will not be measured for fish that appear to have been disturbed or displaced prior to identification of its focal position. After each of the habitat unit's transects have been surveyed, the crew will relocate each marker and record the following information:

- water depth
- mean column velocity
- substrate type (using a code consistent with candidate HSC)

- cover type (using a code consistent with candidate HSC)
  - cover may be recorded during the dive if appropriate

Mean column velocity will be measured using standard USGS procedures. The substrate and cover coding systems used in this study will be designed to be comparable to the codes used for the candidate HSC curves being validated. Dive times and photographs will be taken at each sampling unit. Water temperature and water visibility will be measured periodically; streamflow will be taken from the nearest gage.

Measurement of habitat availability data and determination of "unoccupied" positions will be conducted after collection of fish focal (or, "occupied" position) data. Measurements will be collected using the same variables and methodologies as described above at approximately three foot intervals across each transect, using a random start point of 1, 2, or 3 ft from the nearest bank of the initial transect, then continuing at three foot intervals along each of the sampling unit's three transects. In addition to the above data, if any fish focal positions, as indicated by the deployed markers representing occupied positions, occur within two feet of the habitat availability point, that location will not be classified as "unoccupied" since the presence of the proximal fish may have restricted use of that position by other fish. If an availability point is more than two feet from any fish focal position, it will be classified as an unoccupied position for the purposes of the transferability analysis. It should be noted that all of the habitat availability data points can be used in a subsequent effort to develop new HSC, if that alternative is adopted.

SAMPLING PERIODICITY

This study plan proposes collection of HSC transferability data during two time periods: spring (April or May) and summer (June or later, depending on flow). The spring surveys will be conducted to yield data on small steelhead fry shortly following emergence, at which time they are highly limited in the depths and (especially) velocities they can tolerate. All juvenile steelhead observed during the spring survey will also be assessed. The summer survey will be conducted to assess habitat selectivity and HSC transferability when flows are somewhat more restricted and water temperatures are higher, two variables that are expected to influence habitat choice.

TRANSFERABILITY TESTING PROCEDURES

One of the first tasks in conducting a transferability test is to define the ranges of depth, velocity, or substrate/cover that will be used to represent "optimal", "usable", "suitable", and "unsuitable" habitat. These range definitions can vary among transferability studies, and the method for determining them also differs depending on the candidate HSC. The Thomas and Bovee (1993) protocol calculates these definitions using a ranked listing of the raw microhabitat data from the candidate HSC, by setting the central 50% of observations to represent "optimal" habitat, the central 95% to represent "suitable" habitat, and the intermediate range (between 50% and 95%) is considered "usable". All observations outside of the central 95% are thus considered as "unsuitable". This protocol is only feasible when the original or raw HSC data is available for the candidate HSC, which is possible for the Big Sur HSC, but not for the other candidate HSC datasets listed above.

Consequently, the alternative method of defining suitability ranges proposed by Groshens and Orth (1994) may be preferred, where the optimal, usable, suitable, and unsuitable ranges are based on the final HSC curves, not on the raw data. If multiple candidate HSC datasets are considered for testing, as proposed above, this study plan proposes to define the suitability ranges using the final HSC curves, as described in Groshens and Orth. If, following review of this plan, only the Big Sur HSC is considered for testing, the transferability study can utilize the ranked, raw data to define ranges as per Thomas and Bovee.

Groshens and Orth (1994) used final HSC curves from candidate datasets to define the suitability ranges as:

- "Suitable" = the range in habitat having HSC suitability >0
- "Unsuitable" = the range in habitat having HSC suitability = 0
- "Optimal" = the range in habitat having HSC suitability $\geq$0.7
- "Usable" = the range in habitat having HSC suitability between 0 and 0.7 (labeled as "marginal" in their paper)

The Groshens and Orth definitions are similar in nature to the ranked range definitions suggested by Thomas and Bovee, except that the latter considered observations at the extreme ends of the distributions (e.g., the 2½% on each end) as being fish in "unsuitable" habitat, whereas Groshens and Orth considered

anywhere that fish were observed as being "suitable" (as defined by the HSC curves). The Groshens and Orth definitions listed above are proposed for use in the Carmel River transferability study, however subsequent review of this study plan may lead to different definitions.

Both transferability methodologies used paired 2x2 contingency tables to assess the relative frequency of occupied and unoccupied locations that were calculated (by the tested HSC) to be suitable, unsuitable, optimal, or usable. These tests determine whether a particular HSC curve would show a significantly higher proportion of occupied locations in optimal vs usable locations, and likewise a higher proportion of occupied locations in suitable vs unsuitable locations. Tests were made using all measured habitat attributes, or just using depth and velocity attributes. In general, it is expected that the more variables used in a test the less likely an HSC dataset will successfully transfer. This study plan proposed to conduct transferability tests using all habitat attributes as well as depth and velocity only.

COST ESTIMATE

The estimated costs include $6,000 for study planning, $30,000 for field work, and $9,000 for Data Analysis and interpretation for a total cost of $45,000. These costs assume similar fish densities and channel widths as encountered during 2006 and 2012, which were considered "average" years (it should be noted that fish densities may be significantly less in 2015, due to the small number of adult returns in 2014 and 2015). The cost estimate also assumes that Normandeau will provide a biologist and that MPWMD will provide a technician to form one field crew, and a second crew will be supported by CDFW (with no cost to MPWMD). Given the above assumptions, it is expected that six days of sampling in the spring and six days of sampling in the summer will meet sample size goals for testing transferability within each of the three reaches.

LITERATURE CITED

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Hampton, M. 1997. Microhabitat suitability criteria for anadromous salmonids of the Trinity River. T.R. Payne and J.A. Thomas, contributing editors. U.S. Fish and Wildlife Service, Coastal California Fish and Wildlife Office, Arcata, CA, December 15, 1997. 10pp + figs and apps.

NOAA. 2006. Endangered and threatened species: Final listing determinations for 10 distinct population segments of west coast steelhead. Federal Register 71(3):833-862.

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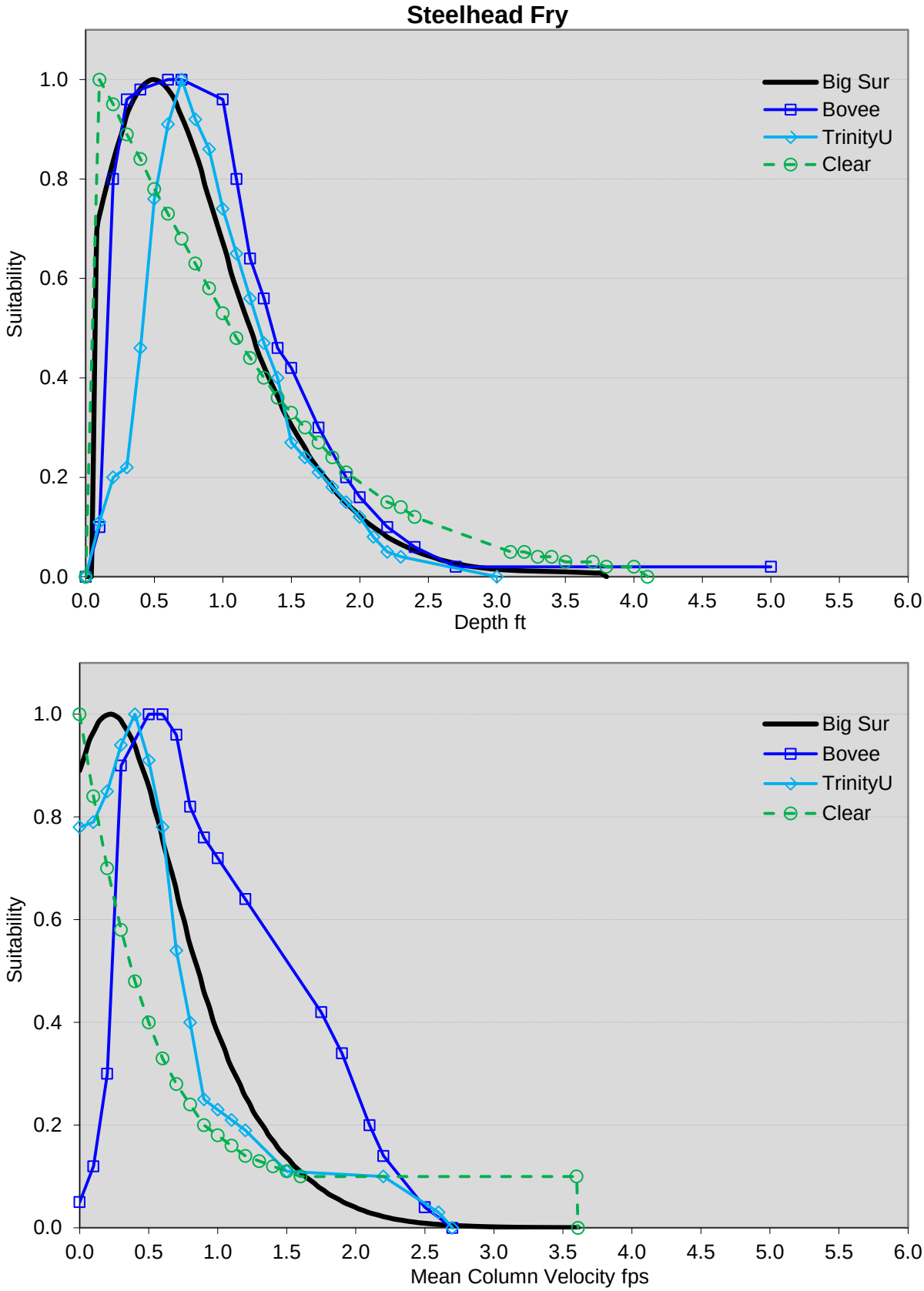

Figure 1. Candidate HSC curves for steelhead fry.

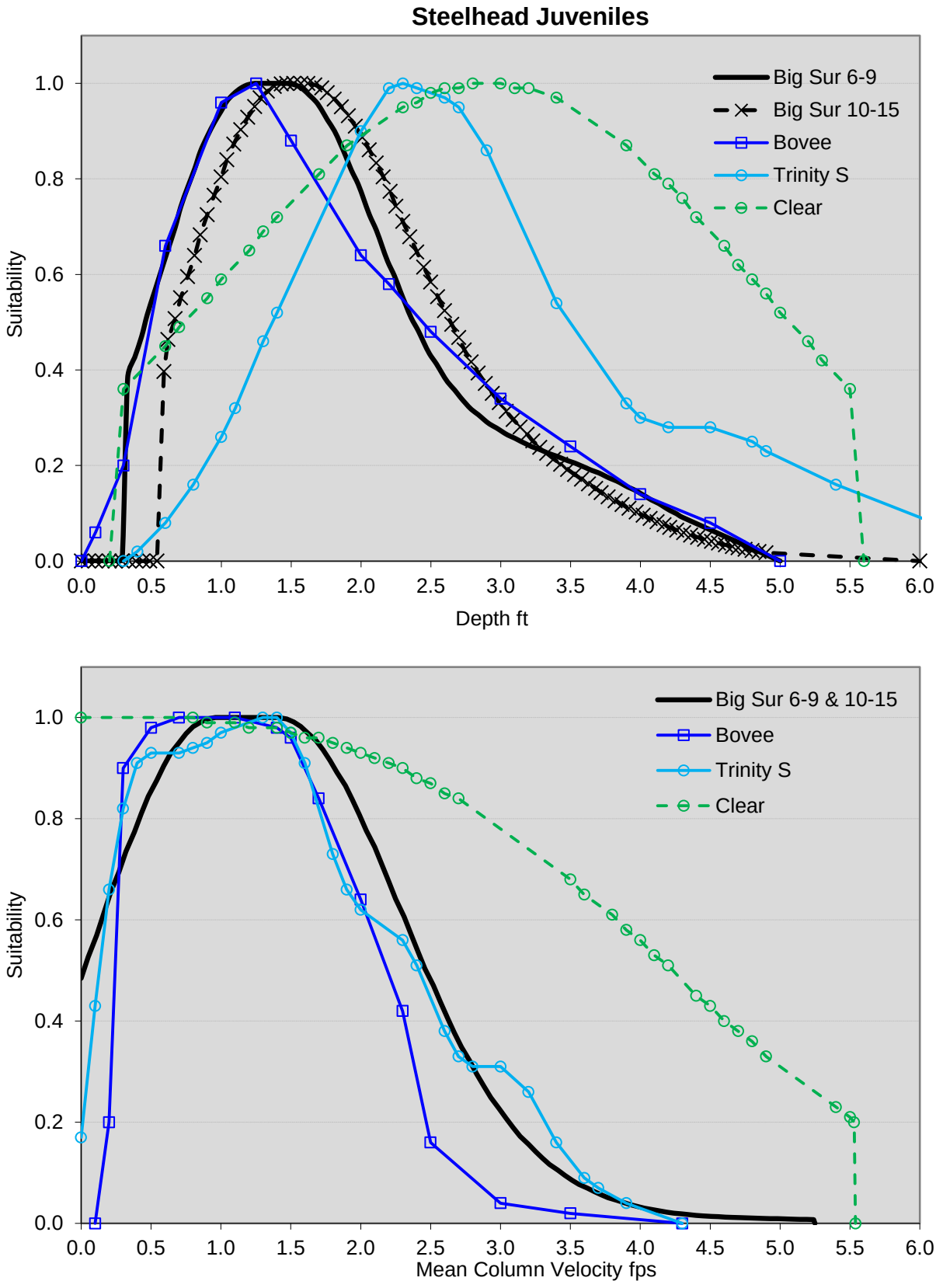

Figure 2. Candidate HSC curves for steelhead juveniles.

ITEM: CONSENT CALENDAR

4. CONSIDER ADOPTION OF RESOLUTION 2015-03 CONCURRING IN THE NOMINATION OF PAUL E. DOREY, VISTA IRRIGATION DISTRICT, TO THE EXECUTIVE COMMITTEE OF THE ACWA/JPIA

Meeting Date:	**March 16, 2015**	**Budgeted:**	**N/A**
From:	**David J. Stoldt, General Manager**	**Program/ Line Item No.:**	**N/A**
Prepared By:	**Arlene Tavani**	**Cost Estimate:**	**N/A**

General Counsel Review: N/A
Committee Recommendation: N/A
CEQA Compliance: N/A

SUMMARY: Attached as **Exhibit 4-A** is draft Resolution No. 2013-03 concurring in the nomination of Paul E., Dorey of Vista Irrigation District to the Executive Committee of the Association of California Water Agencies Joint Powers Insurance Authority (ACWA/JPIA). Also attached as **Exhibit 4-B** is a letter dated January 28, 2015, from Vista Irrigation District that includes Mr. Dorey's statement of candidacy and the resolution of support adopted by the irrigation district's Board of Directors. The Water Management District has been a member of the ACWA/JPIA since July 1, 2012.

RECOMMENDATION: Review **Exhibits 4-A and 4-B** and adopt Resolution No. 2015-03.

EXHIBIT

4-A Draft Resolution 2015-03 Concurring in Nomination to the Executive Committee of the Association of California Water Agencies Joint Powers Insurance Authority

4-B January 28, 2015 Letter from Roy A. Coox, General Manager, Vista Irrigation District

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

EXHIBIT 4-A

RESOLUTION NO. 2015-03

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE MONTEREY PENINSULA WATER MANAGEMENT DISTRICT CONCURRING IN NOMINATION TO THE EXECUTIVE COMMITTEE OF THE ASSOCIATION OF CALIFORNIA WATER AGENCIES JOINT POWERS INSURANCE AUTHORITY ("ACWA/JPIA")

WHEREAS, this district is a member district of the ACWA/JPIA; and

WHEREAS, the Bylaws of the ACWA/JPIA provide that in order for a nomination to be made to ACWA/JPIA's Executive Committee, three member districts must concur with the nominating district, and

WHEREAS, another ACWA/JPIA member district, the Vista Irrigation District has requested that this district concur in its nomination of its member of the ACWA/JPIA Board of Directors to the Executive Committee of the ACWA/JPIA;

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Monterey Peninsula Water Management District that this district concur with the nomination of Paul E. Dorey of Vista Irrigation District to the Executive Committee of the ACWA/JPIA.

BE IT FURTHER RESOLVED that the District Secretary is hereby directed to transmit a certified copy of this resolution to the ACWA/JPIA at P.O. Box 619082, Roseville, CA 95661-9082, forthwith.

On a motion by Director ___ and seconded by Director ___ the foregoing resolution is duly adopted this 16th day of March 2015 by the following votes:

Ayes:
Noes:
Absent:

I, David J. Stoldt, Secretary to the Board of Directors of the Monterey Peninsula Water Management District, hereby certify that the foregoing is a resolution duly adopted on the 16th day of March 2015.

Witness my hand and seal of the Board of Directors this 17th day of March 2015.

_____

David J. Stoldt, Secretary to the Board

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EXHIBIT 4-B

VISTA IRRIGATION DISTRICT

1391 Engineer Street • Vista, California 92081-8840
Phone (760) 597-3100 • Fax: (760) 598-8757
www.vid-h2o.org

January 28, 2015

ACWA/JPIA Member Agencies

Re: Nomination of Paul E. Dorey to the ACWA/JPIA Executive Committee

Dear General Manager;

The Vista Irrigation District (VID) has nominated Board member Paul E. Dorey to serve on the ACWA/JPIA Executive Committee. Elections will take place at the JPIA Board of Directors meeting on May 4, 2015 at the Spring ACWA Conference in Sacramento, California.

Paul has served as VID's representative to the JPIA Board of Directors for eight years, and he has been a member of the JPIA Liability Subcommittee for five years. We hope your organization will concur with this nomination.

As a member of ACWA/JPIA, Vista Irrigation District requests that your Board submit a resolution of support ***concurring*** with the nomination of Paul Dorey to serve on the ACWA/JPIA Executive Committee, and to vote for him at the election. As you can see from the attached background information on Paul Dorey, he is well qualified for this position. All concurring nominations must reach the JP1A office to the attention of Sylvia Robinson at P.O. Box 619082, Roseville, CA 95661-9082 by 4:30 p.m. on Friday, March 20, 2015. If you have any questions, please feel free to contact me.

Thank you for your consideration.

Sincerely,

Roy A. Coox
General Manager

Attachments:

- Statement of candidacy for Paul E. Dorey
- Vista Irrigation District nominating resolution
- Sample concurring resolution

Paul E. Dorey

Statement of Candidacy

I have served on the ACWA/JPIA Board of Directors since 2007. During the last five years, I have had the privilege of serving on the Liability Committee of the JPIA. The Liability Committee has successfully kept its focus on providing member agencies with the most comprehensive, affordable and reliable liability insurance possible. Our Committee has recommended significant reductions in the premiums paid by member agencies while also increasing the insurance coverages provided.

I was elected to the Vista Irrigation District Board of Directors in 2006. The District provides water service to over 120,000 residents in northern San Diego County. I served on the Board of Directors of the Groundwater Resources Association of California, and I currently serve on the Upper San Luis Rey Watershed Authority, the San Luis Rey Watershed Council and the Southern California Water Committee. My wife Nancy and I have lived in Vista since 1971, where we raised our two daughters.

My forty-four years of public service, first in the United States Marine Corps and then in the water industry, have given me the necessary experience and background to serve as a member of the JPIA Executive Committee. This experience has helped me recognize the importance of safety and risk management and the value of developing appropriate policies and procedures, as well as establishing conservative fiscal controls.

As a member of the JPIA's Executive Committee, I will perform my duties and make decisions to guide the organization to most efficiently benefit its member agencies. I will take my responsibility seriously and serve as a very useful and productive member of the Executive Committee. I value your trust and will honor it if elected to the Executive Committee.

Thank you for your support. If you have any questions about my candidacy, feel free to contact me at (760)208-5263 or WN6K@sbcglobal.net.

RESOLUTION NO. 15-03

RESOLUTION OF THE BOARD OF DIRECTORS OF THE
VISTA IRRIGATION DISTRICT
NOMINATING PAUL E. DOREY TO THE EXECUTIVE COMMITTEE
OF THE ASSOCIATION OF CALIFORNIA WATER AGENCIES
JOINT POWERS INSURANCE AUTHORITY ("ACWA/JPIA")

WHEREAS, Vista Irrigation District is a member district of the ACWA/JPIA that participates in all four of its Programs: Liability, Property, Workers' Compensation, and Employee Benefits; and

WHEREAS, the Bylaws of the ACWA/JPIA provide that in order for a nomination to be made to ACWA/JPIA's Executive Committee, the member district must place into nomination its member of the ACWA/JPIA Board of Directors for such open position;

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Vista Irrigation District that its member of the ACWA/JPIA Board of Directors, Paul E. Dorey, be nominated as a candidate for the Executive Committee for the election to be held on May 4, 2015.

BE IT FURTHER RESOLVED that the ACWA/JPIA staff is hereby requested, upon receipt of the formal concurrence of three other member districts, to effect such nomination.

BE IT FURTHER RESOLVED that the District Secretary is hereby directed to transmit a certified copy of this resolution to the ACWA/JPIA at P.O. Box 619082, Roseville, CA 95661-9082, forthwith.

PASSED AND ADOPTED by the following roll call vote of the Board of Directors for the Vista Irrigation District this 21st day of January 2015.

AYES: Directors Miller, Vásquez, Dorey, Reznicek, and MacKenzie
NOES: None
ABSTAIN: None
ABSENT: None

Jo MacKenzie, President

ATTEST:

Lisa R. Soto, Secretary
Board of Directors
VISTA IRRIGATION DISTRICT

ITEM: CONSENT CALENDAR

5. CONSIDER APPOINTMENT OF DIRECTOR CLARKE TO THE ACWA/JPIA BOARD OF DIRECTORS

Meeting Date:	**March 16, 2015**	**Budgeted:**	**N/A**
From:	**David J. Stoldt, General Manager**	**Program/ Line Item No.:**	**N/A**
Prepared By:	**Arlene Tavani**	**Cost Estimate:**	**N/A**

General Counsel Review: N/A
Committee Recommendation: N/A
CEQA Compliance: N/A

SUMMARY: On March 9, 2015, Director Lewis submitted a letter of resignation (see **Exhibit 5-A**) from her position as the Water Management District's representative to the Association of California Water Agencies Joint Powers Insurance Authority (ACWA/JPIA). Director Andrew Clarke has agreed to fill the vacancy and represent the Water Management District on the ACWA/JPIA.

RECOMMENDATION: Approve the appointment of Director Clarke to the position of Director Representative to the ACWA/JPIA Board of Directors.

EXHIBIT
5-A March 9, 2015 Letter from Director Brenda Lewis

EXHIBIT 5-A

March 9, 2015

Kristi Markey, Chair
Monterey Peninsula
Water Management District
P.O. Box 85
Monterey, CA 93942

RE: Resignation as Director Representative to the ACWA/JPIA

Dear Chair Markey:

It is with regret that effective March 4, 2015, I have resigned as Director Representative to the ACWA/JPIA for the Monterey Peninsula Water Management District.

Sincerely,

Brenda Lewis

Brenda Lewis
Director MPWMD Board, Division 1

ITEM: CONSENT CALENDAR

6. RECEIVE FISCAL YEAR 2013-2014 MITIGATION PROGRAM ANNUAL REPORT

Meeting Date:	**March 16, 2015**	**Budgeted:**	**N/A**
From:	**David J. Stoldt General Manager**	**Program/ Line Item No.:**	**N/A**
Prepared By:	**Jonathan Lear**	**Cost Estimate:**	**N/A**

General Counsel Review: N/A
Committee Recommendation: N/A
CEQA Compliance: N/A for report

SUMMARY AND RECOMMENDATION: The Board should receive the 2013-2014 Mitigation Program Annual Report, and direct staff to distribute copies (paper or electronic) to resource agencies, local libraries, and advise the public of its availability. The Executive Summary provides an overview of the major accomplishments, conclusions and/or recommendations. The Executive Summary for the 2013-2014 Mitigation Program Annual Report is attached as **Exhibit 6-A**.

The annual report primarily reviews Monterey Peninsula Water Management District (MPWMD or District) activities that address the effects of community water use on the Carmel River environment in Fiscal Year (FY) 2013-2014, defined as the 12-month period from July 1, 2013 through June 30, 2014. Please note that hydrologic data and well production reporting data are described for Water Year 2014 (October 1, 2013 through September 30, 2014). Use of the Water Year format for these data is consistent with reporting required by the State Water Resources Control Board (SWRCB) and Seaside Basin Watermaster.

This report is the 24th annual report since the Mitigation Program Plan was adopted by the District Board in November 1990, as part of the certification of the MPWMD Water Allocation Environmental Impact Report (Water Allocation EIR), in compliance with the California Environmental Quality Act (CEQA). Copies of the full annual report will be provided to the Board members upon request, and will be provided to the required resource agencies and other interested parties as needed.

BACKGROUND: On November 5, 1990, the Water Allocation EIR was certified by the MPWMD Board. The Board also adopted findings, and passed a resolution that set Option V as the new water allocation limit. Option V resulted in a production limit of 16,744 acre-feet per year (AFY) for the California American Water (Cal-Am) system. Subsequently, this amount was increased to 17,641 AFY based on new supply provided by the completion of the Paralta Well in Seaside in 1993, and other changes since 1993. On October 20, 2009, the SWRCB issued Order 2009-0060, the "Cease and Desist Order" (CDO) against Cal-Am. The CDO refers to the 1995 SWRCB Order 95-10, noting that compliance with Order 95-10 had not yet been achieved. The CDO institutes a series of cutbacks to Cal-Am production from the Carmel River system and prohibits new or intensified connections in the Cal-Am main system. The CDO reduced the upper limit of diversion from the Carmel River previously set by Order 95-10 at 11,285 AFY to

10,429 AFY beginning in WY 2010, with additional annual reductions thereafter.

The Water Allocation EIR determined that even though Option V is the least damaging alternative of the five options analyzed, production at this level still may result in significant, adverse, environmental impacts that must be mitigated. Thus, the CEQA Findings adopted by the Board in 1990 included a "Five-Year Mitigation Program for Option V" and several general mitigation measures. The Five-Year Mitigation Program formally began in July 1991 with the new fiscal year and was slated to run until June 30, 1996. Following public hearings in May 1996 and District Board review of draft reports through September 1996, the Five-Year Evaluation Report for the 1991-1996 comprehensive program, as well as an Implementation Plan for FY 1997 through FY 2001, were finalized in October 1996. In its July 1995 Order WR 95-10, the SWRCB ordered Cal-Am to carry out any aspect of the "Five-Year Mitigation Program for Option V" that the District does not continue after June 1996. To date, as part of its annual budget approval process, the District Board has voted to continue the program. The Mitigation Program presently accounts for a significant portion of the District budget in terms of revenue and expenditures.

For projects or programs that entail significant adverse impacts, CEQA requires that an annual report be prepared documenting: (1) the actual mitigation activities that were carried out by the lead agency, and (2) the effectiveness of the mitigation activities, as measured via a monitoring program. The 2013-2014 Water Allocation Mitigation Report responds to these requirements.

The 2013-2014 report reviews District activities relating to water supply and demand, followed by mitigation measures for specific environmental impacts. It also provides a summary of costs for the Mitigation Program as well as references. For each topic, the mitigation measure adopted as part of the certified Allocation EIR is briefly described, followed by a summary of activities carried out in FY 2013-2014 that relate to the topic. Monitoring results, where applicable, are then presented. Finally, a summary of conclusions, and/or recommendations are provided, where pertinent. The annual report format has been refined from earlier years to aid the efficiency of preparing and reviewing the document.

IMPACT ON STAFF/RESOURCES: Mitigation Program costs for FY 2013-2014 totaled approximately $2.41 million including direct personnel expenses, operating costs, project expenditures, capital equipment, and fixed asset purchases. The annual cost of mitigation efforts varies because several mitigation measures are weather dependent. Expenditures in FY 2013-2014 were $0.19 million more than the prior fiscal year due to increases in Mitigation Program costs. However, the overall costs have remained fairly constant (average of $3 million per year) for last five years. In the past, expenditures had trended upward due to expenditures for the Aquifer Storage Recovery (ASR) Project. ASR Project costs are no longer captured under Mitigation Program Costs. FY 2011-2012 expenditures were $4.59 million; and FY 2012-2013 expenditures were $2.22 million.

During FY 2013-2014, revenues totaled $2.72 million including mitigation program revenues, tax revenues, investment income and miscellaneous revenues. The Mitigation Program Fund Balance as of June 30, 2014 was $331,973.

EXHIBITS

6-A Executive Summary for 2013-2014 Annual Mitigation Report

2013-2014 ANNUAL REPORT
(July 1, 2013 - June 30, 2014)

MPWMD MITIGATION PROGRAM
WATER ALLOCATION PROGRAM ENVIRONMENTAL IMPACT REPORT

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT
Prepared March 2015

I. EXECUTIVE SUMMARY

INTRODUCTION AND BACKGROUND:

In April 1990, the Water Allocation Program Final Environmental Impact Report (EIR) was prepared for the Monterey Peninsula Water Management District (MPWMD or District) by J.L. Mintier and Associates. The Final EIR analyzed the effects of five levels of annual California American Water (CAW or Cal-Am) production, ranging from 16,744 acre-feet per year (AFY) to 20,500 AFY. On November 5, 1990, the MPWMD Board certified the Final EIR, adopted findings, and passed a resolution that set Option V as the new water allocation limit. Option V resulted in an annual limit of 16,744 AFY for Cal-Am production, and 3,137 AFY for non-Cal-Am production, with a total allocation of 19,881 AFY for the Monterey Peninsula Water Resource System (MPWRS). The MPWRS is the integrated system of water resources from the Carmel River Alluvial Aquifer and Seaside Groundwater Basin that provide the Monterey Peninsula community's water supply via the Cal-Am water distribution network.

Even though Option V was the least damaging alternative of the five options analyzed in the Water Allocation Program EIR, production at this level still resulted in significant, adverse environmental impacts that must be mitigated. Thus, the findings adopted by the Board included a "Five-Year Mitigation Program for Option V" and associated mitigation measures.

In June 1993, Ordinance No. 70 was passed, which amended the annual Cal-Am production limit from 16,744 AF to 17,619 AF, and the non-Cal-Am limit from 3,137 AF to 3,054 AF; the total production limit was increased from 19,881 AF to 20,673 AF per year due to new supply from the Paralta Well in Seaside. In April 1996, Ordinance No. 83 slightly changed the Cal-Am and non-Cal-Am annual limits to 17,621 AF and 3,046 AF, respectively, resulting in a total limit of 20,667 AFY. In February 1997, Ordinance No. 87 was adopted to provide a special water allocation for the planned expansion of the Community Hospital of the Monterey Peninsula, resulting in a new Cal-Am production limit of 17,641 AFY; the non-Cal-Am limit of 3,046 AFY was not changed. These actions did not affect the implementation of mitigation measures adopted by the Board in 1990.

The Five-Year Mitigation Program formally began in July 1991 with the new fiscal year (FY) and was slated to run until June 30, 1996. Following public hearings in May 1996 and District Board review of draft reports through September 1996, the Five-Year Evaluation Report for the

1991-1996 comprehensive program, as well as an Implementation Plan for FY 1996-1997 through FY 2000-2001, were finalized in October 1996. In its July 1995 Order WR 95-10, the State Water Resources Control Board (SWRCB) directed Cal-Am to carry out any aspect of the Five-Year Mitigation Program that the District does not continue after June 1996. To date, as part of the annual budget approval process, the District Board has voted to continue the program. The Mitigation Program has accounted for a significant portion of the District's annual budgets in terms of revenue (derived primarily from a portion of the MPWMD user fee on the Cal-Am bill) and expenditures. It should be noted that this fee was removed from Cal-Am's bill in July 2009, resulting from actions subsequent to a California Public Utilities Commission ruling regarding a Cal-Am rate request. Cal-Am continued to pay the fee amount (8.325%) under a separate reinvestment agreement with MPWMD through June 2010. The District and Cal-Am have negotiated an annual funding agreement that funded part of the 2014 mitigation program. The District's other revenue sources were used to fund the remainder of the program.

The California Environmental Quality Act (CEQA) (Pub. Res. Code 21081.6) requires that the MPWMD adopt a reporting or monitoring program to insure compliance with mitigation measures when implementing the Water Allocation Program. Findings Nos. 387 through 404 adopted by the Board on November 5, 1990 describe mitigation measures associated with the Water Allocation Program; many entail preparation of annual monitoring reports. This 2013-2014 Annual Report for the MPWMD Mitigation Program responds to these requirements. It covers the fiscal year period of July 1 through June 30. It should be noted that hydrologic data and well reporting data in this report are tabulated using the water year, defined as October 1 through September 30, in order to be consistent with the accounting period used by the SWRCB.

This 2013-2014 Annual Report first addresses general mitigation measures relating to water supply and demand (Sections II through XI), followed by monitoring related to compliance with production limits, drought reserve and supply augmentation (Sections XII through XV), followed by mitigations relating to specific environmental resources (Sections XVI through XIX). Section XX provides a summary of costs for the biological mitigation programs as well as related hydrologic monitoring, water augmentation and administrative costs. Section XXI presents selected references.

Table I-1 summarizes the mitigation measures described in this report. In subsequent chapters, for each topic, the mitigation measure adopted as part of the Final EIR is briefly described, followed by a summary of activities relating to the topic in FY 2013-2014 (July 1, 2013 through June 30, 2014, unless otherwise noted). Monitoring results, where applicable, are also presented. Tables and figures that support the text are found at the end of each section in the order they are introduced in the text.

ACCOMPLISHMENTS:

Many activities are carried out as part of the MPWMD Mitigation Program to address the environmental effects that community water use has upon the Carmel River and Seaside Groundwater Basins. Highlights of the accomplishments in FY 2013-2014 for each major category are shown in **Table I-2**.

OBSERVED TRENDS, CONCLUSIONS AND/OR RECOMMENDATIONS:

The following paragraphs describe observed trends (primarily qualitative), conclusions and/or recommendations for the mitigation program. General conclusions are followed by a summary of selected Mitigation Program categories.

General Overview

Overall, the Carmel River environment is in better condition today than it was in 1990 when the Allocation Program EIR was prepared. This improvement is evidenced by biological/hydrologic indicators such as consistent steelhead adult spawner counts of several hundred fish in recent years as compared to zero to five fish per year when the Mitigation Program began in 1991; improved densities of juvenile steelhead in quantities that reflect a healthy seeded stream; consistently balanced bird diversity in MPWMD restoration project areas compared to control areas; fewer miles of dry river bed in summer and fall than in the past; and higher water tables in the Carmel Valley alluvial aquifer at the end of each water year.

The comprehensive MPWMD Mitigation Program is an important factor responsible for this improvement. Direct actions such as fish rescues and rearing, and riparian habitat restoration literally enable species to survive and reproduce. Indirect action such as conservation programs, water augmentation, ordinances/regulations and cooperative development of Cal-Am operation strategies result in less environmental impact from human water needs than would occur otherwise. The District's comprehensive monitoring program provides a solid scientific data baseline, and enables better understanding of the relationships between weather, hydrology, human activities and the environment. Better understanding of the MPWRS enables informed decision-making that achieves the District's mission of benefiting the community and the environment.

It is acknowledged that there are other important factors responsible for this improved situation. For example, since Water Year (WY) 1991, the Carmel River has received normal or better runoff in 16 out of 23 years. Actions by federal resource agencies under the Endangered Species Act (ESA) or the SWRCB under its Order WR 95-10 and follow-up orders have provided strong incentive for Cal-Am and other local water producers to examine and amend water production practices to the degree feasible, and for the community to reduce water use. Except for one year in 1997, the community has complied with the production limits imposed on Cal-Am by the SWRCB since Order 95-10 became effective in July 1995.

Despite these improvements, challenges still remain due to human influence on the river. The steelhead and red-legged frog remain listed as threatened species under the ESA. At least several miles of the river still dry up each year, harming habitat for listed fish and frog species. The presence of the two existing dams, flood-plain development and water diversions to meet community and local user needs continue to alter the natural dynamics of the river. Streambank restoration projects may be significantly damaged in large winter storm events, and some people continue to illegally dump refuse into the river or alter their property without the proper permits. Thus, the Mitigation Program (or a comprehensive effort similar to it) will be needed as long as

significant quantities of water are diverted from the Carmel River and people live in close proximity to it.

Water Resources Monitoring Program

Streamflow and precipitation data continue to provide a scientific basis for management of the water resources within the District. These data continue to be useful in Carmel River Basin planning studies, reservoir management operations, water supply forecast and budgeting, and defining the baseline hydrologic conditions of the Carmel River Basin. Also, the District's streamflow monitoring program continues to produce high quality and cost-effective data.

There is limited storage of surface water by dams on the Carmel River. Los Padres Reservoir, completed in 1948, holds 1,626 AF of usable storage (without flashboard), based on 2008 survey data. Usable storage in San Clemente Reservoir (SCR), completed in 1921, has been essentially eliminated by order of the Department of Water Resources (DWR) due to seismic safety concerns. As an interim safety measure, which remained in effect through WY 2014, DWR has seasonally required Cal-Am to lower the water level in SCR from 525 feet to 515 feet elevation, which is too low for water-supply use. Cal-Am had originally proposed a dam seismic strengthening program. State and federal environmental agencies subsequently urged Cal-Am to reconsider their position and support the dam removal and river reroute option. In July 2009, Cal-Am changed its position and endorsed the dam removal option, as memorialized in the January 2010 multi-agency collaboration statement. District staff continues to participate in technical advisory role. In 2011, Cal-Am circulated a request for bids to complete the removal of the Dam and a contractor was selected for this work in 2013. The first phase of this project began in 2013 with construction of a new access road and placement of the river diversion facilities. In 2014, activities associated with San Clemente Dam (SCD) removal continued and included creation of a subsurface cutoff wall at the upstream end of the reservoir's sediment field and construction of the re-route channel through the San Clemente Creek drainage.

Groundwater levels, and consequently groundwater storage conditions, in the Carmel Valley Alluvial Aquifer have maintained a relatively normal pattern in recent years, in contrast to the dramatic storage declines that were observed during the prolonged 1987-1991 drought period. The relatively stable storage in the Carmel Valley alluvial aquifer in recent years is attributable to a combination of a period of more favorable hydrologic conditions and the adoption of improved water management practices that have tended to preserve higher storage conditions in the aquifer. In WY 2014, Carmel Valley alluvial aquifer storage declined slightly compared with recent years as this year was classified as "critically dry" and marked the third consecutive dry or critically dry hydrologic year.

In contrast, storage conditions in the coastal portion of the Seaside Groundwater Basin have not been stable in recent years, in particular with respect to the deeper Santa Margarita aquifer, from which over 80 percent of the Cal-Am production in the Seaside Basin is derived. This downward trend in water levels reflects the changed production operations in the Seaside Basin stemming primarily from changed practices after SWRCB Order 95-10. The increased annual reliance on production from Cal-Am's major production wells in Seaside, along with significant

increases in non-Cal-Am use, have dramatically lowered water levels in this aquifer, and seasonal recoveries have not been sufficient to reverse this trend.

To address this storage depletion trend, the District initiated efforts in the 2000-2001 timeframe to prepare a Seaside Basin Groundwater Management Plan in compliance with protocols set by the State of California (AB 3030, as amended by SB 1938). This process was superseded by litigation filed by Cal-Am in August 2003, requesting a court adjudication of water production and storage rights in the Seaside Basin. The District participated in all litigation proceedings as an intervening "interested party". The Superior Court held hearings in December 2005 and issued a final adjudication decision in March 2006, which was amended through an additional court filing in February 2007. The final decision established a new, lower "natural safe yield" for the Basin of 3,000 AFY, and an initial Basin "operating safe yield" of 5,600 AFY. Under the decision, the operating safe yield would be reduced by 10% every three years until the operating safe yield matches the natural safe yield of the Basin in 2021. The Court also created a nine-member Watermaster Board (of which the District is a member) to implement the Court's decision. With the triennial reductions in operational yield required by the Seaside Basin Adjudication Decision, water levels have not been declining as fast as previously observed.

One of the means that could potentially mitigate this observed storage depletion trend is a program that the District has been actively pursuing since 1996 -- the Seaside Basin groundwater injection program (also known as aquifer storage and recovery, or ASR). ASR entails diverting excess water flows (typically in Winter/Spring) from the Carmel Valley Alluvial Aquifer through existing Cal-Am facilities and injecting the water into the Seaside Groundwater Basin for later recovery in dry periods.

The primary goal of the MPWMD Phase 1 and 2 ASR Projects is better management of existing water resources and production facilities to help reduce impacts to the Carmel River, especially during the dry season. The projects are viewed as being complementary to other larger, long-term water augmentation projects that are currently being pursued for the Monterey Peninsula. These projects, also known as Water Projects 1 and 2, entail a maximum diversion of 2,426 AFY, and 2,900 AFY respectively from the Carmel River for injection. The combined average yield for both projects is estimated at about 2,000 AFY. The operation of the Phase 1 and 2 ASR Projects result in reduced unauthorized pumping of the Carmel River in Summer/Fall and increased storage in the Seaside Basin, which are both considered to be environmentally beneficial.

The ASR water supply efforts in 2013-2014 included: (1) continued work with regulatory and land use agencies on expansion of the Phase 1 Santa Margarita ASR site; (2) completion of the electrical facilities for the Phase 2 ASR Project at the Seaside Middle School site; (3) Completion and testing of the second ASR well at the Phase 2 ASR site; (4) coordination with Cal-Am, federal, and state agencies to construct the necessary infrastructure for the ASR project; (5) coordination with Cal-Am on necessary actions and delivery system facilities to enable expanded ASR; and (6) continued implementation of a Memorandum of Understanding (MOU) with Cal-Am to operate the ASR facilities.

Groundwater quality conditions in both the Carmel Valley Alluvial Aquifer and Seaside Basin have remained acceptable in terms of potential indicators of contamination from shallow sources such as septic systems. There have been no identifiable trends indicative of seawater intrusion into the principal supply sources the coastal areas of these two aquifer systems to date.

Steelhead Fishery Program

Annual monitoring conducted by the District shows that the Carmel River steelhead population has recovered somewhat from the remnant levels of the last drought (1987 to 1991) and from past water-supply practices. Though overall fish populations have improved since the inception of the Mitigation Program in 1990, there was a period of general decline in the adult run from 2001 to 2011. Between 1992 and 2001, the spawning population recovered from a handful of fish to levels approaching 900 adults per year as counted at SCD. Then the run experienced a six-year downward trend from 804 adults in 2001 to 222 adults in 2007, rebounding somewhat in 2008 to 412 adults. However, in 2009 and 2010, the population underwent a dramatic reduction to 95 and 157 adults, respectively. In 2011 and 2012, the population rebounded again with 452 and 470 adults passing over SCD, while in 2013 the number dropped again to 249, well below the 1994-2013 average of 421, likely due in part to the dry year. Drought conditions worsened in 2014 and the river failed to connect to the lagoon for the first time since 1990. Despite a lack of sea-run adults in 2014, some resident adults did spawn in the upper valley as evidenced by the appearance of fry during summer rescues. These adults may have been hold-over fish, resident adults or older juvenile fish reared and released from the SHSRF in the fall of 2013.

Previous redd surveys below SCD confirm that the spawning habitat in the lower river has improved considerably over the last 20 years and many adults are now spawning there instead of passing the SCD fish counting station. In addition, juvenile steelhead rescued by the District from the lower river that survive to adulthood are more likely to return to the lower river to spawn rather than migrate upstream past the SCD. In 2011-2012, The District deployed a DIDSON counting station, acquired from CDFW grant funding, in the lower river to help determine whether more adults are in fact spawning downstream of the dam. Staff downloaded and reviewed video data from the 2013 season and reported the preliminary results in 2014.

Variability of adult steelhead counts are likely the result of a combination of controlling and limiting factors including:

- improved spawning conditions in the lower Carmel River, encouraging fish to spawn before they reach the counter at the dam;

- variable lagoon conditions, caused by artificial manipulation of the sandbar and/or naturally occurring periods of low winter flows;

- impediments to adult and smolt migration routes, such as seasonal barriers, inadequate passage facilities, and intermittent periods of low flow creating critical riffles below the Narrows during the normal winter-spring migration season;

- low densities of juvenile fish in 2004, 2007, and 2009-2011 affecting subsequent adult

populations; and

- variable ocean conditions.

- **Juvenile Steelhead**

Monitoring of the juvenile steelhead population at eleven sites along the mainstem Carmel River below Los Padres Dam shows that fish density continues to be quite variable both year to year and site to site from below 0.40 fish per foot (fpf) of stream to levels frequently ranging above 1.00 fpf, values that are typical of well-stocked steelhead streams. In this 2013-2014 reporting period, the average population density was much less than the long-term average of 0.79 fpf for the Carmel River likely due to the ongoing drought and poor habitat conditions in the lower river.

District staff believes the variability of the juvenile steelhead population in the Carmel River Basin is directly related to the following factors:

Positive Factors:

- improvements in streamflow patterns, due to favorable natural fluctuations, exemplified by relatively high base-flow conditions since 1995;

- District and SWRCB rules to actively manage the rate and distribution of groundwater extractions and direct surface diversions within the basin, coupled with changes to CAW's operations at San Clemente and Los Padres Dams, providing increased streamflow below San Clemente Dam;

- restoration and stabilization of the lower Carmel River's stream banks, providing improved riparian habitat (tree cover/shade along the stream and an increase in woody debris) while preventing erosion of silt/sand from filling gravel beds and pools;

- extensive juvenile steelhead rescues by the District over the last 25 years, now totaling 417,837 fish through 2013;

- rearing and releases of rescued fish from the SHSRF of nearly 97,300 juveniles and smolts back into the river and lagoon over the past 18 years (15 years of operation), at sizes generally larger than the river-reared fish, which in theory should enhance their ocean survival;

Negative Factors:

- variable lagoon conditions, including highly variable water surface elevation changes caused by mechanical breaching, chronic poor water quality (especially in the fall), and predation by birds and striped bass;

- barriers or seasonal impediments to juvenile and smolt emigration, such as the lack of

juvenile passage facilities at Los Padres Dam and intermittent periods of low flow below the Narrows during the normal spring emigration season;

- spring flow variability such as low-flow conditions that could dewater redds prematurely or high flows that could either deposit sediment over redds or completely wash them out;

- chronic, and occasionally acute, fall temperature and hydrogen sulfide levels below LPD, and the increase in suspended sediment from the SCD summer draw-down;

- the potential for enhanced predation on smolts and YOY migrating through the sediment fields of LPD and SCD; and

- the recent drought conditions.

A recent challenge that may remain for some years is the potential effects of substantive physical and operational changes to San Clemente Dam required by the Department of Water Resources, Division of Safety of Dams (DWR/DSOD), including the process of removal of the dam. The most significant issues are the effect of released sediment from the reservoir on downstream river habitat, proper functioning of MPWMD's SHSRF, and downstream property owners (flood elevations). The three-year dam removal project began in 2013 with the removal of vegetation and rechanneling the river through the reservoir reach. Major changes include:

- lowering of the reservoir water level and changes to the release flows and water quality;

- potentially significant changes in the sediment regime in the Carmel River downstream of San Clemente as the dam removal project progresses; and

- loss of reservoir storage, which, in the past, has helped maintain adequate river flows and cooler water in the lower Carmel River.

District staff continues to provide technical expertise and scientific data to CAW engineers and environmental consultants, DWR/DSOD, CDFW, NMFS, U.S. Fish and Wildlife Service, and others involved in addressing the resource management issues associated with both San Clemente and Los Padres Dams. District staff also continues to provide technical expertise and scientific data to California Department Parks and Recreation, Monterey County Water Resources Agency, Monterey County Public Works Department, California Coastal Commission, U. S. Army Corps of Engineers, Carmel Area Wastewater District, and other regulatory agencies and stakeholders involved in the management of the Carmel River, the Carmel River Lagoon and the barrier beach.

Riparian Habitat Mitigation

The Carmel River continues to show many signs of recovery and stabilization after a combination of increased groundwater extraction, extreme drought and flood events occurred during the 1970s, 1980s and 1990s that impacted property owners, threatened species and degraded riparian habitat. In many reaches of the river, fine material (silt and sand) that entered

the main stem during periods of instability has been washed out of the system leaving behind a more complex channel with improved steelhead spawning substrate, diverse habitat, and a richer riparian community. Areas with perennial or near perennial flow (upstream of Schulte Bridge) or a high groundwater table, such as downstream of Highway 1, have experienced vigorous natural recruitment in the channel bottom, which has helped to stabilize streambanks and diversify aquatic habitat.

In these areas, natural recruitment has led to vegetation encroachment that, in some areas, may constrict high flows and threaten bank stability. MPWMD continues to monitor these areas closely and to develop a management strategy to balance protection of native habitat with the need to reduce erosion potential. Environmental review of proposed projects and the process of securing permits is quite complex and requires an exhaustive review of potential impacts.

In contrast to areas with perennial flow, the recovery of streamside areas subjected to annual dewatering requires monitoring. Plant stress in the late summer and fall is evident in portions of the river that go dry. In these areas, streambanks exhibit unstable characteristics during high flows, such as sudden bank collapse, because of the lack of healthy vegetation that would ordinarily provide stability. In addition, due to the presence of main stem reservoirs, there is a lack of sediment delivery from the upper watershed that continues to result in channel degradation (incision of the stream into the valley floor). Thus, pools become deeper and when combined with scour along the outside of streambanks this creates "cut" banks. Although this leads to a more complex and dynamic channel, which is a desirable condition, continued degradation can result in bank collapses and trigger an episode of erosion along the river. District staff continues to document degradation in the river bed including at the Carmel Area Wastewater District pipe across the river downstream of Highway 1 and at bridge infrastructure in the active channel.

Restoration project areas sponsored by MPWMD since 1984 continue to mature and exhibit more features of relatively undisturbed reaches, such as plant diversity and vigor, complex floodplain topography, and a variety of in-channel features such as large wood, extensive vegetative cover, pools, riffles, and cut banks.

As cited in previous reports, the most significant trends continue to include the following:

- increased encroachment of vegetation into the active channel bottom,
- effects to areas with groundwater extraction downstream of Schulte Road,
- channel scour due to a lack of sediment from upstream and from bank erosion,
- healthy avian species diversity, and
- maturing of previous restoration projects.

Carmel River Erosion Protection and Restoration

With the exception of the channel area between the Via Mallorca Road bridge and the Rancho San Carlos Road bridge, streambanks in the mainstem appear to be relatively stable during average water years with "frequent flow" storm events (flows with a return magnitude of less than five years). The program begun by MPWMD in 1984 (and later subsumed into the

Mitigation Program) to stabilize streambanks appears to be achieving the goals that were initially set out, i.e., to reduce bank erosion during high flow events up to a 10-year return flow, restore vegetation along the streamside, and improve fisheries habitat.

Consistent with previous reports, it is likely that the following trends will continue:

- State and Federal agencies consider the Carmel River watershed to be a high priority area for restoration, as evidenced by the interest in addressing water supply issues, the removal of San Clemente Dam, impacts to the Carmel Bay Area of Special Biological Significance, and management of threatened species. Stringent avoidance and mitigation requirements will continue to be placed on activities that could have negative impacts on sensitive aquatic species or their habitats.
- Activities that interrupt or curtail natural stream functions, such as lining streambanks with riprap, have come under increasing scrutiny and now require significant mitigation offsets. Approximately 35% to 40% of the streambanks downstream of Carmel Valley Village have been altered or hardened since the late 1950s. Activities that increase the amount of habitat or restore natural stream functions are more likely to be approved or funded through State and Federal grant programs.
- Additional work to add instream features (such as large logs for steelhead refuge or backwater channel areas for frogs) can restore and diversify aquatic habitat.
- Major restoration projects completed between 1987 and 1999 have had extensive and successful work to diversify plantings. However, maintenance of irrigation systems is ongoing and requires extensive work in water years classified as below normal, dry and critically dry.
- Downstream of the Robinson Canyon Road bridge, the river continues to cut into the channel bottom and form a more complex system of pools, riffles and gravel bars.

Between the mouth of the river and Robinson Canyon Road bridge, many areas of the river appear to be deeper than at any previous time since measurements have been recorded (i.e., beginning in 1978), with many reaches showing several feet of downcutting. This trend, which was identified as a concern in the 1984 Carmel River Management Program EIR, appears to have accelerated in the period from 1998 to 2014. This was a period of exceptional stability (for the Carmel River) as streambanks hardened with structural protection over the past several decades resisted erosion and the force of the river during high flows was directed into the channel bottom. This condition has resulted in the undermining of rip-rap protection and bridge infrastructure in some reaches. To assess the impact of scour and degradation in the bottom of the channel, the District budgeted funds in Fiscal Year 2014-15 to carry out a thalweg survey (survey along the bottom of the channel), which will be compared to similar surveys dating back to 1984.

In the spring of 2010, the Carmel Area Wastewater District's concrete-encased pipe across the bottom of the river was exposed for the first time since it was constructed in 1973. When the pipe encasement was installed, the top was buried two feet below the riverbed. In 2012, District staff measured a maximum of 4.5 feet of scour from the top of the encasement, which is approximately five feet wide and five feet high (see **Figure XVII-3**). In September 2013, District staff measured between 4.0 and 4.25 feet of scour. It is possible that high flows are

passing under the pipe encasement. In addition, the pipe encasement appears to be causing the river to create a large deep pool on the downstream side, while on the upstream side the encasement causes the river bottom to be flat and wide for an extended length. At certain low-flow periods with the lagoon open, the encasement may be creating a temporary barrier to steelhead migration.

In the spring of 2011, the river migrated into the north streambank at the Rancho San Carlos Road Bridge (see **Figure XVII-4**). If no work to stabilize the streambank is carried out, it is likely that the river will continue to migrate toward homes along the north streambank.

Eventually, without corrective measures to balance the sediment load with the flow of water or to mitigate for the effect of the downcutting, streambanks will begin to collapse and the integrity of bridges and other infrastructure in the active channel of the river may be threatened.

Vegetation Restoration and Irrigation

To the maximum extent possible, MPWMD-sponsored river restoration projects incorporate a functional floodplain that is intended to be inundated in relatively frequent storm events (those expected every 1-2 years). For example, low benches at the Red Rock and All Saints Projects have served as natural recruitment areas and are currently being colonized by black cottonwoods, sycamores and willows. In addition, willow and cottonwood pole plantings in these areas were installed with a backhoe, which allows them to tap into the water table. These techniques have been successful and have reduced the need for supplemental irrigation.

Channel Vegetation Management

Another notable trend relating to the District's vegetation management program was the widening of the channel after floods in 1995 and 1998. With relatively normal years following these floods, the channel has narrowed as vegetation recruits on the channel bottom and gravel bars. Current Federal regulations such as the Endangered Species Act (ESA) "Section 4(d)" rules promulgated by NOAA Fisheries to protect steelhead significantly restrict vegetation management activities. Because of these restrictions, the District can carry out activities only on the most critical channel restrictions and erosion hazards in the lower 15 miles of the river. In the absence of high winter flows capable of scouring vegetation out of the channel bottom, encroaching vegetation may significantly restrict the channel. As vegetation in the river channel recovers from the high flows of 1995 and 1998 and matures in the channel bottom, more conflicts are likely to arise between preserving habitat and reducing the potential for property damage during high flows. MPWMD will continue to balance the need to treat erosion hazards in the river yet maintain features that contribute to aquatic habitat quality.

Permits for Channel Restoration and Vegetation Management

In 2012, MPWMD renewed its long-term permits with the U.S. Army Corps of Engineers and the California Regional Water Quality Control Board for routine maintenance and restoration work. In 2014, the District also renewed a long-term Routine Maintenance Agreement (RMA)

with the California Department of Fish and Wildlife to conduct regular maintenance and restoration activities in the Carmel River.

Monitoring Program

Vegetative moisture stress fluctuates depending on the rainfall, proximate stream flow, depth to groundwater, and average daily temperatures, and tends to be much lower in above-normal rainfall years. Typical trends for a single season start with little to no vegetative moisture stress in the spring, when the soil is moist and the river is flowing. As the river begins to dry up in lower Carmel Valley (normally around June) and temperatures begin to increase, an overall increase in vegetative moisture stress occurs. For much of the riparian corridor in the lower seven miles of the Carmel River, this stress has been mitigated by supplemental irrigation, thereby preventing the die off of large areas of riparian habitat. However, many recruiting trees experience high levels of stress or mortality in areas difficult to irrigate. Riparian vegetation exposed to rapid or substantial lowering of groundwater levels (i.e., below the root zones of the plants) will continue to require monitoring and irrigation during the dry season.

With respect to riparian songbird diversity, populations dropped after major floods in 1995 and 1998 because of the loss of streamside habitat. Since 1998, species diversity recovered and now fluctuates depending on habitat conditions. Values indicate that the District mitigation program is preserving and improving riparian habitat.

Strategies for the future

A comprehensive long-term solution to overall environmental degradation requires a significant increase in dry-season water flows in the lower river, a reversal of the incision process, and reestablishment of a natural meander pattern. Of these, MPWMD has made progress on increasing summer low flows and groundwater levels by aggressively pursuing a water conservation program, implementing the first and second phases of the Seaside Groundwater Basin Aquifer Storage and Recovery Project, and recommending an increase in summer releases from Los Padres Reservoir.

Reversal, or at least a slowing, of channel incision may be possible if the supply of sediment is brought into better balance with the sediment transport forces. Additional sediment from the tributary watersheds between San Clemente Dam and Los Padres Dam may pass into the lower river in the foreseeable future with the removal of San Clemente Dam in 2015. However, any increase in the sediment supply may not reach the lowest portion of the river for many years.

In January 2009, CAW agreed to proceed with the removal of San Clemente Dam and reroute of the Carmel River main stem around the sediment field. MPWMD supported this dam removal and re-route project proposed by the California Coastal Conservancy. The project began in the summer of 2013 and is scheduled to be completed in late 2015. In addition to a significant improvement in fish passage, removal of San Clemente Dam would likely reduce the time it takes for sand and gravel from the upper watershed to move through the river bottom and replenish the Carmel River State Beach at the mouth of the river.

Over the long term, an increase in sediment supply could help reduce streambank instability and erosion threats to public and private infrastructure. However, reestablishing a natural supply of sediment and restoring the natural river meander pattern through the lower 15.5 miles of the Carmel Valley presents significant political, environmental, and fiscal challenges, and is not currently being considered as part of the Mitigation Program.

Integrated Regional Water Management (IRWM) Grant Program

The IRWM program promoted by the DWR encourages planning and management of water resources on a regional scale and promotes projects that incorporate multiple objectives and strategies. In addition, the IRWM process brings stakeholders together and encourages cooperation among agencies in developing mutually beneficial solutions to resource problems.

In November 2007, the District adopted the final IRWM plan for a region encompassing Monterey Peninsula areas within the District boundary, the area in the Carmel River watershed outside of the MPWMD boundary, Carmel Bay and the Southern Monterey Bay. The plan combines strategies to improve and manage potable water supply, water conservation, stormwater runoff, floodwaters, wastewater, water recycling, habitat for wildlife, and public recreation.

Subsequently, MPWMD was successful in 2011 in obtaining a $995,000 grant from the DWR to update the IRWM Plan to Proposition 84 standards. The plan combines strategies to improve and manage potable water supply, water conservation, stormwater runoff, floodwaters, wastewater, water recycling, habitat for wildlife, and public recreation. In FY 2011-2012, MPWMD entered into a grant agreement with DWR and initiated work on 10 planning projects, including an update to the 2007 plan and several planning projects to benefit local jurisdictions. During FY 2012-2013, additional agreements were signed to work on all 10 planning projects. During FY 2013-14, the IRWM Plan was updated and adopted by the MWPMD Board and the other nine planning projects were completed. The total cost of the project, including local agency match, was about $1.6 million. A final report on the grant is scheduled for completion in 2015.

Funding from the IRWM grant program and other programs requiring an adopted IRWM Plan could provide the incentive to undertake a set of projects that would continue to improve the Carmel River environment and engage a larger number of organizations in helping to develop and implement a comprehensive solution to water resource problems in the planning region.

Carmel River Lagoon Habitat

The District continues to support and encourage the ongoing habitat-restoration efforts in the wetlands and riparian areas surrounding the Carmel River Lagoon. These efforts are consistent with goals that were identified in the Carmel River Lagoon Enhancement Plan, which was partially funded by the District. The District continues to work with various agencies and landowners to implement ongoing restoration of the Odello West property and future restoration of the Odello East property across the highway. Because of the restoration activities on the south

side of the lagoon, the District has concentrated its monitoring efforts on the relatively undisturbed north side. Staff have also continue to meet and discuss with other agencies the ongoing use of an existing CDPR agricultural well and potential future use of treated water from the Carmel Area Wastewater District to augment the lagoon during periods of low water.

The District expanded its long-term monitoring around the lagoon in 1995 in an attempt to determine if the reduction in freshwater flows due to groundwater pumping upstream might change the size or ecological character of the wetlands. Demonstrable changes have not been identified. Because of the complexity of the estuarine system, a variety of parameters are monitored, including vegetative cover in transects and quadrats, water conductivity, and hydrology. It is notable that due to the number of factors affecting this system, it would be premature to attribute any observed changes solely to groundwater pumping. During the 20-year period to date, for example, there have been two Extremely Wet (1995 and 1998), two Wet (2005, 2006), five Above Normal (1996, 1997, 2000, 2010 and 2011), and five Normal (1999, 2001, 2003, 2008 and 2009), two Below Normal (2002 and 2004), two Dry (2012 and 2013), and two Critically Dry (2007 and 2014) Water Year types in terms of total annual runoff. Thus, the hydrology of the watershed has been wetter than average 45% of the time, and at least normal or better 70% of the time during that period. However, monitoring in 2014 occurred during a Critically Dry Water Year that followed two consecutive Dry Water Years. Other natural factors that affect the wetlands include introduction of salt water into the system as waves overtop the sandbar in autumn and winter, tidal fluctuations, and long-term global climatic change. When the District initiated the long-term lagoon monitoring component of the Mitigation Program, it was with the understanding that it would be necessary to gather data for an extended period in order to draw conclusions about well production drawdown effects on wetland dynamics. It is recommended that the current vegetation, conductivity, topographical and wildlife monitoring be continued in order to provide a robust data set for continued analysis of potential changes around the lagoon.

Lagoon bathymetric cross sectional surveys, initially conducted in 1988, have been completed annually during the dry season since 1994. These data are useful in assessing changes in the sand supply within the main body of the lagoon and are necessary to answer to questions concerning whether or not the lagoon is filling up with sand, thus losing valuable habitat. As indicated in the survey plots, the sandy bed of the lagoon can vary significantly from year to year. In general, no major trends indicating sand accumulation or depletion at the lagoon cross sections have been identified based on available data, with the exception of the upstream-most cross section number 4, which exhibits an overall loss in sand volume over the 1994-2013 period. The sand loss or down-cutting observed at cross section 4 is consistent with the pervasive down-cutting that has occurred along the thalweg of the Lower Carmel River (LCR) upstream of the Highway 1 Bridge for several miles. The trend of LCR streambed scour appears to have begun in Water Year 2006. In addition, now that annual cross sectional data have been collected in two "critically dry" years (WY 2007 and 2014) and two "dry" years (2012 and 2013), it is concluded that substrate elevations at the cross sections generally do not change in these low-flow years, despite the regular occurrence of major lagoon mouth breaches in all of these years, except WY 2014. Accordingly, the multi-year cross-sectional data set (21 years) indicates quantity of streamflow as the primary factor that controls substrate changes at the key cross sections.

Program Costs

Mitigation Program costs for FY 2013-2014 totaled approximately $2.41 million including direct personnel expenses, operating costs, project expenditures, capital equipment, and fixed asset purchases. The annual cost of mitigation efforts varies because several mitigation measures are weather dependent. Expenditures in FY 2013-2014 were $0.19 million more than the prior fiscal year due to increases in Mitigation Program costs. However, the overall costs have remained fairly constant (average of $3 million per year) for last five years. In the past, expenditures had trended upward due to expenditures for the Aquifer Storage Recovery (ASR) Project. ASR Project costs are no longer captured under Mitigation Program Costs. FY 2011-2012 expenditures were $4.59 million; and FY 2012-2013 expenditures were $2.22 million.

During FY 2013-2014, revenues totaled $2.72 million including mitigation program revenues, tax revenues, investment income and miscellaneous revenues. The Mitigation Program Fund Balance as of June 30, 2014 was $331,973.

Table I-1

SUMMARY OF COMPONENTS OF MPWMD MITIGATION PROGRAM
July 1, 2013 - June 30, 2014

WATER MANAGEMENT

- Monitor Water Resources
- Manage Water Production
- Manage Water Demand
- Monitor Water Usage
- Augment Water Supply
- Allocation of New Supply
- Determine Drought Reserve

STEELHEAD FISHERY

- Capture/Transport Emigrating Smolts in Spring
  -- Smolt rescues
  -- Build acclimation facility/tagging study
- Prevent Stranding of Fall/Winter Juvenile Migrants
  -- Juvenile rescues
  -- Build mid-Valley holding facility
- Rescue Juveniles Downstream of Robles del Rio in Summer
- Operate Sleepy Hollow holding/rearing facility
- Modify Spillway/Transport Smolts Around Los Padres Dam
- Monitoring Activities for Mitigation Plan
  -- Adult counts at San Clemente Dam
  -- Juvenile population surveys
- Other Activities not required by Mitigation Plan
  -- Spawning habitat restoration
  -- Fish planting (steelhead broodstock program)
  -- Coastal Salmon Recovery Program grant (began mid-2001)
  -- Modify critical riffles

RIPARIAN VEGETATION AND WILDLIFE

- Conservation and Water Distribution Management
- Prepare/Oversee Riparian Corridor Management Plan
- Implement Riparian Corridor Management Program
  -- Cal-Am well irrigation (4 wells)
  -- Channel clearing
  -- Vegetation monitoring
  -- Track and pursue violations
  -- River Care Guide booklet
  -- CRMP Erosion Protection Program

LAGOON VEGETATION AND WILDLIFE

- Assist with Lagoon Enhancement Plan Investigations (See Note 1)
- Expand Long-Term Lagoon Monitoring Program
  -- Water quality/quantity
  -- Vegetation/soils
- Identify Alternatives to Maintain Lagoon Volume

AESTHETICS

- Restore Riparian Vegetation (see above)

Note 1: Mitigation measures are dependent on implementation of the Lagoon Enhancement Plan by the California Department of Parks and Recreation, the land owner and CEQA lead agency. Portions of the Enhancement Plan have been implemented by CalTrans as part of a "mitigation banking" project.

Table I-2
Summary of MPWMD Mitigation Program Accomplishments in 2013-2014

MITIGATION ACTION	MAJOR ACCOMPLISHMENTS IN FY 2013-2014
Monitor Water Resources	Regularly tracked precipitation, streamflow, surface and groundwater levels and quality, and lagoon characteristics between Los Padres Dam and the Carmel River Lagoon, using real-time methods at numerous data collection stations. Maintained extensive monitoring network, and continuous streamflow recorders below San Clemente Dam and other sites.
Manage Water Production	Developed and implemented multi-agency Memorandum of Agreement and quarterly water supply strategies based on normal-year conditions; worked cooperatively with resource agencies implementing the federal Endangered Species Act. Implemented ordinances that regulate wells and water distribution systems.
Manage Water Demand	From July 1, 2013, through June 30, 2014, a total of 852 Water Permits were issued. 30 new residences and 679 residential Remodels/additions were permitted in the CAW system. There were 80 Non-Residential Water Permits issued for Remodels/Additions and Changes of Use in the CAW system. As of June 30, 2014, a total of 91.724 AF of water remained available in the areas served CAW, as described in Section IX. This includes water from pre- and post-Paralta Allocations and water added to a Jurisdiction's Allocation from Water Use Credit transfers and public retrofits.
Monitor Water Usage	Complied with SWRCB Order 95-10 for Water Year 2014.
Augment Water Supply	Long-term efforts to augment supply included: (1) Continued participation in the CPUC rate hearing process to review elements of the Monterey Peninsula Water Supply Project (MPWSP); (2) Participated in meetings intended to resolve concerns about MPWSP construction, operations, financing, management and oversight; (3) Participated on Technical Advisory Committee to the Monterey Peninsula Regional Water Authority; (4) Operated Aquifer Storage and Recovery (ASR) Phase 1 and 2 projects in WY 2014; (5) performed pump test on second ASR Phase 2 injection well Seaside Middle School site; (6) Held regular coordination meetings with Cal-Am regarding needed infrastructure upgrades to deliver water supply to the ASR project wells at full capacity; (7) Conducted additional work related to alternative desalination plant sites; (9) Provided

MITIGATION ACTION	MAJOR ACCOMPLISHMENTS IN FY 2013-2014
	technical support to the Monterey Regional Water Pollution Control Agency (MRWPCA) for the Groundwater Replenishment Project (GRP) and received presentations by MRWPCA; (10) Participated in CPUC hearing process on Cal-Am related rate requests. Other ongoing activities included: (1) Served as member of both the Seaside Basin Watermaster Board and as the Technical Advisory Committee; (2) Delivered several database products to the Watermaster and its consultants under the District's contract for the required Seaside Basin Monitoring and Management Plan; (3) Continued participation on technical committee regarding removal of San Clemente Dam and associated sediment management.
Allocate New Supply	Remained within Water Allocation Program limits.
Determine Drought Reserve	Rationing was not required due to maintenance of adequate storage reserve.
Steelhead Fishery Program	The surface flow of the Carmel River dropped to 10 cfs at the Highway 1 Bridge on April 16, 2013. In response to this decline, District staff began full-scale rescues on April 19. Rescues were conducted over a five-month period, April 19 – September 12, 2013 between Highway 1 Bridge (RM 1.0) and Robinson Canyon Road Bridge (RM 8.5). An additional one-mile reach between Boronda Road Bridge and DeDampierre Park in Carmel Valley Village (RM 12.6-13.6) was also rescued in September as the drought worsened. During this period staff completed 82 rescue days, yielding a total of 42,805 steelhead . Compared to previous rescue seasons, the rescue total in the 2013 dry season was two and a half times greater than the 1989-2013 average of 16,713 fish rescued.
Riparian Habitat Program	Continued revegetation efforts at exposed banks with little or no vegetation located between Via Mallorca and Esquiline Roads; Contracted to collect channel profile data and limited cross section data from the Carmel River for use in maintaining a long-term record and comparing to the past and future data; Made public presentations showing MPWMD-sponsored restoration work over the past 24 years; Continued long-term monitoring of physical and biological processes along the river in order to evaluate the District's river management activities; Continued the annual inspections of the Carmel River from the upstream end of the lagoon to Camp Steffani; Walked the entire river to observe and record erosion damage, conditions that

MITIGATION ACTION	MAJOR ACCOMPLISHMENTS IN FY 2013-2014
	could cause erosion, riparian ordinance infractions, and the overall condition of the riparian corridor; Continued enforcement actions to address serious violations of District riparian ordinances; Carried out vegetation management activities; Developed an Integrated Regional Water Management Plan; Operated under Routine Maintenance Agreement with CDFW for MPWMD vegetation maintenance activities.
Lagoon Habitat Program	Provided technical expertise and data to multi-agency sponsors of lagoon restoration program; assisted Carmel Area Wastewater District to evaluate possible Lagoon augmentation with recycled water; facilitated Carmel River Lagoon Technical Advisory Committee meetings; pursued funding for the April 2007 *Final Study Plan for the Long-Term Adaptive Management of the Carmel River State Beach and Lagoon*; continued vegetation habitat monitoring; surveyed and analyzed four bathymetric transects; participated in interagency meetings regarding management of lagoon in winter storm events (see also steelhead efforts that benefit lagoon); conducted topographic, hydrology and wildlife surveys.
Aesthetic Measures	See Riparian Habitat Program measures.

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ITEM: CONSENT CALENDAR

7. CONSIDER ADOPTION OF TREASURER'S REPORT FOR JANUARY 2015

Meeting Date:	**March 16, 2015**	**Budgeted:**	**N/A**
From:	**David J. Stoldt, General Manager**	**Program/ Line Item No.:**	**N/A**
Prepared By:	**Suresh Prasad**	**Cost Estimate:**	**N/A**

General Counsel Review: N/A
Committee Recommendation: The Administrative Committee considered this item on March 9, 2015 and recommended approval.
CEQA Compliance: N/A

SUMMARY: Exhibit 7-A comprises the Treasurer's Report for January 2015. **Exhibit 7-B**, **Exhibit 7-C** and **Exhibit 7-D** are listings of check disbursements for the period January 1-31, 2015. Check Nos. 20387 through 20942, the direct deposits of employee's paychecks, payroll tax deposits, and bank charges resulted in total disbursements for the period in the amount of $591,470.33. That amount included $161,299.47 for conservation rebates. **Exhibit 7-E** reflects the financial statements for the month ending January 31, 2015.

RECOMMENDATION: District staff recommends adoption of the January 2015 Treasurer's Report and financial statements, and ratification of the disbursements made during the month.

EXHIBITS
7-A Treasurer's Report
7-B Listing of Cash Disbursements-Regular
7-C Listing of Cash Disbursements-Payroll
7-D Listing of Other Bank Items
7-E Financial Statements

EXHIBIT 7-A

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT
TREASURER'S REPORT FOR JANUARY 2015

Description	Checking	MPWMD Money Market	L.A.I.F.	Wells Fargo Investments	MPWMD Total	PB Reclamation Money Market
Beginning Balance	$42,698.80	$2,571,432.02	$692,736.09	$2,251,357.89	5,558,224.80	$16,869.53
Transfer to/from LAIF					0.00	
Fee Deposits		625,774.88			625,774.88	232,641.76
Interest		82.83	521.82	1,597.98	2,202.63	3.43
Transfer-Money Market to Checking	600,000.00	(600,000.00)			0.00	
Transfer-Money Market to W/Fargo					0.00	
W/Fargo-Investment Purchase					0.00	
Transfer Ckg to MPWMD M/Mrkt					0.00	
MoCo Tax & WS Chg Installment Pymt					0.00	
Transfer to CAWD					0.00	(239,000.00)
Voided Cks					0.00	
Bank Corrections/Reversals/Errors					0.00	
Bank Charges/Rtn'd Deposits/Other	(295.13)				(295.13)	(25.00)
Payroll Tax Deposits	(25,252.54)				(25,252.54)	
Payroll Checks/Direct Deposits	(123,675.06)				(123,675.06)	
General Checks	(442,247.60)				(442,247.60)	
Prepaid Exp-Automatic Bank Pymt					0.00	
Ending Balance	**$51,228.47**	**$2,597,289.73**	**$693,257.91**	**$2,252,955.87**	**$5,594,731.98**	**$10,489.72**

EXHIBIT 7-B

Monterey Peninsula Water Mgmt District

Bank Transaction Report

Transaction Detail

Issued Date Range: 01/01/2015 - 01/31/2015

Cleared Date Range: -

Issued Date	Cleared Date	Number	Description	Module	Status	Type	Amount
Bank Account: 111 - Bank of America Checking							
01/08/2015	01/31/2015	20387	A.G. Davi, LTD	Accounts Payable	Cleared	Check	-395.00
01/08/2015	01/31/2015	20388	Alhambra	Accounts Payable	Cleared	Check	-164.04
01/08/2015	01/31/2015	20389	American Lock & Key	Accounts Payable	Cleared	Check	-201.28
01/08/2015	01/31/2015	20390	Arriaga, John	Accounts Payable	Cleared	Check	-2,500.00
01/08/2015	01/31/2015	20391	Cal-Am Water	Accounts Payable	Cleared	Check	-190.15
01/08/2015	01/31/2015	20392	Chevron	Accounts Payable	Cleared	Check	-399.02
01/08/2015	01/31/2015	20393	Cisco WebEx, LLC	Accounts Payable	Cleared	Check	-49.00
01/08/2015	01/31/2015	20394	City of Monterey	Accounts Payable	Cleared	Check	-697.75
01/08/2015	01/31/2015	20395	Colantuono, Highsmith, & Whatley, PC	Accounts Payable	Cleared	Check	-356.50
01/08/2015	01/31/2015	20396	Delay & Laredo	Accounts Payable	Cleared	Check	-25,332.95
01/08/2015	01/31/2015	20397	Employment Development Dept.	Accounts Payable	Cleared	Check	-3,813.70
01/08/2015	01/31/2015	20398	EWING	Accounts Payable	Cleared	Check	-1,788.27
01/08/2015	01/31/2015	20399	Garden Solutions Lanscaping	Accounts Payable	Cleared	Check	-5,278.00
01/08/2015	01/31/2015	20400	Goodin,MacBride,Squeri,Day,Lamprey	Accounts Payable	Cleared	Check	-577.70
01/08/2015	01/31/2015	20401	Graniterock	Accounts Payable	Cleared	Check	-5,120.09
01/08/2015	01/31/2015	20402	ICMA	Accounts Payable	Cleared	Check	-5,208.41
01/08/2015	01/31/2015	20403	M.J. Murphy	Accounts Payable	Cleared	Check	-60.13
01/08/2015	01/31/2015	20404	Martin's Irrigation Supply	Accounts Payable	Cleared	Check	-111.21
01/08/2015		20405	MBAS	Accounts Payable	Outstanding	Check	-1,200.00
01/08/2015	01/31/2015	20406	Michael Hutnak	Accounts Payable	Cleared	Check	-3,760.00
01/08/2015	01/31/2015	20407	MoCo Recorder	Accounts Payable	Cleared	Check	-14.00
01/08/2015	01/31/2015	20408	MoCo Recorder	Accounts Payable	Cleared	Check	-29.00
01/08/2015	01/31/2015	20409	MoCo Recorder	Accounts Payable	Cleared	Check	-14.00
01/08/2015	01/31/2015	20410	MoCo Recorder	Accounts Payable	Cleared	Check	-61.00
01/08/2015	01/31/2015	20410	MoCo Recorder Reversal	Accounts Payable	Cleared	Check Reversal	61.00
01/08/2015	01/31/2015	20411	MoCo Recorder	Accounts Payable	Cleared	Check	-29.00
01/08/2015	01/31/2015	20412	MoCo Recorder	Accounts Payable	Cleared	Check	-29.00
01/26/2015	01/31/2015	20412	MoCo Recorder Reversal	Accounts Payable	Cleared	Check Reversal	29.00
01/08/2015	01/31/2015	20413	MoCo Recorder	Accounts Payable	Cleared	Check	-32.00
01/08/2015	01/31/2015	20414	MoCo Recorder	Accounts Payable	Cleared	Check	-14.00
01/08/2015	01/31/2015	20415	MoCo Recorder	Accounts Payable	Cleared	Check	-29.00
01/08/2015	01/31/2015	20416	Monterey County Sheriff's Office	Accounts Payable	Cleared	Check	-200.00
01/08/2015	01/31/2015	20417	National Notary Association	Accounts Payable	Cleared	Check	-59.00
01/08/2015	01/31/2015	20418	Pacific Water Management	Accounts Payable	Cleared	Check	-2,850.00
01/08/2015	01/31/2015	20419	Peninsula Messenger Service	Accounts Payable	Cleared	Check	-687.00
01/08/2015	01/31/2015	20420	Peninsula Welding Supply, Inc.	Accounts Payable	Cleared	Check	-56.00

EXHIBIT 7-B

Bank Transaction Report **Issued Date Range: 01/01/2015 - 01/31/2015 Cleared Date Range: -**

Issued Date	Cleared Date	Number	Description	Module	Status	Type	Amount
01/08/2015	01/31/2015	20421	PG&E	Accounts Payable	Cleared	Check	-1,710.27
01/08/2015	01/31/2015	20422	Purchase Power	Accounts Payable	Cleared	Check	-57.84
01/08/2015	01/31/2015	20423	Pure H2O	Accounts Payable	Cleared	Check	-64.49
01/08/2015	01/31/2015	20424	Rapid Printers	Accounts Payable	Cleared	Check	-330.03
01/08/2015	01/31/2015	20425	Red Shift Internet Services	Accounts Payable	Cleared	Check	-604.95
01/08/2015	01/31/2015	20426	Sherron Forsgren	Accounts Payable	Cleared	Check	-653.20
01/08/2015	01/31/2015	20427	Silva, June	Accounts Payable	Cleared	Check	-338.66
01/08/2015	01/31/2015	20428	Special Districts Association of Monterey County	Accounts Payable	Cleared	Check	-60.00
01/08/2015	01/31/2015	20429	Thomas Brand Consulting, LLC	Accounts Payable	Cleared	Check	-12,177.50
01/08/2015	01/31/2015	20430	Universal Staffing Inc.	Accounts Payable	Cleared	Check	-1,391.97
01/08/2015	01/31/2015	20431	Verizon Wireless	Accounts Payable	Cleared	Check	-540.76
01/08/2015	01/31/2015	20439	Gabby Ayala	Accounts Payable	Cleared	Check	-217.37
01/08/2015	01/31/2015	20440	MoCo Recorder	Accounts Payable	Cleared	Check	-32.00
01/08/2015	01/31/2015	20441	MoCo Recorder	Accounts Payable	Cleared	Check	-55.00
01/08/2015	01/31/2015	20442	Schmidlin, Cynthia	Accounts Payable	Cleared	Check	-2,500.00
01/14/2015		20443	Airtec Service	Accounts Payable	Outstanding	Check	-892.03
01/14/2015	01/31/2015	20444	AT & T	Accounts Payable	Cleared	Check	-446.71
01/14/2015	01/31/2015	20445	AT & T	Accounts Payable	Cleared	Check	-356.29
01/14/2015		20446	Bill Parham	Accounts Payable	Outstanding	Check	-650.00
01/14/2015	01/31/2015	20447	Bioassessment Services	Accounts Payable	Cleared	Check	-1,550.00
01/14/2015		20448	California Dept. of Fish & Wildlife	Accounts Payable	Outstanding	Check	-613.75
01/14/2015	01/31/2015	20449	CalPers Long Term Care Program	Accounts Payable	Cleared	Check	-107.92
01/14/2015	01/31/2015	20450	CDW Government	Accounts Payable	Cleared	Check	-34,736.77
01/14/2015	01/31/2015	20451	Central Coast Fly Fishing	Accounts Payable	Cleared	Check	-150.45
01/14/2015	01/31/2015	20452	CoreLogic Information Solutions, Inc.	Accounts Payable	Cleared	Check	-396.00
01/14/2015	01/31/2015	20453	DLT Solutions	Accounts Payable	Cleared	Check	-505.66
01/14/2015	01/31/2015	20454	KBA Docusys - Lease Payments	Accounts Payable	Cleared	Check	-578.30
01/14/2015		20455	Kinnetic Laboratories, Inc	Accounts Payable	Outstanding	Check	-1,891.74
01/14/2015		20456	Latitude Geographics	Accounts Payable	Outstanding	Check	-3,700.00
01/14/2015	01/31/2015	20457	Marina Coast Water District - 013447	Accounts Payable	Cleared	Check	-66.72
01/14/2015	01/31/2015	20458	Marina Coast Water District -011635 000	Accounts Payable	Cleared	Check	-169.82
01/14/2015	01/31/2015	20459	Martin's Irrigation Supply	Accounts Payable	Cleared	Check	-29.27
01/14/2015	01/31/2015	20460	MBAS	Accounts Payable	Cleared	Check	-2,865.00
01/14/2015	01/31/2015	20461	McMaster-Carr	Accounts Payable	Cleared	Check	-354.25
01/14/2015		20462	MoCo Recorder Reversal	Accounts Payable	Outstanding	Check Reversal	180.00
01/14/2015		20462	MoCo Recorder	Accounts Payable	Outstanding	Check	-180.00
01/14/2015	01/31/2015	20463	Monterey Bay Carpet & Janitorial Svc	Accounts Payable	Cleared	Check	-1,000.00
01/14/2015		20464	Monterey Commercial Property Owners Association	Accounts Payable	Outstanding	Check	-400.00
01/14/2015	01/31/2015	20465	Monterey County Clerk	Accounts Payable	Cleared	Check	-50.00
01/14/2015	01/31/2015	20466	Osahan, Inder	Accounts Payable	Cleared	Check	-1,083.00
01/14/2015	01/31/2015	20467	Palace Office Supply	Accounts Payable	Cleared	Check	-326.96
01/14/2015		20468	PERS Retirement	Accounts Payable	Outstanding	Check	-19,098.15
01/14/2015	01/31/2015	20469	PG& E 9024846025-6	Accounts Payable	Cleared	Check	-20.16

EXHIBIT 7-B

Bank Transaction Report **Issued Date Range: 01/01/2015 - 01/31/2015 Cleared Date Range: -**

Issued Date	Cleared Date	Number	Description	Module	Status	Type	Amount
01/14/2015	01/31/2015	20470	PG&E	Accounts Payable	Cleared	Check	-20.56
01/14/2015	01/31/2015	20471	Pitney Bowes Global Financial Svc, LLC	Accounts Payable	Cleared	Check	-383.78
01/14/2015		20472	Pueblo Water Resources, Inc.	Accounts Payable	Outstanding	Check	-13,312.50
01/14/2015	01/31/2015	20473	Sandoval, Eric	Accounts Payable	Cleared	Check	-455.00
01/14/2015	01/31/2015	20474	Society for Human Resources Management	Accounts Payable	Cleared	Check	-190.00
01/14/2015	01/31/2015	20475	Telit Wireless Solutions	Accounts Payable	Cleared	Check	-120.72
01/14/2015	01/31/2015	20476	Thomas Brand Consulting, LLC	Accounts Payable	Cleared	Check	-1,267.00
01/14/2015	01/31/2015	20477	UPEC, Local 792	Accounts Payable	Cleared	Check	-1,013.74
01/14/2015		20478	Verducci Enterprise LP	Accounts Payable	Outstanding	Check	-38,658.54
01/14/2015	01/31/2015	20479	Yolanda Munoz	Accounts Payable	Cleared	Check	-540.00
01/14/2015	01/31/2015	20480	Zone24x7	Accounts Payable	Cleared	Check	-3,757.84
01/14/2015	01/31/2015	20481	MoCo Recorder	Accounts Payable	Cleared	Check	-29.00
01/14/2015	01/31/2015	20482	MoCo Recorder	Accounts Payable	Cleared	Check	-65.00
01/14/2015	01/31/2015	20483	MoCo Recorder	Accounts Payable	Cleared	Check	-61.00
01/14/2015	01/31/2015	20484	MoCo Recorder	Accounts Payable	Cleared	Check	-32.00
01/14/2015	01/31/2015	20484	MoCo Recorder Reversal	Accounts Payable	Cleared	Check Reversal	32.00
01/14/2015	01/31/2015	20485	MoCo Recorder	Accounts Payable	Cleared	Check	-56.00
01/14/2015	01/31/2015	20486	MoCo Recorder	Accounts Payable	Cleared	Check	-29.00
01/14/2015		20487	MoCo Recorder	Accounts Payable	Outstanding	Check	-35.00
01/14/2015	01/31/2015	20488	MoCo Recorder	Accounts Payable	Cleared	Check	-59.00
01/14/2015	01/31/2015	20489	MoCo Recorder	Accounts Payable	Cleared	Check	-61.00
01/14/2015	01/31/2015	20490	MoCo Recorder	Accounts Payable	Cleared	Check	-61.00
01/14/2015	01/31/2015	20491	MoCo Recorder	Accounts Payable	Cleared	Check	-61.00
01/16/2015	01/31/2015	20492	A.G. Davi Property Management	Accounts Payable	Cleared	Check	-200.00
01/16/2015	01/31/2015	20493	ADRIAN DERMICEK	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20494	ADRIENNE S HERMAN	Accounts Payable	Outstanding	Check	-1,500.00
01/16/2015		20495	AG DAVI PROPERTY MGMT	Accounts Payable	Outstanding	Check	-50.00
01/16/2015		20496	ALAIN CLAUDEL	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20497	ALAN ESTRADA	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20498	ALBERT BOOSMAN	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20499	ALEXANDER T & JEANY E BESOBRAZOFF	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20500	ALISON MCGILL	Accounts Payable	Cleared	Check	-125.00
01/16/2015	01/31/2015	20501	ALLEN FUHS	Accounts Payable	Cleared	Check	-200.00
01/16/2015		20502	Alma Vasquez	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20503	ALVARO CARRENO	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20504	Amelia Chapman & Ryan Burke	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20505	Andrew P. Boerlage	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20506	ANDY & THERESA BRIANT	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20507	ANGELINA H CASTILLO	Accounts Payable	Cleared	Check	-1,614.00
01/16/2015	01/31/2015	20508	ANN KASTING	Accounts Payable	Cleared	Check	-50.00
01/16/2015		20509	ANTHONY & PATRICIA VENZA	Accounts Payable	Outstanding	Check	-50.00
01/16/2015	01/31/2015	20510	ANTONIO MONTANTE	Accounts Payable	Cleared	Check	-399.88
01/16/2015	01/31/2015	20511	ARLEN M GROSSMAN	Accounts Payable	Cleared	Check	-50.00

EXHIBIT 7-B

Bank Transaction Report **Issued Date Range: 01/01/2015 - 01/31/2015 Cleared Date Range: -**

Issued Date	Cleared Date	Number	Description	Module	Status	Type	Amount
01/16/2015		20512	ARLENE M LUCIER	Accounts Payable	Outstanding	Check	-100.00
01/16/2015	01/31/2015	20513	ARTHUR IRELAND	Accounts Payable	Cleared	Check	-178.00
01/16/2015		20514	ARTHUR NOBIDA	Accounts Payable	Outstanding	Check	-88.20
01/16/2015		20515	ASHLEY STREETMAN	Accounts Payable	Outstanding	Check	-50.00
01/16/2015	01/31/2015	20516	Asuman Johnson	Accounts Payable	Cleared	Check	-50.00
01/16/2015	01/31/2015	20517	AUDREY WILLIAMS	Accounts Payable	Cleared	Check	-448.20
01/16/2015	01/31/2015	20518	BARBARA A BERG	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20519	BARBARA BAUMGARTEN TURNER	Accounts Payable	Cleared	Check	-125.00
01/16/2015	01/31/2015	20520	BARBARA C MOODY	Accounts Payable	Cleared	Check	-700.00
01/16/2015	01/31/2015	20521	BARBARA HOSKINSON	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20522	BARBARA SCHILL	Accounts Payable	Outstanding	Check	-50.00
01/16/2015		20523	BARBARA VANTRESS	Accounts Payable	Outstanding	Check	-100.00
01/16/2015	01/31/2015	20524	BART RALL	Accounts Payable	Cleared	Check	-125.00
01/16/2015	01/31/2015	20525	BEN MILLER	Accounts Payable	Cleared	Check	-100.00
01/16/2015	01/31/2015	20526	BERNARD JAMES FITZPATRICK	Accounts Payable	Cleared	Check	-50.00
01/16/2015	01/31/2015	20527	BEVERLEY ANN SCHMIDT	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20528	BONNIE BROOKS	Accounts Payable	Cleared	Check	-50.00
01/16/2015		20529	BRANDON SWANSON	Accounts Payable	Outstanding	Check	-50.00
01/16/2015	01/31/2015	20530	BRANKO MARINOVICH	Accounts Payable	Cleared	Check	-50.00
01/16/2015		20531	Bratty and Bluhm Property Management	Accounts Payable	Outstanding	Check	-50.00
01/16/2015	01/31/2015	20532	BRENT EDWARDS	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20533	BRIAN F SOURS	Accounts Payable	Cleared	Check	-50.00
01/16/2015	01/31/2015	20534	BRIAN SOURS	Accounts Payable	Cleared	Check	-149.00
01/16/2015	01/31/2015	20535	BUENA VISTA LAND COMPANY	Accounts Payable	Cleared	Check	-160.00
01/16/2015	01/31/2015	20536	CAL STAMENOV	Accounts Payable	Cleared	Check	-50.00
01/16/2015	01/31/2015	20537	CARRIE ERICKSON	Accounts Payable	Cleared	Check	-50.00
01/16/2015		20538	CASEY CHRISTOPHERSON	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20539	CECELIA E ROMAN	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20540	CHARLENE CONSTANTINO	Accounts Payable	Cleared	Check	-100.00
01/16/2015	01/31/2015	20541	CHARLES & MARY WILMOT	Accounts Payable	Cleared	Check	-50.00
01/16/2015		20542	CHARLES A BESTOR	Accounts Payable	Outstanding	Check	-500.00
01/16/2015		20543	CHARLES CHANG	Accounts Payable	Outstanding	Check	-500.00
01/16/2015		20544	CHARLES CHANG	Accounts Payable	Outstanding	Check	-125.00
01/16/2015		20545	CHARLES DELLA SALA	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20546	CHARLES H REES	Accounts Payable	Cleared	Check	-625.00
01/16/2015	01/31/2015	20547	CHARLES KRPATA	Accounts Payable	Cleared	Check	-775.00
01/16/2015		20548	Chetan Patel	Accounts Payable	Outstanding	Check	-500.00
01/16/2015		20549	CHRISTINE MCENERY	Accounts Payable	Outstanding	Check	-50.00
01/16/2015	01/31/2015	20550	CHRISTOPHER MCDERMOTT	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20551	CHRISTY GERVASE	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20552	CLARE SHERIFF	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20553	Creative Property Management	Accounts Payable	Cleared	Check	-168.00
01/16/2015	01/31/2015	20554	CRYSTAL BIRKEMEIER	Accounts Payable	Cleared	Check	-500.00

EXHIBIT 7-B

Bank Transaction Report **Issued Date Range: 01/01/2015 - 01/31/2015 Cleared Date Range: -**

Issued Date	Cleared Date	Number	Description	Module	Status	Type	Amount
01/16/2015	01/31/2015	20555	CURT HAYS	Accounts Payable	Cleared	Check	-356.00
01/16/2015		20556	CYNTHIA A DAVIS	Accounts Payable	Outstanding	Check	-50.00
01/16/2015	01/31/2015	20557	CYNTHIA L DOHL	Accounts Payable	Cleared	Check	-125.00
01/16/2015		20558	DALE MCINTURF	Accounts Payable	Outstanding	Check	-50.00
01/16/2015	01/31/2015	20559	Dan & Mary Echevarria	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20560	DANIEL SMITH	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20561	DANIEL BONANFANT	Accounts Payable	Cleared	Check	-50.00
01/16/2015		20562	Daniel Davis	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20563	DANIEL V VILLA	Accounts Payable	Cleared	Check	-50.00
01/16/2015	01/31/2015	20564	Danny W Huff	Accounts Payable	Cleared	Check	-625.00
01/16/2015	01/31/2015	20565	DARRYL HENDRICKS	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20566	DARRYL KENYON	Accounts Payable	Cleared	Check	-50.00
01/16/2015	01/31/2015	20567	DARWIN DATWYLER	Accounts Payable	Cleared	Check	-175.00
01/16/2015	01/31/2015	20568	DAVID BECKER	Accounts Payable	Cleared	Check	-200.00
01/16/2015		20569	DAVID C FUESS	Accounts Payable	Outstanding	Check	-500.00
01/16/2015		20570	DAVID MOORE	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20571	DAVID WASICK	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20572	DAWEI WU	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20573	Dean Rodatos	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20574	DEBBIE LAFONTAINE TRACY	Accounts Payable	Outstanding	Check	-50.00
01/16/2015		20575	DEBBIE LAFONTAINE TRACY	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20576	DEBBY MAJORS-DEGNAN	Accounts Payable	Cleared	Check	-875.00
01/16/2015	01/31/2015	20577	DEIDRE ARRINGTON	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20578	Del Mesa Carmel Community Assoc	Accounts Payable	Outstanding	Check	-806.25
01/16/2015	01/31/2015	20579	DELBERT WERMUTH	Accounts Payable	Cleared	Check	-625.00
01/16/2015	01/31/2015	20580	Deneen C. Seril	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20581	DENISE L WOOD	Accounts Payable	Cleared	Check	-671.25
01/16/2015	01/31/2015	20582	DENNIS TRASON	Accounts Payable	Cleared	Check	-50.00
01/16/2015	01/31/2015	20583	Dennis Foutz	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20584	Dennis Fox	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20585	DENNIS FOX	Accounts Payable	Cleared	Check	-721.00
01/16/2015	01/31/2015	20586	DENNIS TUNSTALL	Accounts Payable	Cleared	Check	-50.00
01/16/2015	01/31/2015	20587	Diana Dolley	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20588	DIANE B DAVENPORT	Accounts Payable	Cleared	Check	-50.00
01/16/2015	01/31/2015	20589	DIANNE S WOODS	Accounts Payable	Cleared	Check	-100.00
01/16/2015	01/31/2015	20590	DION DOW	Accounts Payable	Cleared	Check	-200.00
01/16/2015	01/31/2015	20591	DON & PAT MARTIN	Accounts Payable	Cleared	Check	-50.00
01/16/2015		20592	DONAL V. REILLY	Accounts Payable	Outstanding	Check	-50.00
01/16/2015	01/31/2015	20593	DONALD G MARTIN	Accounts Payable	Cleared	Check	-50.00
01/16/2015	01/31/2015	20594	Donna MANNING	Accounts Payable	Cleared	Check	-2,296.00
01/16/2015		20595	DONNA C ASWAD	Accounts Payable	Outstanding	Check	-125.00
01/16/2015	01/31/2015	20596	DONNA M KOENIG	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20597	DOUG HANSON	Accounts Payable	Cleared	Check	-50.00

EXHIBIT 7-B

Bank Transaction Report **Issued Date Range: 01/01/2015 - 01/31/2015 Cleared Date Range: -**

Issued Date	Cleared Date	Number	Description	Module	Status	Type	Amount
01/16/2015	01/31/2015	20598	DOUG TOBY	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20599	DOUGLAS FOSS	Accounts Payable	Cleared	Check	-200.00
01/16/2015	01/31/2015	20600	DOUGLAS T WEAVER	Accounts Payable	Cleared	Check	-50.00
01/16/2015	01/31/2015	20601	EDDIE JONES	Accounts Payable	Cleared	Check	-400.00
01/16/2015	01/31/2015	20602	EDMUND GROSS	Accounts Payable	Cleared	Check	-125.00
01/16/2015	01/31/2015	20603	EDWARD DICKSON	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20604	ELENA DHYANSKY	Accounts Payable	Cleared	Check	-148.00
01/16/2015	01/31/2015	20605	ELIZABETH LORENZI	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20606	ELIZABETH O'DONNELL	Accounts Payable	Cleared	Check	-125.00
01/16/2015	01/31/2015	20607	EMILY HICKOK	Accounts Payable	Cleared	Check	-175.00
01/16/2015	01/31/2015	20608	ENZA ALIOTTI	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20609	ERIC CARLSON & MAXINE STEWART-CARLSON	Accounts Payable	Outstanding	Check	-50.00
01/16/2015		20610	Eriksen Digman	Accounts Payable	Outstanding	Check	-625.00
01/16/2015	01/31/2015	20611	ERNEST L SEEMAN & TERI L SCHADECK	Accounts Payable	Cleared	Check	-1,025.00
01/16/2015		20612	Ernest Lostrom	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20613	EVA LINDBERG	Accounts Payable	Cleared	Check	-125.00
01/16/2015	01/31/2015	20614	FERN PRICE	Accounts Payable	Cleared	Check	-326.00
01/16/2015	01/31/2015	20615	Frank J. Niblett	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20616	Frank Lawrie	Accounts Payable	Cleared	Check	-400.00
01/16/2015		20617	FRANK YOHANNAN	Accounts Payable	Outstanding	Check	-363.00
01/16/2015	01/31/2015	20618	Gabriel Moreno	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20619	GARY & ANDRA BRIANT	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20620	GARY & ROSE MEDLIN	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20621	GEARY ENGLES	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20622	GEOFFRY WELCH	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20623	GEORGE LIBERT	Accounts Payable	Cleared	Check	-169.00
01/16/2015	01/31/2015	20624	GEORGE & MARION KEYWORTH	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20625	GEORGE & NINA KADIEV	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20626	GERALD L KLARSFELD	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20627	GILBERT CONVERSET & CARMELA CANTISANI	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20628	GISELA TAEUBER	Accounts Payable	Cleared	Check	-200.00
01/16/2015	01/31/2015	20629	GLYNNE G BARBIER	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20630	GREGORY THOMPSON	Accounts Payable	Outstanding	Check	-210.00
01/16/2015	01/31/2015	20631	GROVER MEYROSE	Accounts Payable	Cleared	Check	-512.50
01/16/2015	01/31/2015	20632	H DENNIS TRUDEAU	Accounts Payable	Cleared	Check	-625.00
01/16/2015	01/31/2015	20633	HARLAN HAMILTON	Accounts Payable	Cleared	Check	-50.00
01/16/2015		20634	HELEN FERBRACHE	Accounts Payable	Outstanding	Check	-100.00
01/16/2015	01/31/2015	20635	HELGA FELLAY	Accounts Payable	Cleared	Check	-50.00
01/16/2015	01/31/2015	20636	HERBERT J CONLEY	Accounts Payable	Cleared	Check	-122.49
01/16/2015	01/31/2015	20637	HUYEN L NGUYEN	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20638	IAN CROOKS	Accounts Payable	Cleared	Check	-50.00
01/16/2015	01/31/2015	20639	IRIS R DART	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20640	JACKIE MENKE	Accounts Payable	Cleared	Check	-500.00

EXHIBIT 7-B

Bank Transaction Report **Issued Date Range: 01/01/2015 - 01/31/2015 Cleared Date Range: -**

Issued Date	Cleared Date	Number	Description	Module	Status	Type	Amount
01/16/2015		20641	Jacqueline Morris	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20642	Jaime Carreon	Accounts Payable	Cleared	Check	-399.00
01/16/2015	01/31/2015	20643	JAMES & PAMELA SHEPPARD	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20644	JAMES DOYLE & CAROLYN REYNOLDS	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20645	JAMES L EADY	Accounts Payable	Cleared	Check	-200.00
01/16/2015	01/31/2015	20646	JAMES ZIEL	Accounts Payable	Cleared	Check	-119.00
01/16/2015	01/31/2015	20647	Jason Bainbridge	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20648	JAYNE HAHIN	Accounts Payable	Cleared	Check	-600.00
01/16/2015	01/31/2015	20649	JEAN OMAN	Accounts Payable	Cleared	Check	-200.00
01/16/2015	01/31/2015	20650	Jean Reulbach	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20651	JEANNE PRYOR	Accounts Payable	Cleared	Check	-198.00
01/16/2015	01/31/2015	20652	JEFF STILES	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20653	JEFFREY HAWKINS	Accounts Payable	Cleared	Check	-775.00
01/16/2015	01/31/2015	20654	JEFFREY HAN	Accounts Payable	Cleared	Check	-170.10
01/16/2015		20655	JEFFREY L LORENTZ	Accounts Payable	Outstanding	Check	-500.00
01/16/2015		20656	Jennifer Browne	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20657	Jennifer Pomo	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20658	JERRY V PESCE	Accounts Payable	Cleared	Check	-100.00
01/16/2015	01/31/2015	20659	Jesika Lookinghawk	Accounts Payable	Cleared	Check	-2,500.00
01/16/2015	01/31/2015	20660	Jess Ruether	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20661	JESSE KAHN	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20662	Jessica Lessard	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20663	JO ANNE BOWIE	Accounts Payable	Cleared	Check	-125.00
01/16/2015		20664	JOACHIM HOFMANN	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20665	JOAN SEELER	Accounts Payable	Cleared	Check	-100.00
01/16/2015	01/31/2015	20666	JODY HELMUTH	Accounts Payable	Cleared	Check	-125.00
01/16/2015		20667	JOE & BEATRICE BONANNO	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20668	JOE VON SOOSTEN	Accounts Payable	Cleared	Check	-1,537.50
01/16/2015	01/31/2015	20669	JOHN GIBBS	Accounts Payable	Cleared	Check	-960.00
01/16/2015	01/31/2015	20670	JOHN SNAPP	Accounts Payable	Cleared	Check	-600.00
01/16/2015		20671	John Woytak	Accounts Payable	Outstanding	Check	-50.00
01/16/2015	01/31/2015	20672	JOHN & PRISCILLA WALTON	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20673	JOHN CALCAGNO	Accounts Payable	Cleared	Check	-178.00
01/16/2015	01/31/2015	20674	JOHN COGBILL	Accounts Payable	Cleared	Check	-125.00
01/16/2015	01/31/2015	20675	JOHN D GANNON	Accounts Payable	Cleared	Check	-168.98
01/16/2015		20676	JOHN THOMPSON	Accounts Payable	Outstanding	Check	-178.00
01/16/2015	01/31/2015	20677	JON R CHEZEM	Accounts Payable	Cleared	Check	-50.00
01/16/2015	01/31/2015	20678	Jonathan & Laura Maxon	Accounts Payable	Cleared	Check	-125.00
01/16/2015	01/31/2015	20679	JONINA MEYERS	Accounts Payable	Cleared	Check	-178.00
01/16/2015	01/31/2015	20680	Jose Santos	Accounts Payable	Cleared	Check	-50.00
01/16/2015		20681	JOSEFINA BENITEZ	Accounts Payable	Outstanding	Check	-50.00
01/16/2015	01/31/2015	20682	JOSEPH J BABICH	Accounts Payable	Cleared	Check	-100.00
01/16/2015	01/31/2015	20683	JOYCE HAFERMAN	Accounts Payable	Cleared	Check	-500.00

EXHIBIT 7-B

Bank Transaction Report **Issued Date Range: 01/01/2015 - 01/31/2015 Cleared Date Range: -**

Issued Date	Cleared Date	Number	Description	Module	Status	Type	Amount
01/16/2015		20684	JUANA ENRIQUEZ	Accounts Payable	Outstanding	Check	-50.00
01/16/2015	01/31/2015	20685	JUDITH & ROBERT SALEEN	Accounts Payable	Cleared	Check	-88.00
01/16/2015	01/31/2015	20686	JUDITH RYAN	Accounts Payable	Cleared	Check	-125.00
01/16/2015	01/31/2015	20687	JUDY ISHIZUE	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20688	JUDY M PROUD	Accounts Payable	Outstanding	Check	-500.00
01/16/2015		20689	KAMLESH PARIKH	Accounts Payable	Outstanding	Check	-239.00
01/16/2015	01/31/2015	20690	Karen M. McKenzie	Accounts Payable	Cleared	Check	-125.00
01/16/2015	01/31/2015	20691	KAREN MCPHERSON	Accounts Payable	Cleared	Check	-484.20
01/16/2015	01/31/2015	20692	KARL W KUNZ	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20693	KATE STEVENS	Accounts Payable	Outstanding	Check	-50.00
01/16/2015	01/31/2015	20694	KATHLEEN FORE	Accounts Payable	Cleared	Check	-625.00
01/16/2015	01/31/2015	20695	KATHLEEN KLUETMEIER	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20696	KATHLEEN M DIMAGGIO	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20697	KELLY MCRAE	Accounts Payable	Outstanding	Check	-625.00
01/16/2015	01/31/2015	20698	Kenneth E. Riley	Accounts Payable	Cleared	Check	-378.00
01/16/2015		20699	Kenneth Hill	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20700	KENNETH T DELUCA	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20701	Kingdom Hall Maintenance c/o Owen Robinson	Accounts Payable	Outstanding	Check	-125.00
01/16/2015	01/31/2015	20702	KNIGHTS OF SAN CARLOS	Accounts Payable	Cleared	Check	-50.00
01/16/2015		20703	L. SUZANNE ROTH	Accounts Payable	Outstanding	Check	-500.00
01/16/2015		20704	LARRY LACHMAN	Accounts Payable	Outstanding	Check	-500.00
01/16/2015		20705	LAURA FAY	Accounts Payable	Outstanding	Check	-50.00
01/16/2015	01/31/2015	20706	LAURA HAYES	Accounts Payable	Cleared	Check	-449.99
01/16/2015	01/31/2015	20707	LAUREL A MOODY	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20708	LEONARDO TREVINO	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20709	LESLIE H COSTANZA	Accounts Payable	Cleared	Check	-399.00
01/16/2015	01/31/2015	20710	Lila Staples	Accounts Payable	Cleared	Check	-150.00
01/16/2015	01/31/2015	20711	LINDA S LAMB	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20712	LINDA THOMAS	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20713	LING CHOW	Accounts Payable	Cleared	Check	-50.00
01/16/2015	01/31/2015	20714	LISA WEIMAN	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20715	LORENE M KIMZEY	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20716	LOTTE MARCUS	Accounts Payable	Cleared	Check	-100.00
01/16/2015		20717	LOWELL & HILLERI KEELY	Accounts Payable	Outstanding	Check	-50.00
01/16/2015		20718	Lucille M. Zimmer-Tucker	Accounts Payable	Outstanding	Check	-200.00
01/16/2015	01/31/2015	20719	LUIS SANDOVAL	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20720	LUYUAN ZHAO	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20721	Lydia Villarreal	Accounts Payable	Cleared	Check	-2,026.00
01/16/2015	01/31/2015	20722	LYLA ENGLEHORN	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20723	Marc Los Huertos	Accounts Payable	Outstanding	Check	-2,175.00
01/16/2015		20724	MARCEL D MENDOZA	Accounts Payable	Outstanding	Check	-178.00
01/16/2015	01/31/2015	20725	MARCIA HARDY	Accounts Payable	Cleared	Check	-125.00
01/16/2015	01/31/2015	20726	MARGARITA HUNTER	Accounts Payable	Cleared	Check	-50.00

EXHIBIT 7-B

Bank Transaction Report **Issued Date Range: 01/01/2015 - 01/31/2015 Cleared Date Range: -**

Issued Date	Cleared Date	Number	Description	Module	Status	Type	Amount
01/16/2015	01/31/2015	20727	Maria Favaloro	Accounts Payable	Cleared	Check	-125.00
01/16/2015	01/31/2015	20728	MARIA K MILLER	Accounts Payable	Cleared	Check	-125.00
01/16/2015	01/31/2015	20729	Mariam Marshall	Accounts Payable	Cleared	Check	-125.00
01/16/2015	01/31/2015	20730	MARJORIE J SIEMSEN	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20731	MARK B PETERSON	Accounts Payable	Cleared	Check	-1,205.00
01/16/2015		20732	MARTHA BANKER	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20733	Martha Kostas	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20734	Mary Davis-Marks	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20735	Mary McAllister Julian	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20736	MARY O'DONNELL	Accounts Payable	Outstanding	Check	-675.00
01/16/2015	01/31/2015	20737	MARYAM GUITA IRANI	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20738	MATT LYONS	Accounts Payable	Cleared	Check	-1,350.00
01/16/2015	01/31/2015	20739	MATTHEW & JENNIFER MENKE	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20740	Matthew & Raeval Evans	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20741	Matthew Clark	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20742	MATTHEW D KELLEHER	Accounts Payable	Cleared	Check	-400.00
01/16/2015	01/31/2015	20743	MATTHEW WHITMAN	Accounts Payable	Cleared	Check	-100.00
01/16/2015	01/31/2015	20744	MAXIE L BOLES	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20745	MEDIALOCATE	Accounts Payable	Cleared	Check	-100.00
01/16/2015	01/31/2015	20746	MELISSA MANNIX	Accounts Payable	Cleared	Check	-125.00
01/16/2015		20747	MICHAEL MASCHMEYER	Accounts Payable	Outstanding	Check	-840.00
01/16/2015		20748	MICHAEL & CAROLE DAWSON	Accounts Payable	Outstanding	Check	-6,375.00
01/16/2015	01/31/2015	20749	MICHAEL & CRESCENDA ZUCCARO	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20750	MICHAEL & ELIZABETH MAURUTTO	Accounts Payable	Outstanding	Check	-500.00
01/16/2015		20751	MICHAEL A & JOAN H RETA	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20752	Michael Baker	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20753	MICHAEL BRUNO	Accounts Payable	Outstanding	Check	-50.00
01/16/2015	01/31/2015	20754	MICHAEL E CROFT	Accounts Payable	Cleared	Check	-88.00
01/16/2015	01/31/2015	20755	MICHAEL LAUCHLAN	Accounts Payable	Cleared	Check	-50.00
01/16/2015		20756	Michael Vane	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20757	MICHAELINE KEHRER	Accounts Payable	Cleared	Check	-98.00
01/16/2015		20758	MICHELLE RUDOLPH	Accounts Payable	Outstanding	Check	-500.00
01/16/2015		20759	MIGUEL GONZALEZ	Accounts Payable	Outstanding	Check	-407.05
01/16/2015		20760	Mildred Wade	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20761	Monterey County Fair	Accounts Payable	Cleared	Check	-7,271.36
01/16/2015	01/31/2015	20762	Nam Chann	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20763	NANCI A. SCHIPPER	Accounts Payable	Outstanding	Check	-500.00
01/16/2015		20764	NANCY H CHANG	Accounts Payable	Outstanding	Check	-100.00
01/16/2015	01/31/2015	20765	NANCY MCCREADY	Accounts Payable	Cleared	Check	-125.00
01/16/2015		20766	NANCY STOCKDALE	Accounts Payable	Outstanding	Check	-200.00
01/16/2015		20767	NANCY STOKES	Accounts Payable	Outstanding	Check	-500.00
01/16/2015		20768	Nathan Brown	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20769	NED B VAN ROEKEL	Accounts Payable	Cleared	Check	-500.00

EXHIBIT 7-B

Bank Transaction Report **Issued Date Range: 01/01/2015 - 01/31/2015 Cleared Date Range: -**

Issued Date	Cleared Date	Number	Description	Module	Status	Type	Amount
01/16/2015		20770	NEIL GABRIELSON & SHANNON OSTER-GABRIELSON	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20771	NOLAN FERREIRA	Accounts Payable	Cleared	Check	-567.00
01/16/2015	01/31/2015	20772	NORMAN LARSON	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20773	OLIN D STEWART	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20774	OLIVIA R MORGAN	Accounts Payable	Outstanding	Check	-125.00
01/16/2015	01/31/2015	20775	PAMELA GILLOOLY	Accounts Payable	Cleared	Check	-50.00
01/16/2015	01/31/2015	20776	PARAMOUNT PROPERTIES	Accounts Payable	Cleared	Check	-100.00
01/16/2015		20777	PATRICIA J HARDY	Accounts Payable	Outstanding	Check	-238.00
01/16/2015		20778	PATRICIA L BENSON	Accounts Payable	Outstanding	Check	-50.00
01/16/2015		20779	PATRICIA SANTINI	Accounts Payable	Outstanding	Check	-325.00
01/16/2015		20780	PATRICK & DENISE CALLINAN	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20781	PATRICK GODFREY	Accounts Payable	Cleared	Check	-125.00
01/16/2015	01/31/2015	20782	PATRICK WADE	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20783	PATRIK ZETTERLUND	Accounts Payable	Outstanding	Check	-500.00
01/16/2015		20784	PAUL J KASPARIAN	Accounts Payable	Outstanding	Check	-125.00
01/16/2015	01/31/2015	20785	PAUL MCANALLY	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20786	PAULA BROWNING	Accounts Payable	Cleared	Check	-50.00
01/16/2015	01/31/2015	20787	Paulette C. Tardio	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20788	Paulina Reid	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20789	PETER CHU	Accounts Payable	Cleared	Check	-100.00
01/16/2015	01/31/2015	20790	Philip Lin	Accounts Payable	Cleared	Check	-562.50
01/16/2015	01/31/2015	20791	PHILIP TUFFS	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20792	POK ORTIZ	Accounts Payable	Outstanding	Check	-500.00
01/16/2015		20793	Quality Inn Monterey	Accounts Payable	Outstanding	Check	-100.00
01/16/2015		20794	RACHEL HOLZ	Accounts Payable	Outstanding	Check	-200.00
01/16/2015		20795	RAVENDRA GIR	Accounts Payable	Outstanding	Check	-50.00
01/16/2015	01/31/2015	20796	REESE HODGES	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20797	REIKO KAGEYAMA	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20798	RENE ERBEN	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20799	REUBEN & TAMARA HARRIS	Accounts Payable	Outstanding	Check	-150.00
01/16/2015		20800	RIA CARLISLE	Accounts Payable	Outstanding	Check	-50.00
01/16/2015	01/31/2015	20801	RICHARD ZEVIN	Accounts Payable	Cleared	Check	-775.00
01/16/2015		20802	RICHARD & CATHERINE HAMBLEY	Accounts Payable	Outstanding	Check	-2,625.00
01/16/2015	01/31/2015	20803	RICHARD & JANICE ELSTER	Accounts Payable	Cleared	Check	-485.00
01/16/2015		20804	RICHARD DONE	Accounts Payable	Outstanding	Check	-50.00
01/16/2015	01/31/2015	20805	RICHARD E & ROSEMARY SPAWN	Accounts Payable	Cleared	Check	-498.00
01/16/2015	01/31/2015	20806	RICHARD MORRISS	Accounts Payable	Cleared	Check	-148.00
01/16/2015	01/31/2015	20807	RICHARD N DEGLIN	Accounts Payable	Cleared	Check	-125.00
01/16/2015	01/31/2015	20808	RICHARD RICHARDS	Accounts Payable	Cleared	Check	-200.00
01/16/2015	01/31/2015	20809	RICHARD SIQUIG	Accounts Payable	Cleared	Check	-200.00
01/16/2015	01/31/2015	20810	ROBERT SIERRA	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20811	ROBERT & CECELIA MALCOLM	Accounts Payable	Cleared	Check	-650.00
01/16/2015		20812	ROBERT A KOYAK	Accounts Payable	Outstanding	Check	-125.00

EXHIBIT 7-B

Bank Transaction Report **Issued Date Range: 01/01/2015 - 01/31/2015 Cleared Date Range: -**

Issued Date	Cleared Date	Number	Description	Module	Status	Type	Amount
01/16/2015	01/31/2015	20813	ROBERT BAYER	Accounts Payable	Cleared	Check	-50.00
01/16/2015		20814	ROBERT C THOMPSON	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20815	ROBERT G BAYER	Accounts Payable	Cleared	Check	-625.00
01/16/2015	01/31/2015	20816	ROBERT J PEGIS SR	Accounts Payable	Cleared	Check	-50.00
01/16/2015	01/31/2015	20817	ROBERT ORD	Accounts Payable	Cleared	Check	-125.00
01/16/2015	01/31/2015	20818	ROBERT REID	Accounts Payable	Cleared	Check	-125.00
01/16/2015	01/31/2015	20819	ROBERT SLATER	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20820	ROBERT VICKREY	Accounts Payable	Cleared	Check	-944.00
01/16/2015	01/31/2015	20821	ROBERTA PARISATTI	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20822	ROBIN ROBINSON	Accounts Payable	Cleared	Check	-125.00
01/16/2015	01/31/2015	20823	ROBIN PELC	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20824	Rod Goya	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20825	ROD MACKINLAY	Accounts Payable	Cleared	Check	-150.00
01/16/2015	01/31/2015	20826	ROD PARMLEY	Accounts Payable	Cleared	Check	-168.00
01/16/2015	01/31/2015	20827	RODNEY & ANN TRAMMELL	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20828	RODNEY C HAYES	Accounts Payable	Outstanding	Check	-50.00
01/16/2015		20829	Roger Janikula	Accounts Payable	Outstanding	Check	-50.00
01/16/2015	01/31/2015	20830	RON COSMERO	Accounts Payable	Cleared	Check	-125.00
01/16/2015		20831	RON HARDY	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20832	Rose Moreno	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20833	ROY YONEMURA	Accounts Payable	Cleared	Check	-403.20
01/16/2015		20834	RYAN BULICH	Accounts Payable	Outstanding	Check	-500.00
01/16/2015		20835	S GIORDONNA GRADIS	Accounts Payable	Outstanding	Check	-400.00
01/16/2015	01/31/2015	20836	SALLY STRUEVER	Accounts Payable	Cleared	Check	-125.00
01/16/2015	01/31/2015	20837	SAMUEL & SUSAN GARCIA	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20838	SAMUEL MELTON & AMY WILLIAMS	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20839	SAMUEL T REEVES	Accounts Payable	Cleared	Check	-150.00
01/16/2015	01/31/2015	20840	SARA LIU	Accounts Payable	Cleared	Check	-125.00
01/16/2015		20841	SCOTT KOMAR	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20842	SCOTT MORGAN	Accounts Payable	Cleared	Check	-125.00
01/16/2015	01/31/2015	20843	Sean Breslin	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20844	SPENCER ERIC BAILEY	Accounts Payable	Cleared	Check	-102.50
01/16/2015	01/31/2015	20845	ST JAMES PARISH	Accounts Payable	Cleared	Check	-400.00
01/16/2015		20846	Stanley Robbins	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20847	STEVE ROSSI	Accounts Payable	Cleared	Check	-1,453.13
01/16/2015	01/31/2015	20848	STEVE THOMAS	Accounts Payable	Cleared	Check	-100.00
01/16/2015	01/31/2015	20849	STEVEN M IBRAHIM	Accounts Payable	Cleared	Check	-50.00
01/16/2015	01/31/2015	20850	STEVEN PILNICK	Accounts Payable	Cleared	Check	-50.00
01/16/2015	01/31/2015	20851	STEVEN WILSON	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20852	STUART & KIM LARSON	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20853	SUNDAY P SPENCER	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20854	SUSAN BAXTER	Accounts Payable	Cleared	Check	-225.00
01/16/2015	01/31/2015	20855	Susan Murphy	Accounts Payable	Cleared	Check	-500.00

EXHIBIT 7-B

Bank Transaction Report **Issued Date Range: 01/01/2015 - 01/31/2015 Cleared Date Range: -**

Issued Date	Cleared Date	Number	Description	Module	Status	Type	Amount
01/16/2015		20856	SUSANNE CRICHTON	Accounts Payable	Outstanding	Check	-50.00
01/16/2015		20857	TAMMIE TIMMION	Accounts Payable	Outstanding	Check	-175.00
01/16/2015	01/31/2015	20858	Teresa Mack-Piccone	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20859	Terrence Pershall	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20860	TERRY DUFFY	Accounts Payable	Outstanding	Check	-186.00
01/16/2015	01/31/2015	20861	Thomas Bruneel	Accounts Payable	Cleared	Check	-200.00
01/16/2015		20862	THOMAS GERRITSEN	Accounts Payable	Outstanding	Check	-50.00
01/16/2015	01/31/2015	20863	Todd Weaver	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20864	TRACY MANZANO	Accounts Payable	Outstanding	Check	-500.00
01/16/2015		20865	TRAVIS H LONG	Accounts Payable	Outstanding	Check	-625.00
01/16/2015	01/31/2015	20866	TRENT HODGES	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20867	Upendra Mistry	Accounts Payable	Outstanding	Check	-550.00
01/16/2015		20868	UPENDRA MISTRY	Accounts Payable	Outstanding	Check	-50.00
01/16/2015		20869	VERA AUGUSTA JULIETTE FIERS	Accounts Payable	Outstanding	Check	-475.00
01/16/2015		20870	VICKI FRANK	Accounts Payable	Outstanding	Check	-125.00
01/16/2015	01/31/2015	20871	VICTOR JOHNSON	Accounts Payable	Cleared	Check	-500.00
01/16/2015	01/31/2015	20872	VILMA PERALTA	Accounts Payable	Cleared	Check	-200.00
01/16/2015	01/31/2015	20873	VIVIAN SALLY BLANKFIELD	Accounts Payable	Cleared	Check	-200.00
01/16/2015		20874	VOLKERT T & ELISABETH VOIGT	Accounts Payable	Outstanding	Check	-128.00
01/16/2015	01/31/2015	20875	W. William Baumgardt	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20876	WALTER KITAGAWA	Accounts Payable	Outstanding	Check	-100.00
01/16/2015	01/31/2015	20877	WANDA SKONBERG	Accounts Payable	Cleared	Check	-448.20
01/16/2015		20878	WENDY TYLER	Accounts Payable	Outstanding	Check	-125.00
01/16/2015	01/31/2015	20879	WESLEY WILLIAM DOLHUN & MARCELLA KINDRED-DOLHUN	Accounts Payable	Cleared	Check	-125.00
01/16/2015	01/31/2015	20880	WILLIAM MACE	Accounts Payable	Cleared	Check	-100.00
01/16/2015	01/31/2015	20881	WILLIAM & ANN MCELYEA	Accounts Payable	Cleared	Check	-125.00
01/16/2015		20882	WILLIAM EDWIN BOWEN	Accounts Payable	Outstanding	Check	-494.99
01/16/2015		20883	WILLIAM QUERFURTH	Accounts Payable	Outstanding	Check	-500.00
01/16/2015	01/31/2015	20884	XIAOPING YUN	Accounts Payable	Cleared	Check	-100.00
01/16/2015	01/31/2015	20885	YOSHIE HILL	Accounts Payable	Cleared	Check	-378.00
01/16/2015	01/31/2015	20886	YVETTE MA	Accounts Payable	Cleared	Check	-500.00
01/16/2015		20887	YVONNE REID	Accounts Payable	Outstanding	Check	-50.00
01/22/2015	01/31/2015	20888	MoCo Recorder	Accounts Payable	Cleared	Check	-61.00
01/22/2015	01/31/2015	20889	MoCo Recorder	Accounts Payable	Cleared	Check	-61.00
01/22/2015	01/31/2015	20890	MoCo Recorder	Accounts Payable	Cleared	Check	-61.00
01/22/2015	01/31/2015	20891	MoCo Recorder	Accounts Payable	Cleared	Check	-32.00
01/23/2015		20892	ACWA-JPIA	Accounts Payable	Outstanding	Check	-499.15
01/23/2015	01/31/2015	20893	AT & T	Accounts Payable	Cleared	Check	-70.94
01/23/2015		20894	AT & T	Accounts Payable	Outstanding	Check	-396.12
01/23/2015	01/31/2015	20895	AT & T	Accounts Payable	Cleared	Check	-88.31
01/23/2015	01/31/2015	20896	AT & T	Accounts Payable	Cleared	Check	-36.70
01/23/2015	01/31/2015	20897	AT & T	Accounts Payable	Cleared	Check	-1,493.36
01/23/2015	01/31/2015	20898	AT & T	Accounts Payable	Cleared	Check	-139.99

EXHIBIT 7-B

Bank Transaction Report **Issued Date Range: 01/01/2015 - 01/31/2015 Cleared Date Range: -**

Issued Date	Cleared Date	Number	Description	Module	Status	Type	Amount
01/23/2015	01/31/2015	20899	AT & T	Accounts Payable	Cleared	Check	-342.41
01/23/2015		20900	Bell, Andy	Accounts Payable	Outstanding	Check	-682.00
01/23/2015		20901	Cal-Am Water	Accounts Payable	Outstanding	Check	-205.06
01/23/2015	01/31/2015	20902	Christensen, Thomas	Accounts Payable	Cleared	Check	-350.00
01/23/2015		20903	Cofer, Delores	Accounts Payable	Outstanding	Check	-354.00
01/23/2015	01/31/2015	20904	Comcast	Accounts Payable	Cleared	Check	-191.29
01/23/2015	01/31/2015	20905	Employment Development Dept.	Accounts Payable	Cleared	Check	-3,874.32
01/23/2015	01/31/2015	20906	EWING	Accounts Payable	Cleared	Check	-50.00
01/23/2015		20907	Extra Space Storage	Accounts Payable	Outstanding	Check	-644.00
01/23/2015	01/31/2015	20908	Hydro Turf, Inc.	Accounts Payable	Cleared	Check	-7,267.31
01/23/2015		20909	ICMA	Accounts Payable	Outstanding	Check	-5,208.41
01/23/2015		20910	Laborers Trust Fund of Northern CA	Accounts Payable	Outstanding	Check	-24,472.00
01/23/2015		20911	Locke, Stephanie L.	Accounts Payable	Outstanding	Check	-639.66
01/23/2015		20912	MBAS	Accounts Payable	Outstanding	Check	-6,750.00
01/23/2015		20913	Monterey County Sheriff's Office	Accounts Payable	Outstanding	Check	-200.00
01/23/2015		20914	MRT Investment LTD	Accounts Payable	Outstanding	Check	-172.27
01/23/2015	01/31/2015	20915	Palace Office Supply	Accounts Payable	Cleared	Check	-114.10
01/23/2015	01/31/2015	20916	PG & E 3127875782-3	Accounts Payable	Cleared	Check	-348.90
01/23/2015	01/31/2015	20917	PG&E	Accounts Payable	Cleared	Check	-9.88
01/23/2015	01/31/2015	20918	PG&E	Accounts Payable	Cleared	Check	-4,606.34
01/23/2015	01/31/2015	20919	Prasad, Suresh	Accounts Payable	Cleared	Check	-275.83
01/23/2015		20920	Professional Liability Insurance Service	Accounts Payable	Outstanding	Check	-39.25
01/23/2015	01/31/2015	20921	Sentry Alarm Systems	Accounts Payable	Cleared	Check	-125.50
01/23/2015		20922	Smith-Root, Inc.	Accounts Payable	Outstanding	Check	-294.30
01/23/2015		20923	Standard Insurance Company	Accounts Payable	Outstanding	Check	-945.32
01/23/2015		20924	Standard Insurance Company	Accounts Payable	Outstanding	Check	-348.28
01/23/2015	01/31/2015	20925	Tavani, Arlene	Accounts Payable	Cleared	Check	-307.79
01/23/2015	01/31/2015	20926	Thomas Brand Consulting, LLC	Accounts Payable	Cleared	Check	-1,841.63
01/23/2015	01/31/2015	20927	Universal Staffing Inc.	Accounts Payable	Cleared	Check	-1,622.40
01/23/2015	01/31/2015	20928	Urquhart, Kevan	Accounts Payable	Cleared	Check	-450.44
01/23/2015		20929	Yolanda Munoz	Accounts Payable	Outstanding	Check	-540.00
01/26/2015	01/31/2015	20930	MoCo Recorder	Accounts Payable	Cleared	Check	-61.00
01/29/2015		20931	MoCo Recorder	Accounts Payable	Outstanding	Check	-26.00
01/29/2015		20932	MoCo Recorder	Accounts Payable	Outstanding	Check	-29.00
01/29/2015		20933	MoCo Recorder	Accounts Payable	Outstanding	Check	-14.00
01/29/2015		20934	MoCo Recorder	Accounts Payable	Outstanding	Check	-61.00
01/29/2015		20935	MoCo Recorder	Accounts Payable	Outstanding	Check	-14.00
01/29/2015		20936	MoCo Recorder	Accounts Payable	Outstanding	Check	-35.00
01/29/2015		20937	MoCo Recorder	Accounts Payable	Outstanding	Check	-64.00
01/29/2015		20938	MoCo Recorder	Accounts Payable	Outstanding	Check	-29.00
01/29/2015		20939	MoCo Recorder	Accounts Payable	Outstanding	Check	-61.00
01/29/2015		20940	MoCo Recorder	Accounts Payable	Outstanding	Check	-29.00
01/29/2015		20941	MoCo Recorder	Accounts Payable	Outstanding	Check	-61.00

EXHIBIT 7-B

Bank Transaction Report **Issued Date Range: 01/01/2015 - 01/31/2015** **Cleared Date Range: -**

Issued Date	Cleared Date	Number	Description	Module	Status	Type	Amount
01/29/2015		20942	MoCo Recorder	Accounts Payable	Outstanding	Check	-26.00
						Bank Account 111 Total: (553)	**-442,247.60**
						Report Total: (553)	**-442,247.60**

EXHIBIT 7-B

Bank Transaction Report **Issued Date Range: 01/01/2015 - 01/31/2015** **Cleared Date Range: -**

Summary

Bank Account	Count	Amount
111 Bank of America Checking	553	-442,247.60
Report Total:	**553**	**-442,247.60**

Cash Account	Count	Amount
99 99-10-100100 Pool Cash Account	553	-442,247.60
Report Total:	**553**	**-442,247.60**

Transaction Type	Count	Amount
Check	549	-442,549.60
Check Reversal	4	302.00
Report Total:	**553**	**-442,247.60**

EXHIBIT 7-C

Payroll Bank Transaction Report

Monterey Peninsula Water Mgmt District

By Payment Number

Date: 1/1/2015 - 1/31/2015

Payroll Set: 01 - Monterey Peninsula Water Management District

Payment Number	Payment Date	Payment Type	Employee Number	Employee Name	Check Amount	Direct Deposit Amount	Total Payment
1231	01/09/2015	Regular	1024	Stoldt, David J	0.00	5,792.07	5,792.07
1232	01/09/2015	Regular	1025	Tavani, Arlene M	0.00	1,896.27	1,896.27
1233	01/09/2015	Regular	1006	Dudley, Mark A	0.00	2,889.83	2,889.83
1234	01/09/2015	Regular	1039	Flores, Elizabeth	0.00	1,786.39	1,786.39
1235	01/09/2015	Regular	1018	Prasad, Suresh	0.00	3,320.33	3,320.33
1236	01/09/2015	Regular	1019	Reyes, Sara C	0.00	1,833.61	1,833.61
1237	01/09/2015	Regular	1020	Sandoval, Eric J	0.00	1,912.04	1,912.04
1238	01/09/2015	Regular	1021	Schmidlin, Cynthia L	0.00	1,810.23	1,810.23
1239	01/09/2015	Regular	1022	Soto, Paula	0.00	1,419.93	1,419.93
1240	01/09/2015	Regular	1002	Bekker, Mark	0.00	1,625.81	1,625.81
1241	01/09/2015	Regular	1005	Christensen, Thomas T	0.00	2,559.21	2,559.21
1242	01/09/2015	Regular	1008	Hampson, Larry M	0.00	3,081.41	3,081.41
1243	01/09/2015	Regular	1013	Lyons, Matthew J	0.00	1,644.90	1,644.90
1244	01/09/2015	Regular	6029	Snyder, Alexander G.	0.00	182.85	182.85
1245	01/09/2015	Regular	1023	Stern, Henrietta L	0.00	2,163.90	2,163.90
1246	01/09/2015	Regular	6028	Atkins, Daniel N.	0.00	315.37	315.37
1247	01/09/2015	Regular	1004	Chaney, Beverly M	0.00	2,362.74	2,362.74
1248	01/09/2015	Regular	6010	Gonnerman, Maryan C	0.00	217.95	217.95
1249	01/09/2015	Regular	1007	Hamilton, Cory R	0.00	2,036.80	2,036.80
1250	01/09/2015	Regular	1009	James, Gregory W	0.00	2,937.06	2,937.06
1251	01/09/2015	Regular	1011	Lear, Jonathan P	0.00	2,736.98	2,736.98
1252	01/09/2015	Regular	1012	Lindberg, Thomas L	0.00	2,168.12	2,168.12
1253	01/09/2015	Regular	1016	Oliver, Joseph W	0.00	2,655.43	2,655.43
1254	01/09/2015	Regular	1026	Urquhart, Kevan A	0.00	2,149.59	2,149.59
1255	01/09/2015	Regular	1001	Ayala, Gabriela D	0.00	1,665.47	1,665.47
1256	01/09/2015	Regular	1003	Boles, Michael T	0.00	938.55	938.55
1257	01/09/2015	Regular	1010	Kister, Stephanie L	0.00	1,805.72	1,805.72
1258	01/09/2015	Regular	1017	Locke, Stephanie L	0.00	2,733.36	2,733.36
1259	01/09/2015	Regular	1014	Martin, Debra S	0.00	1,748.66	1,748.66
1260	01/23/2015	Regular	1024	Stoldt, David J	0.00	5,808.32	5,808.32
1261	01/23/2015	Regular	1025	Tavani, Arlene M	0.00	1,897.23	1,897.23
1262	01/23/2015	Regular	1006	Dudley, Mark A	0.00	2,896.06	2,896.06
1263	01/23/2015	Regular	1039	Flores, Elizabeth	0.00	1,755.80	1,755.80
1264	01/23/2015	Regular	1018	Prasad, Suresh	0.00	3,629.21	3,629.21
1265	01/23/2015	Regular	1019	Reyes, Sara C	0.00	1,837.54	1,837.54
1266	01/23/2015	Regular	1020	Sandoval, Eric J	0.00	2,129.43	2,129.43
1267	01/23/2015	Regular	1021	Schmidlin, Cynthia L	0.00	1,963.14	1,963.14
1268	01/23/2015	Regular	1022	Soto, Paula	0.00	1,290.23	1,290.23
1269	01/23/2015	Regular	1002	Bekker, Mark	0.00	1,641.92	1,641.92
1270	01/23/2015	Regular	1005	Christensen, Thomas T	0.00	2,560.08	2,560.08
1271	01/23/2015	Regular	1008	Hampson, Larry M	0.00	3,092.06	3,092.06
1272	01/23/2015	Regular	1013	Lyons, Matthew J	0.00	1,650.13	1,650.13
1273	01/23/2015	Regular	6029	Snyder, Alexander G.	0.00	399.69	399.69
1274	01/23/2015	Regular	1023	Stern, Henrietta L	0.00	2,140.97	2,140.97
1275	01/23/2015	Regular	6028	Atkins, Daniel N.	0.00	547.50	547.50
1276	01/23/2015	Regular	1004	Chaney, Beverly M	0.00	2,266.89	2,266.89
1277	01/23/2015	Regular	6010	Gonnerman, Maryan C	0.00	81.73	81.73
1278	01/23/2015	Regular	6001	Gwinn, Abigail E	0.00	13.63	13.63
1279	01/23/2015	Regular	1007	Hamilton, Cory R	0.00	2,042.86	2,042.86
1280	01/23/2015	Regular	1009	James, Gregory W	0.00	2,943.56	2,943.56
1281	01/23/2015	Regular	1011	Lear, Jonathan P	0.00	2,744.20	2,744.20
1282	01/23/2015	Regular	1012	Lindberg, Thomas L	0.00	2,165.94	2,165.94
1283	01/23/2015	Regular	1016	Oliver, Joseph W	0.00	2,596.01	2,596.01
1284	01/23/2015	Regular	1026	Urquhart, Kevan A	0.00	2,130.71	2,130.71
1285	01/23/2015	Regular	1001	Ayala, Gabriela D	0.00	1,657.36	1,657.36
1286	01/23/2015	Regular	1003	Boles, Michael T	0.00	1,778.98	1,778.98
1287	01/23/2015	Regular	1010	Kister, Stephanie L	0.00	1,748.46	1,748.46

Payment Employee Direct Deposit

EXHIBIT 7-C

Number	Payment Date	Payment Type	Number	Employee Name	Check Amount	Amount	Total Payment
1288	01/23/2015	Regular	1017	Locke, Stephanie L	0.00	2,663.42	2,663.42
1289	01/23/2015	Regular	1014	Martin, Debra S	0.00	1,656.72	1,656.72
20432	01/08/2015	Regular	7006	Brower, Sr., Robert S	203.17	0.00	203.17
20433	01/08/2015	Regular	7007	Byrne, Jeannie	203.17	0.00	203.17
20434	01/08/2015	Regular	7013	Clarke, Andrew	254.25	0.00	254.25
20435	01/08/2015	Regular	7003	Lewis, Brenda	386.19	0.00	386.19
20436	01/08/2015	Regular	7005	Markey, Kristina A	203.17	0.00	203.17
20437	01/08/2015	Regular	7001	Pendergrass, David K	203.17	0.00	203.17
20438	01/08/2015	Regular	7004	Potter, David L	101.58	0.00	101.58
						Total	**123,675.06**

EXHIBIT 7-D

Bank Transaction Report

Monterey Peninsula Water Mgmt District

Transaction Detail

Issued Date Range: 01/01/2015 - 01/31/2015

Cleared Date Range: -

Issued Date	Cleared Date	Number	Description	Module	Status	Type	Amount
Bank Account: 111 - Bank of America Checking							
01/08/2015	01/31/2015	DFT0000533	I.R.S.	Accounts Payable	Cleared	Bank Draft	-70.65
01/08/2015	01/31/2015	DFT0000534	I.R.S.	Accounts Payable	Cleared	Bank Draft	-51.06
01/08/2015	01/31/2015	DFT0000535	I.R.S.	Accounts Payable	Cleared	Bank Draft	-218.24
01/09/2015	01/31/2015	DFT0000530	I.R.S.	Accounts Payable	Cleared	Bank Draft	-10,156.68
01/09/2015	01/31/2015	DFT0000531	I.R.S.	Accounts Payable	Cleared	Bank Draft	-2,073.20
01/09/2015	01/31/2015	DFT0000532	I.R.S.	Accounts Payable	Cleared	Bank Draft	-97.72
01/15/2015	01/31/2015	SVC0000045	Jan/15 Bank Charge	General Ledger	Cleared	Service Charge	-295.13
01/23/2015	01/31/2015	DFT0000537	I.R.S.	Accounts Payable	Cleared	Bank Draft	-10,313.39
01/23/2015	01/31/2015	DFT0000538	I.R.S.	Accounts Payable	Cleared	Bank Draft	-2,125.02
01/23/2015	01/31/2015	DFT0000539	I.R.S.	Accounts Payable	Cleared	Bank Draft	-146.58
						Bank Account 111 Total: (10)	**-25,547.67**
						Report Total: (10)	**-25,547.67**

EXHIBIT 7-D

Bank Transaction Report **Issued Date Range: 01/01/2015 - 01/31/2015** **Cleared Date Range: -**

Summary

Bank Account		Count	Amount
111 Bank of America Checking		10	-25,547.67
	Report Total:	**10**	**-25,547.67**

Cash Account		Count	Amount
99 99-10-100100 Pool Cash Account		10	-25,547.67
	Report Total:	**10**	**-25,547.67**

Transaction Type	Count	Amount
Bank Draft	9	-25,252.54
Service Charge	1	-295.13
Report Total:	**10**	**-25,547.67**

EXHIBIT 7-E

Statement of Revenue Over Expense - No Decimals

Monterey Peninsula Water Mgmt District

Group Summary

For Fiscal: 2014-2015 Period Ending: 01/31/2015

Level…	January Activity	January Budget	Variance Favorable (Unfavorable)	Percent Used	YTD Activity	Total Budget	Variance Favorable (Unfavorable)	Percent Used
Revenue								
R100 - Water Supply Charge	0	283,220	-283,220	0.00 %	2,024,551	3,400,000	-1,375,449	-59.55 %
R110 - Mitigation Revenue	157,300	165,101	-7,801	-95.28 %	629,200	1,982,000	-1,352,800	-31.75 %
R120 - Property Taxes Revenues	0	124,950	-124,950	0.00 %	887,592	1,500,000	-612,408	-59.17 %
R130 - User Fees	3,545	6,248	-2,702	-56.74 %	30,553	75,000	-44,447	-40.74 %
R140 - Connection Charges	-32,061	14,578	-46,639	219.94 %	50,927	175,000	-124,073	-29.10 %
R150 - Permit Processing Fee	8,177	14,578	-6,401	-56.09 %	84,640	175,000	-90,360	-48.37 %
R160 - Well Registration Fee	25	0	25	0.00 %	1,750	0	1,750	0.00 %
R190 - WDS Permits Rule 21	4,889	4,665	224	-104.81 %	26,273	56,000	-29,727	-46.92 %
R200 - Recording Fees	599	666	-67	-89.89 %	6,143	8,000	-1,857	-76.79 %
R210 - Legal Fees	114	1,250	-1,136	-9.12 %	1,269	15,000	-13,731	-8.46 %
R220 - Copy Fee	0	0	0	0.00 %	70	0	70	0.00 %
R230 - Miscellaneous - Other	1,908	1,250	659	-152.72 %	2,550	15,000	-12,450	-17.00 %
R240 - Insurance Refunds	0	0	0	0.00 %	6,329	0	6,329	0.00 %
R250 - Interest Income	2,203	1,249	953	-176.28 %	8,340	15,000	-6,660	-55.60 %
R260 - CAW - ASR	22,318	39,393	-17,074	-56.66 %	136,593	472,900	-336,307	-28.88 %
R270 - CAW - Rebates	74,299	58,310	15,989	-127.42 %	850,563	700,000	150,563	-121.51 %
R280 - CAW - Conservation	0	29,422	-29,422	0.00 %	0	353,200	-353,200	0.00 %
R290 - CAW - Miscellaneous	0	583	-583	0.00 %	0	7,000	-7,000	0.00 %
R300 - Watermaster	0	5,748	-5,748	0.00 %	0	69,000	-69,000	0.00 %
R310 - Other Reimbursements	0	2,832	-2,832	0.00 %	0	34,000	-34,000	0.00 %
R320 - Grants	345,830	51,479	294,351	-671.78 %	350,533	618,000	-267,467	-56.72 %
R500 - Capital Equipment Reserve	0	7,322	-7,322	0.00 %	0	87,900	-87,900	0.00 %
R520 - Flood/Drought Reserve	0	3,332	-3,332	0.00 %	0	40,000	-40,000	0.00 %
R600 - Water Supply Charge Carry Forward	0	94,795	-94,795	0.00 %	0	1,138,000	-1,138,000	0.00 %
Total Revenue:	**589,147**	**910,969**	**-321,822**	**-64.67 %**	**5,097,877**	**10,936,000**	**-5,838,123**	**-46.62 %**

EXHIBIT 7-E

Statement of Revenue Over Expense - No Decimals **For Fiscal: 2014-2015 Period Ending: 01/31/2015**

Level…	January Activity	January Budget	Variance Favorable (Unfavorable)	Percent Used	YTD Activity	Total Budget	Variance Favorable (Unfavorable)	Percent Used
Expense								
Level1: 100 - Personnel Costs								
1100 - Salaries & Wages	171,841	188,375	16,534	91.22 %	1,277,393	2,261,400	984,007	56.49 %
1110 - Manager's Auto Allowance	462	400	-62	115.43 %	2,908	4,800	1,892	60.58 %
1120 - Manager's Deferred Comp	600	583	-17	102.90 %	4,131	7,000	2,869	59.01 %
1130 - Unemployment Compensation	0	250	250	0.00 %	0	3,000	3,000	0.00 %
1140 - Insurance Opt-Out Supplemental	1,473	0	-1,473	0.00 %	9,327	0	-9,327	0.00 %
1150 - Temporary Personnel	2,434	3,399	965	71.61 %	22,134	40,800	18,666	54.25 %
1160 - PERS Retirement	30,995	32,937	1,942	94.10 %	239,332	395,400	156,068	60.53 %
1170 - Medical Insurance	23,372	32,554	9,182	71.80 %	167,630	390,800	223,170	42.89 %
1180 - Medical Insurance - Retirees	4,191	0	-4,191	0.00 %	34,385	0	-34,385	0.00 %
1190 - Workers Compensation	3,000	3,274	274	91.63 %	23,488	39,300	15,813	59.76 %
1200 - Life Insurance	418	0	-418	0.00 %	3,022	0	-3,022	0.00 %
1210 - Long Term Disability Insurance	945	0	-945	0.00 %	6,623	0	-6,623	0.00 %
1220 - Short Term Disability Insurance	172	0	-172	0.00 %	1,217	0	-1,217	0.00 %
1230 - Other Benefits	154	0	-154	0.00 %	1,080	0	-1,080	0.00 %
1260 - Employee Assistance Program	66	0	-66	0.00 %	460	0	-460	0.00 %
1270 - FICA Tax Expense	231	0	-231	0.00 %	2,377	0	-2,377	0.00 %
1280 - Medicare Tax Expense	2,125	2,299	174	92.41 %	16,658	27,600	10,942	60.36 %
1290 - Staff Development & Training	78	2,557	2,479	3.05 %	1,918	30,700	28,782	6.25 %
1300 - Conference Registration	0	0	0	0.00 %	3,070	0	-3,070	0.00 %
1310 - Professional Dues	692	0	-692	0.00 %	1,365	0	-1,365	0.00 %
1320 - Personnel Recruitment	-152	150	302	-101.56 %	1,581	1,800	219	87.83 %
Total Level1: 100 - Personnel Costs:	**243,095**	**266,777**	**23,681**	**91.12 %**	**1,820,098**	**3,202,600**	**1,382,502**	**56.83 %**
Level1: 200 - Supplies and Services								
2100 - Board Member Compensation	1,760	3,082	1,322	57.10 %	15,950	37,000	21,050	43.11 %
2110 - Board Expenses	810	375	-435	216.09 %	1,495	4,500	3,005	33.22 %
2120 - Insurance Expense	3,445	3,749	303	91.91 %	25,183	45,000	19,817	55.96 %
2130 - Membership Dues	2,650	2,499	-151	106.04 %	23,673	30,000	6,327	78.91 %
2135 - Public Outreach	300	0	-300	0.00 %	2,149	0	-2,149	0.00 %
2140 - Bank Charges	380	292	-88	130.26 %	2,399	3,500	1,101	68.56 %
2150 - Office Supplies	3,148	2,641	-507	119.20 %	19,958	31,700	11,742	62.96 %
2160 - Meeting Expenses	40	675	635	5.93 %	1,223	8,100	6,877	15.10 %
2170 - Printing/Photocopy	0	1,983	1,983	0.00 %	1,436	23,800	22,364	6.04 %
2180 - Miscellaneous Expenses	0	625	625	0.00 %	2,600	7,500	4,900	34.67 %
2190 - IT Supplies/Services	5,723	7,205	1,482	79.43 %	49,341	86,500	37,159	57.04 %
2200 - Professional Fees	6,600	9,979	3,379	66.14 %	83,750	119,800	36,050	69.91 %
2210 - Legal	705	33,320	32,615	2.12 %	166,842	400,000	233,158	41.71 %
2220 - Legal Notices	0	358	358	0.00 %	231	4,300	4,069	5.36 %
2230 - Rent	1,689	1,741	52	97.01 %	11,823	20,900	9,077	56.57 %
2235 - Equipment Lease	2,522	1,416	-1,106	178.08 %	8,398	17,000	8,602	49.40 %
2240 - Telephone	4,187	2,782	-1,405	150.48 %	28,583	33,400	4,817	85.58 %

EXHIBIT 7-E

Statement of Revenue Over Expense - No Decimals **For Fiscal: 2014-2015 Period Ending: 01/31/2015**

Level…	January Activity	January Budget	Variance Favorable (Unfavorable)	Percent Used	YTD Activity	Total Budget	Variance Favorable (Unfavorable)	Percent Used
2250 - Utilities	2,722	2,940	218	92.57 %	28,195	35,300	7,105	79.87 %
2260 - Facility Maintenance	951	2,874	1,923	33.08 %	17,784	34,500	16,716	51.55 %
2270 - Travel Expenses	2,738	1,916	-822	142.91 %	11,497	23,000	11,503	49.99 %
2280 - Transportation	1,736	2,582	847	67.22 %	13,400	31,000	17,600	43.23 %
2900 - Operating Supplies	799	1,799	1,000	44.43 %	10,859	21,600	10,741	50.27 %
Total Level1: 200 - Supplies and Services:	**42,905**	**84,833**	**41,928**	**50.58 %**	**526,770**	**1,018,400**	**491,630**	**51.73 %**
Level1: 300 - Other Expenses								
3000 - Project Expenses	1,302,640	517,376	-785,264	251.78 %	3,071,492	6,211,000	3,139,508	49.45 %
4000 - Fixed Asset Purchases	0	16,577	16,577	0.00 %	43,067	199,000	155,933	21.64 %
5000 - Debt Service	6,073	19,159	13,086	31.70 %	77,544	230,000	152,456	33.71 %
6000 - Contingencies	0	6,247	6,247	0.00 %	0	75,000	75,000	0.00 %
Total Level1: 300 - Other Expenses:	**1,308,713**	**559,359**	**-749,353**	**233.97 %**	**3,192,103**	**6,715,000**	**3,522,897**	**47.54 %**
Total Expense:	**1,594,713**	**910,969**	**-683,744**	**175.06 %**	**5,538,971**	**10,936,000**	**5,397,029**	**50.65 %**
Report Total:	**-1,005,566**	**0**	**-1,005,566**		**-441,094**	**0**	**-441,094**	

EXHIBIT 7-E

Statement of Revenue Over Expense - No Decimals **For Fiscal: 2014-2015 Period Ending: 01/31/2015**

Fund Summary

Fund	January Activity	January Budget	Variance Favorable (Unfavorable)	Percent Used	YTD Activity	Total Budget	Variance Favorable (Unfavorable)	Percent Used
24 - MITIGATION FUND	255,838	0	255,838		-362,911	0	-362,911	
26 - CONSERVATION FUND	-158,994	0	-158,994		-329,507	0	-329,507	
35 - WATER SUPPLY FUND	-1,102,410	0	-1,102,410		251,324	0	251,324	
Report Total:	**-1,005,566**	**0.07**	**-1,005,566**		**-441,094**	**0**	**-441,094**	

EXHIBIT 7-E

Statement of Revenue Over Expense - No Decimals

Monterey Peninsula Water Mgmt District

Group Summary

For Fiscal: 2014-2015 Period Ending: 01/31/2015

Level...		January Activity	January Budget	Variance Favorable (Unfavorable)	Percent Used	YTD Activity	Total Budget	Variance Favorable (Unfavorable)	Percent Used
Fund: 24 - MITIGATION FUND									
Revenue									
R110 - Mitigation Revenue		157,300	165,101	-7,801	-95.28 %	629,200	1,982,000	-1,352,800	-31.75 %
R120 - Property Taxes Revenues		0	4,761	-4,761	0.00 %	29,083	57,150	-28,067	-50.89 %
R130 - User Fees		2,993	6,248	-3,255	-47.90 %	25,793	75,000	-49,207	-34.39 %
R160 - Well Registration Fee		25	0	25	0.00 %	1,750	0	1,750	0.00 %
R190 - WDS Permits Rule 21		4,889	4,665	224	-104.81 %	26,273	56,000	-29,727	-46.92 %
R230 - Miscellaneous - Other		0	1,250	-1,250	0.00 %	0	15,000	-15,000	0.00 %
R250 - Interest Income		385	537	-152	-71.65 %	1,603	6,450	-4,847	-24.86 %
R290 - CAW - Miscellaneous		0	583	-583	0.00 %	0	7,000	-7,000	0.00 %
R310 - Other Reimbursements		0	1,708	-1,708	0.00 %	0	20,500	-20,500	0.00 %
R320 - Grants		345,830	51,479	294,351	-671.78 %	346,613	618,000	-271,387	-56.09 %
R500 - Capital Equipment Reserve		0	3,582	-3,582	0.00 %	0	43,000	-43,000	0.00 %
	Total Revenue:	**511,422**	**239,912**	**271,510**	**-213.17 %**	**1,060,316**	**2,880,100**	**-1,819,784**	**-36.82 %**

EXHIBIT 7-E

Statement of Revenue Over Expense - No Decimals **For Fiscal: 2014-2015 Period Ending: 01/31/2015**

Level...	January Activity	January Budget	Variance Favorable (Unfavorable)	Percent Used	YTD Activity	Total Budget	Variance Favorable (Unfavorable)	Percent Used
Expense								
Level1: 100 - Personnel Costs								
1100 - Salaries & Wages	74,215	79,951	5,736	92.83 %	539,230	959,800	420,570	56.18 %
1110 - Manager's Auto Allowance	92	79	-13	116.64 %	581	950	369	61.21 %
1120 - Manager's Deferred Comp	120	117	-3	102.90 %	826	1,400	574	59.01 %
1130 - Unemployment Compensation	0	100	100	0.00 %	0	1,200	1,200	0.00 %
1140 - Insurance Opt-Out Supplemental	390	0	-390	0.00 %	2,360	0	-2,360	0.00 %
1150 - Temporary Personnel	0	37	37	0.00 %	0	450	450	0.00 %
1160 - PERS Retirement	13,443	14,028	585	95.83 %	101,511	168,400	66,889	60.28 %
1170 - Medical Insurance	10,565	14,119	3,554	74.83 %	73,956	169,500	95,544	43.63 %
1180 - Medical Insurance - Retirees	1,802	0	-1,802	0.00 %	16,888	0	-16,888	0.00 %
1190 - Workers Compensation	1,847	1,958	111	94.34 %	14,504	23,500	8,996	61.72 %
1200 - Life Insurance	180	0	-180	0.00 %	1,292	0	-1,292	0.00 %
1210 - Long Term Disability Insurance	420	0	-420	0.00 %	2,941	0	-2,941	0.00 %
1220 - Short Term Disability Insurance	77	0	-77	0.00 %	534	0	-534	0.00 %
1230 - Other Benefits	51	0	-51	0.00 %	356	0	-356	0.00 %
1260 - Employee Assistance Program	29	0	-29	0.00 %	197	0	-197	0.00 %
1270 - FICA Tax Expense	169	0	-169	0.00 %	1,813	0	-1,813	0.00 %
1280 - Medicare Tax Expense	959	1,008	49	95.12 %	7,375	12,100	4,725	60.95 %
1290 - Staff Development & Training	78	1,100	1,022	7.09 %	1,115	13,200	12,085	8.45 %
1300 - Conference Registration	0	0	0	0.00 %	1,191	0	-1,191	0.00 %
1310 - Professional Dues	298	0	-298	0.00 %	552	0	-552	0.00 %
1320 - Personnel Recruitment	-65	58	124	-112.30 %	680	700	20	97.12 %
Total Level1: 100 - Personnel Costs:	**104,669**	**112,555**	**7,886**	**92.99 %**	**767,904**	**1,351,200**	**583,296**	**56.83 %**
Level1: 200 - Supplies and Services								
2100 - Board Member Compensation	757	1,324	568	57.14 %	6,859	15,900	9,042	43.14 %
2110 - Board Expenses	348	158	-190	220.07 %	793	1,900	1,107	41.73 %
2120 - Insurance Expense	1,482	1,608	126	92.15 %	11,417	19,300	7,883	59.16 %
2130 - Membership Dues	280	1,075	795	26.01 %	9,441	12,900	3,459	73.18 %
2135 - Public Outreach	129	0	-129	0.00 %	945	0	-945	0.00 %
2140 - Bank Charges	127	125	-2	101.56 %	840	1,500	660	56.00 %
2150 - Office Supplies	1,354	1,141	-212	118.60 %	8,822	13,700	4,878	64.40 %
2160 - Meeting Expenses	17	292	274	5.90 %	522	3,500	2,978	14.93 %
2170 - Printing/Photocopy	0	850	850	0.00 %	618	10,200	9,582	6.06 %
2180 - Miscellaneous Expenses	0	267	267	0.00 %	1,118	3,200	2,082	34.94 %
2190 - IT Supplies/Services	2,461	3,099	638	79.42 %	21,179	37,200	16,021	56.93 %
2200 - Professional Fees	2,838	4,290	1,452	66.15 %	36,013	51,500	15,488	69.93 %
2210 - Legal	0	7,497	7,497	0.00 %	31,617	90,000	58,383	35.13 %
2220 - Legal Notices	0	158	158	0.00 %	99	1,900	1,801	5.22 %
2230 - Rent	799	750	-50	106.63 %	5,596	9,000	3,404	62.18 %
2235 - Equipment Lease	1,084	608	-476	178.33 %	3,611	7,300	3,689	49.47 %
2240 - Telephone	1,858	1,200	-659	154.91 %	12,852	14,400	1,548	89.25 %

EXHIBIT 7-E

Statement of Revenue Over Expense - No Decimals **For Fiscal: 2014-2015 Period Ending: 01/31/2015**

Level…	January Activity	January Budget	Variance Favorable (Unfavorable)	Percent Used	YTD Activity	Total Budget	Variance Favorable (Unfavorable)	Percent Used
2250 - Utilities	1,185	1,266	81	93.59 %	12,212	15,200	2,988	80.34 %
2260 - Facility Maintenance	409	1,233	824	33.16 %	7,801	14,800	6,999	52.71 %
2270 - Travel Expenses	1,110	825	-285	134.56 %	3,548	9,900	6,352	35.84 %
2280 - Transportation	1,504	1,116	-388	134.76 %	8,420	13,400	4,980	62.84 %
2900 - Operating Supplies	260	775	515	33.52 %	1,057	9,300	8,243	11.37 %
Total Level1: 200 - Supplies and Services:	**18,001**	**29,655**	**11,654**	**60.70 %**	**185,380**	**356,000**	**170,620**	**52.07 %**
Level1: 300 - Other Expenses								
3000 - Project Expenses	132,914	87,507	-45,407	151.89 %	451,328	1,050,500	599,172	42.96 %
4000 - Fixed Asset Purchases	0	7,476	7,476	0.00 %	18,614	89,750	71,136	20.74 %
6000 - Contingencies	0	2,720	2,720	0.00 %	0	32,650	32,650	0.00 %
Total Level1: 300 - Other Expenses:	**132,914**	**97,703**	**-35,211**	**136.04 %**	**469,942**	**1,172,900**	**702,958**	**40.07 %**
Total Expense:	**255,584**	**239,912**	**-15,672**	**106.53 %**	**1,423,227**	**2,880,100**	**1,456,873**	**49.42 %**
Total Revenues	**511,421.82**	**239,912**	**271,510**	**-213.17 %**	**1,060,315.79**	**2,880,100**	**-1,819,784**	**-36.82 %**
Total Fund: 24 - MITIGATION FUND:	**255,838**	**0**	**255,838**		**-362,911**	**0**	**-362,911**	

EXHIBIT 7-E

Statement of Revenue Over Expense - No Decimals **For Fiscal: 2014-2015 Period Ending: 01/31/2015**

Level…	January Activity	January Budget	Variance Favorable (Unfavorable)	Percent Used	YTD Activity	Total Budget	Variance Favorable (Unfavorable)	Percent Used
Fund: 26 - CONSERVATION FUND								
Revenue								
R120 - Property Taxes Revenues	0	72,421	-72,421	0.00 %	519,182	869,400	-350,218	-59.72 %
R130 - User Fees	552	0	552	0.00 %	4,760	0	4,760	0.00 %
R140 - Connection Charges	0	0	0	0.00 %	1,239	0	1,239	0.00 %
R150 - Permit Processing Fee	8,177	14,578	-6,401	-56.09 %	84,640	175,000	-90,360	-48.37 %
R200 - Recording Fees	599	666	-67	-89.89 %	6,143	8,000	-1,857	-76.79 %
R210 - Legal Fees	114	1,250	-1,136	-9.12 %	1,269	15,000	-13,731	-8.46 %
R230 - Miscellaneous - Other	0	0	0	0.00 %	300	0	300	0.00 %
R250 - Interest Income	282	337	-55	-83.58 %	1,086	4,050	-2,964	-26.82 %
R270 - CAW - Rebates	74,299	58,310	15,989	-127.42 %	850,563	700,000	150,563	-121.51 %
R280 - CAW - Conservation	0	29,422	-29,422	0.00 %	0	353,200	-353,200	0.00 %
R310 - Other Reimbursements	0	1,125	-1,125	0.00 %	0	13,500	-13,500	0.00 %
R320 - Grants	0	0	0	0.00 %	3,920	0	3,920	0.00 %
R500 - Capital Equipment Reserve	0	258	-258	0.00 %	0	3,100	-3,100	0.00 %
R520 - Flood/Drought Reserve	0	3,332	-3,332	0.00 %	0	40,000	-40,000	0.00 %
Total Revenue:	**84,024**	**181,698**	**-97,674**	**-46.24 %**	**1,473,103**	**2,181,250**	**-708,147**	**-67.53 %**

EXHIBIT 7-E

Statement of Revenue Over Expense - No Decimals **For Fiscal: 2014-2015 Period Ending: 01/31/2015**

Level…	January Activity	January Budget	Variance Favorable (Unfavorable)	Percent Used	YTD Activity	Total Budget	Variance Favorable (Unfavorable)	Percent Used
Expense								
Level1: 100 - Personnel Costs								
1100 - Salaries & Wages	37,669	41,733	4,064	90.26 %	308,893	501,000	192,107	61.66 %
1110 - Manager's Auto Allowance	92	79	-13	116.64 %	581	950	369	61.21 %
1120 - Manager's Deferred Comp	120	117	-3	102.90 %	826	1,400	574	59.01 %
1130 - Unemployment Compensation	0	67	67	0.00 %	0	800	800	0.00 %
1140 - Insurance Opt-Out Supplemental	390	0	-390	0.00 %	2,360	0	-2,360	0.00 %
1150 - Temporary Personnel	2,434	3,332	898	73.04 %	22,134	40,000	17,866	55.33 %
1160 - PERS Retirement	6,740	7,205	466	93.54 %	56,440	86,500	30,060	65.25 %
1170 - Medical Insurance	5,794	7,872	2,078	73.61 %	44,602	94,500	49,898	47.20 %
1180 - Medical Insurance - Retirees	1,006	0	-1,006	0.00 %	6,402	0	-6,402	0.00 %
1190 - Workers Compensation	135	175	40	77.27 %	1,152	2,100	948	54.86 %
1200 - Life Insurance	114	0	-114	0.00 %	821	0	-821	0.00 %
1210 - Long Term Disability Insurance	218	0	-218	0.00 %	1,530	0	-1,530	0.00 %
1220 - Short Term Disability Insurance	39	0	-39	0.00 %	296	0	-296	0.00 %
1230 - Other Benefits	51	0	-51	0.00 %	356	0	-356	0.00 %
1260 - Employee Assistance Program	17	0	-17	0.00 %	123	0	-123	0.00 %
1270 - FICA Tax Expense	26	0	-26	0.00 %	247	0	-247	0.00 %
1280 - Medicare Tax Expense	526	583	57	90.22 %	4,480	7,000	2,520	63.99 %
1290 - Staff Development & Training	0	616	616	0.00 %	701	7,400	6,699	9.47 %
1300 - Conference Registration	0	0	0	0.00 %	830	0	-830	0.00 %
1310 - Professional Dues	171	0	-171	0.00 %	521	0	-521	0.00 %
1320 - Personnel Recruitment	-37	42	78	-87.76 %	429	500	71	85.79 %
Total Level1: 100 - Personnel Costs:	**55,505**	**61,821**	**6,316**	**89.78 %**	**453,723**	**742,150**	**288,427**	**61.14 %**
Level1: 200 - Supplies and Services								
2100 - Board Member Compensation	422	741	319	56.98 %	3,986	8,900	4,914	44.79 %
2110 - Board Expenses	194	92	-103	212.16 %	209	1,100	891	18.98 %
2120 - Insurance Expense	827	900	73	91.91 %	5,796	10,800	5,004	53.67 %
2130 - Membership Dues	2,156	600	-1,556	359.48 %	7,506	7,200	-306	104.25 %
2135 - Public Outreach	72	0	-72	0.00 %	360	0	-360	0.00 %
2140 - Bank Charges	71	67	-4	106.29 %	475	800	325	59.32 %
2150 - Office Supplies	755	633	-122	119.32 %	4,697	7,600	2,903	61.80 %
2160 - Meeting Expenses	10	158	149	6.07 %	316	1,900	1,584	16.61 %
2170 - Printing/Photocopy	0	475	475	0.00 %	345	5,700	5,355	6.05 %
2180 - Miscellaneous Expenses	0	150	150	0.00 %	624	1,800	1,176	34.67 %
2190 - IT Supplies/Services	1,374	1,733	359	79.28 %	11,864	20,800	8,936	57.04 %
2200 - Professional Fees	1,584	2,399	815	66.03 %	20,175	28,800	8,625	70.05 %
2210 - Legal	0	6,664	6,664	0.00 %	13,733	80,000	66,267	17.17 %
2220 - Legal Notices	0	83	83	0.00 %	55	1,000	945	5.54 %
2230 - Rent	155	417	262	37.11 %	1,101	5,000	3,899	22.02 %
2235 - Equipment Lease	605	342	-264	177.21 %	2,039	4,100	2,061	49.72 %
2240 - Telephone	905	666	-239	135.80 %	6,208	8,000	1,792	77.60 %

EXHIBIT 7-E

Statement of Revenue Over Expense - No Decimals **For Fiscal: 2014-2015 Period Ending: 01/31/2015**

Level…	January Activity	January Budget	Variance Favorable (Unfavorable)	Percent Used	YTD Activity	Total Budget	Variance Favorable (Unfavorable)	Percent Used
2250 - Utilities	642	708	67	90.61 %	6,826	8,500	1,674	80.30 %
2260 - Facility Maintenance	228	691	463	33.00 %	4,323	8,300	3,977	52.09 %
2270 - Travel Expenses	662	458	-203	144.41 %	4,233	5,500	1,267	76.96 %
2280 - Transportation	44	616	573	7.12 %	3,157	7,400	4,243	42.66 %
2900 - Operating Supplies	421	433	12	97.29 %	8,983	5,200	-3,783	172.74 %
Total Level1: 200 - Supplies and Services:	**11,127**	**19,026**	**7,899**	**58.48 %**	**107,009**	**228,400**	**121,391**	**46.85 %**
Level1: 300 - Other Expenses								
3000 - Project Expenses	176,386	95,587	-80,799	184.53 %	1,231,351	1,147,500	-83,851	107.31 %
4000 - Fixed Asset Purchases	0	2,591	2,591	0.00 %	10,527	31,100	20,573	33.85 %
6000 - Contingencies	0	2,674	2,674	0.00 %	0	32,100	32,100	0.00 %
Total Level1: 300 - Other Expenses:	**176,386**	**100,851**	**-75,535**	**174.90 %**	**1,241,877**	**1,210,700**	**-31,177**	**102.58 %**
Total Expense:	**243,018**	**181,698**	**-61,320**	**133.75 %**	**1,802,610**	**2,181,250**	**378,640**	**82.64 %**
Total Revenues	**84,023.75**	**181,698**	**-97,674**	**-46.24 %**	**1,473,102.77**	**2,181,250**	**-708,147**	**-67.53 %**
Total Fund: 26 - CONSERVATION FUND:	**-158,994**	**0**	**-158,994**		**-329,507**	**0**	**-329,507**	

EXHIBIT 7-E

Statement of Revenue Over Expense - No Decimals **For Fiscal: 2014-2015 Period Ending: 01/31/2015**

Level…	January Activity	January Budget	Variance Favorable (Unfavorable)	Percent Used	YTD Activity	Total Budget	Variance Favorable (Unfavorable)	Percent Used
Fund: 35 - WATER SUPPLY FUND								
Revenue								
R100 - Water Supply Charge	0	283,220	-283,220	0.00 %	2,024,551	3,400,000	-1,375,449	-59.55 %
R120 - Property Taxes Revenues	0	47,768	-47,768	0.00 %	339,326	573,450	-234,124	-59.17 %
R140 - Connection Charges	-32,061	14,578	-46,639	219.94 %	49,688	175,000	-125,312	-28.39 %
R220 - Copy Fee	0	0	0	0.00 %	70	0	70	0.00 %
R230 - Miscellaneous - Other	1,908	0	1,908	0.00 %	2,250	0	2,250	0.00 %
R240 - Insurance Refunds	0	0	0	0.00 %	6,329	0	6,329	0.00 %
R250 - Interest Income	1,536	375	1,161	-409.68 %	5,651	4,500	1,151	-125.57 %
R260 - CAW - ASR	22,318	39,393	-17,074	-56.66 %	136,593	472,900	-336,307	-28.88 %
R300 - Watermaster	0	5,748	-5,748	0.00 %	0	69,000	-69,000	0.00 %
R500 - Capital Equipment Reserve	0	3,482	-3,482	0.00 %	0	41,800	-41,800	0.00 %
R600 - Water Supply Charge Carry Forward	0	94,795	-94,795	0.00 %	0	1,138,000	-1,138,000	0.00 %
Total Revenue:	**-6,299**	**489,358**	**-495,657**	**1.29 %**	**2,564,459**	**5,874,650**	**-3,310,191**	**-43.65 %**

EXHIBIT 7-E

Statement of Revenue Over Expense - No Decimals **For Fiscal: 2014-2015 Period Ending: 01/31/2015**

Level...	January Activity	January Budget	Variance Favorable (Unfavorable)	Percent Used	YTD Activity	Total Budget	Variance Favorable (Unfavorable)	Percent Used
Expense								
Level1: 100 - Personnel Costs								
1100 - Salaries & Wages	59,956	66,690	6,734	89.90 %	429,271	800,600	371,329	53.62 %
1110 - Manager's Auto Allowance	277	242	-35	114.63 %	1,745	2,900	1,155	60.16 %
1120 - Manager's Deferred Comp	360	350	-10	102.90 %	2,478	4,200	1,722	59.01 %
1130 - Unemployment Compensation	0	83	83	0.00 %	0	1,000	1,000	0.00 %
1140 - Insurance Opt-Out Supplemental	692	0	-692	0.00 %	4,607	0	-4,607	0.00 %
1150 - Temporary Personnel	0	29	29	0.00 %	0	350	350	0.00 %
1160 - PERS Retirement	10,812	11,704	891	92.39 %	81,381	140,500	59,119	57.92 %
1170 - Medical Insurance	7,013	10,562	3,550	66.39 %	49,072	126,800	77,728	38.70 %
1180 - Medical Insurance - Retirees	1,383	0	-1,383	0.00 %	11,094	0	-11,094	0.00 %
1190 - Workers Compensation	1,018	1,141	123	89.19 %	7,831	13,700	5,869	57.16 %
1200 - Life Insurance	124	0	-124	0.00 %	909	0	-909	0.00 %
1210 - Long Term Disability Insurance	308	0	-308	0.00 %	2,153	0	-2,153	0.00 %
1220 - Short Term Disability Insurance	56	0	-56	0.00 %	388	0	-388	0.00 %
1230 - Other Benefits	53	0	-53	0.00 %	367	0	-367	0.00 %
1260 - Employee Assistance Program	20	0	-20	0.00 %	140	0	-140	0.00 %
1270 - FICA Tax Expense	36	0	-36	0.00 %	316	0	-316	0.00 %
1280 - Medicare Tax Expense	640	708	68	90.37 %	4,804	8,500	3,696	56.52 %
1290 - Staff Development & Training	0	841	841	0.00 %	102	10,100	9,998	1.01 %
1300 - Conference Registration	0	0	0	0.00 %	1,049	0	-1,049	0.00 %
1310 - Professional Dues	223	0	-223	0.00 %	292	0	-292	0.00 %
1320 - Personnel Recruitment	-50	50	100	-100.54 %	472	600	128	78.70 %
Total Level1: 100 - Personnel Costs:	**82,921**	**92,401**	**9,480**	**89.74 %**	**598,471**	**1,109,250**	**510,779**	**53.95 %**
Level1: 200 - Supplies and Services								
2100 - Board Member Compensation	581	1,016	435	57.15 %	5,105	12,200	7,095	41.85 %
2110 - Board Expenses	267	125	-142	213.93 %	493	1,500	1,007	32.89 %
2120 - Insurance Expense	1,137	1,241	104	91.60 %	7,970	14,900	6,930	53.49 %
2130 - Membership Dues	215	825	610	26.01 %	6,726	9,900	3,174	67.94 %
2135 - Public Outreach	99	0	-99	0.00 %	844	0	-844	0.00 %
2140 - Bank Charges	182	100	-82	182.10 %	1,085	1,200	115	90.41 %
2150 - Office Supplies	1,039	866	-172	119.91 %	6,439	10,400	3,961	61.92 %
2160 - Meeting Expenses	13	225	212	5.87 %	385	2,700	2,315	14.27 %
2170 - Printing/Photocopy	0	658	658	0.00 %	474	7,900	7,426	6.00 %
2180 - Miscellaneous Expenses	0	208	208	0.00 %	858	2,500	1,642	34.32 %
2190 - IT Supplies/Services	1,889	2,374	485	79.55 %	16,297	28,500	12,203	57.18 %
2200 - Professional Fees	2,178	3,290	1,112	66.19 %	27,563	39,500	11,938	69.78 %
2210 - Legal	705	19,159	18,454	3.68 %	121,492	230,000	108,508	52.82 %
2220 - Legal Notices	0	117	117	0.00 %	76	1,400	1,324	5.44 %
2230 - Rent	735	575	-160	127.88 %	5,126	6,900	1,774	74.29 %
2235 - Equipment Lease	832	466	-366	178.40 %	2,748	5,600	2,852	49.08 %
2240 - Telephone	1,424	916	-507	155.37 %	9,523	11,000	1,477	86.57 %

EXHIBIT 7-E

Statement of Revenue Over Expense - No Decimals **For Fiscal: 2014-2015 Period Ending: 01/31/2015**

Level…	January Activity	January Budget	Variance Favorable (Unfavorable)	Percent Used	YTD Activity	Total Budget	Variance Favorable (Unfavorable)	Percent Used
2250 - Utilities	896	966	71	92.68 %	9,157	11,600	2,443	78.94 %
2260 - Facility Maintenance	314	950	636	33.04 %	5,660	11,400	5,740	49.65 %
2270 - Travel Expenses	967	633	-334	152.70 %	3,716	7,600	3,884	48.89 %
2280 - Transportation	188	850	662	22.08 %	1,823	10,200	8,377	17.88 %
2900 - Operating Supplies	118	591	473	20.02 %	819	7,100	6,281	11.54 %
Total Level1: 200 - Supplies and Services:	**13,777**	**36,152**	**22,375**	**38.11 %**	**234,380**	**434,000**	**199,620**	**54.00 %**
Level1: 300 - Other Expenses								
3000 - Project Expenses	993,340	334,283	-659,057	297.16 %	1,388,814	4,013,000	2,624,186	34.61 %
4000 - Fixed Asset Purchases	0	6,510	6,510	0.00 %	13,926	78,150	64,224	17.82 %
5000 - Debt Service	6,073	19,159	13,086	31.70 %	77,544	230,000	152,456	33.71 %
6000 - Contingencies	0	854	854	0.00 %	0	10,250	10,250	0.00 %
Total Level1: 300 - Other Expenses:	**999,413**	**360,806**	**-638,607**	**276.99 %**	**1,480,284**	**4,331,400**	**2,851,116**	**34.18 %**
Total Expense:	**1,096,111**	**489,358**	**-606,753**	**223.99 %**	**2,313,135**	**5,874,650**	**3,561,515**	**39.37 %**
Total Revenues	**-6,298.88**	**489,358**	**-495,657**	**1.29 %**	**2,564,458.64**	**5,874,650**	**-3,310,191**	**-43.65 %**
Total Fund: 35 - WATER SUPPLY FUND:	**-1,102,410**	**0**	**-1,102,410**		**251,324**	**0**	**251,324**	
Report Total:	**-1,005,566**	**0**	**-1,005,566**		**-441,094**	**0**	**-441,094**	

EXHIBIT 7-E

Statement of Revenue Over Expense - No Decimals **For Fiscal: 2014-2015 Period Ending: 01/31/2015**

Fund Summary

Fund	January Activity	January Budget	Variance Favorable (Unfavorable)	Percent Used	YTD Activity	Total Budget	Variance Favorable (Unfavorable)	Percent Used
24 - MITIGATION FUND	255,838	0	255,838		-362,911	0	-362,911	
26 - CONSERVATION FUND	-158,994	0	-158,994		-329,507	0	-329,507	
35 - WATER SUPPLY FUND	-1,102,410	0	-1,102,410		251,324	0	251,324	
Report Total:	**-1,005,566**	**0.07**	**-1,005,566**		**-441,094**	**0**	**-441,094**	

ITEM: PUBLIC HEARING

12. CONSIDER SECOND READING AND ADOPTION OF ORDINANCE NO. 163, REPLACING URGENCY ORDINANCE NO. 159, REGARDING REBATE PROGRAM AMENDMENTS AND AMENDMENTS TO THE EXPANDED WATER CONSERATION AND STANDBY RATIONING PLAN (REGULATION XV)

Meeting Date:	**March 16, 2015**	**Budgeted:**	**N/A**
From:	**David J. Stoldt, General Manager**	**Program/ Line Item No.:**	**N/A**
Prepared By:	**Stephanie Locke**	**Cost Estimate:**	**N/A**

General Counsel Review: Yes
Committee Recommendation: Water Demand Committee recommends approval.
CEQA Compliance: This ordinance is exempt from CEQA.

SUMMARY: Ordinance No. 163 (**Exhibit 12-A**) replaces Urgency Ordinance No. 159 adopted in April 2014. Urgency ordinances are effective for one year only. The proposed ordinance amends Rule 141 (Water Conservation Rebates) to clarify eligibility changes as a result of Non-Residential retrofit requirements enacted in 2013. The ordinance creates a new **Table XIV-1** to allow Rebates to be amended by Board resolution. The ordinance continues the financial incentives for removal of large irrigated public lawns and retrofits to non-profit buildings that otherwise might not replace toilets due to budget constraints, and revises several outdated areas of the Expanded Water Conservation and Standby Rationing Plan, including triggers for Stages 4-7 and the two day per week watering schedule.

This ordinance is exempt from the California Environmental Quality Act pursuant to CEQA Guidelines Section 15301, Existing Facilities, for modifications to Rule 141, as these amendments relate to replacement of existing facilities with less water intensive uses. Modifications to Regulation XV are exempt from the California Environmental Quality Act (CEQA) under Water Code §10652 and CEQA Guidelines §15282 (v).

RECOMMENDATION: The Board should adopt the ordinance on second reading.

EXHIBIT
12-A Draft Ordinance No. 163 including Table XIV-1, Rebate Amounts

EXHIBIT 12-A

2nd READING DRAFT

ORDINANCE NO. 163

AN ORDINANCE OF THE BOARD OF DIRECTORS OF THE MONTEREY PENINSULA WATER MANAGEMENT DISTRICT AMENDING AMENDING REGULATION XV, EXPANDED WATER CONSERVATION AND STANDBY RATIONING PLAN

FINDINGS

1. The Monterey Peninsula Water Management District (District or Water Management District) is charged under the Monterey Peninsula Water Management District Law with the integrated management of the ground and surface water resources in the Monterey Peninsula area.

2. The Water Management District has general and specific power to cause and implement water conservation activities as set forth in Sections 325 and 328 of the Monterey Peninsula Water Management District Law.

3. This ordinance is enacted to respond to present and threatened water emergencies, as provided by Section 332 of the District Law. Water emergencies addressed by this ordinance are created by legal circumstances which constrain the amount of water that is available to serve water users in the Monterey Peninsula area.

4. On July 6, 1995, the State Water Resources Control Board (SWRCB), in response to four complaints, issued Order WR No. 95-10 that found that the groundwater in the aquifer underlying and closely paralleling the Carmel River is water flowing in a subterranean stream and subject to the jurisdiction of the SWRCB.

5. SWRCB Order WR No. 95-10 also found that California American Water wells were drawing water from the subterranean stream associated with the Carmel River and had diverted an average of 10,730 acre-feet per year (AFA) without a valid basis of right.

6. SWRCB Order WR No. 95-10 directed California American Water to reduce its average historical diversions from the Carmel River by 15% in Water Year 1996 and 20% in each subsequent water year until its unlawful diversions were terminated.

7. In Water Year 1997, California American Water's diversions from the Carmel River

exceeded the limit specified in SWRCB Order WR No. 95-10 and the SWRCB issued an Administrative Civil Liability Complaint against California American Water.

8. On January 28, 1999, to enable compliance with SWRCB Order WR No. 95-10, the Water Management District adopted Ordinance No. 92 that established Regulation XV, the Expanded Water Conservation and Standby Rationing Plan.

9. Since establishment of the Expanded Water Conservation and Standby Rationing Plan in 1999, California American Water has complied with the diversion limits specified in SWRCB Order WR No. 95-10 every year.

10. On January 17, 2014, the Governor of the State of California proclaimed a state of emergency due to current drought conditions and called on Californians to reduce their water usage by 20 percent.

11. The U.S. Drought Monitor has designated the territory of the Monterey Peninsula Water Management District to be currently in a condition of extreme drought (February 3, 2015).

12. The provisions of this ordinance shall preserve the health and safety of the Monterey Peninsula's water users.

13. The measures adopted in this ordinance are necessary in order to improve and protect the quantity and quality of groundwater supplies within the District, to prevent a worsening of existing conditions, and to allow time to implement a definite and long-term water supply solution.

14. Amendments to the Rebate Program to allow California Non-Profit Corporations to receive Rebates for purchase and installation of more than 20 toilets on a Site are necessary to achieve water saving retrofits that would not otherwise occur.

15. Amendments to the Rebate Program to allow the Board discretion to incentivize Lawn removal at Public facilities by offering a Rebate for removal of large irrigated areas is necessary to respond to the current drought and to increasing levels of regulatory restrictions on potable water use.

16. Amendments to the Rebate amounts and the addition of new Non-Residential Rebates will facilitate greater water savings in the MPWMD.

17. This ordinance amends the water Rationing triggers that specify movement to Stages 4-7 of Regulation XV, Expanded Water Conservation and Standby Rationing Plan. These

amendments are necessary to respond to changing conditions related to Water Supply in the Monterey Peninsula Water Resource System. The ordinance replaces specific targets in Rules 164-167 with Table XV-4 that can be amended by Resolution of the Board.

18. The following District Rules shall be amended by this ordinance: Rule 141 (Water Conservation Rebates), Rule 164 (Stage 4 Water Rationing), Rule 165 (Stage 5 Water Rationing), Rule 166 (Stage 6 Water Rationing), and Rule 167 (Stage 7 Water Rationing), and Rule 172 (Landscape Water Audits).

19. This ordinance is exempt from the California Environmental Quality Act pursuant to CEQA Guidelines Section 15301, Existing Facilities, for modifications to Rule 141, as these amendments relate to replacement of existing facilities with less water intensive uses.

20. Modifications to Regulation XV are exempt from the California Environmental Quality Act (CEQA) under Water Code §10652 and CEQA Guidelines §15282 (v).

NOW THEREFORE be it ordained as follows:

ORDINANCE

Section One: Short Title

This ordinance shall be known as the 2015 Rationing and Rebate Programs Amendment Ordinance of the Monterey Peninsula Water Management District.

Section Two: Purpose

In response to drought conditions and the need to bring about reduced water consumption on the Monterey Peninsula, this ordinance amends the Rebate Program to allow non-profit entities to receive a Rebate for installation of more than 20 Ultra High Efficiency Toilets, and gives the Board discretion to approve Rebates in excess of $2,500 for Lawn removal at Public Sites. The ordinance establishes that Rebate amounts will be amended by Board Resolution. This ordinance also amends Regulation XV to address inconsistencies with water Rationing triggers and to establish the two day per week outdoor watering schedule.

Section Three: **Amendments to Rule 141**

Rule 141-A through 141-C shall be amended as shown below, with added language as shown in ***bold italic*** type face, and deleted language shown in ~~strikeout~~ type face. The remaining provisions of Rule 141 shall remain unchanged by this ordinance.

RULE 141 - WATER CONSERVATION REBATES

A. QUALIFYING DEVICES

Rebates are available for purchase of the following Qualifying Devices within the boundaries of the Monterey Peninsula Water Management District***. Qualifying Devices and the associated Rebate amount are shown in Table XIV-1***:

1. High Efficiency Dishwasher;
2. High Efficiency Clothes Washer ~~for~~ ***in a*** Residential use;
3. Instant-Access Hot Water System;
4. High Efficiency Toilet;
5. Zero Water Consumption Urinal;
6. One or more Cisterns installed as a component of an Irrigation System. Maximum available Rebate shall be for 25,000 gallons of Cistern storage capacity on a Qualifying Property;
7. Smart Controller;
8. Soil Moisture Sensors that control the irrigation cycles of a conventional automatic Irrigation System controller or Smart Controller. Gypsum block Soil Moisture Sensors shall not be included on the list of Qualifying Devices;
9. Removal of established Lawn and replacement with low water use plants or permeable surfaces (maximum of 2,500 square-feet[1]);
10. High Efficiency Urinal ***in a Residential use***;
11. Pint Urinal;

[1] ***Lawn removal Rebate at a Public facility may exceed the square-footage limitation subject to Board approval.***

12. Rotating Sprinkler Nozzle;

13. Water Broom. Maximum available Rebate shall be for two Water Brooms per Qualifying Property;

14. Commercial High Efficiency Clothes Washer ***at a Residential Site*** ~~designed and manufactured for Non-Residential uses~~;

15. Cooling Tower Conductivity Controller;

16. Water Efficient Ice Machine;

17. X-ray film processor recirculation system.

18. Cooling Tower Conductivity/pH Controller;

19. Dry Vacuum Pump;

20. Graywater Irrigation System;

21. High Efficiency Connectionless Food Steamer;

22. High Efficiency Commercial Dishwasher;

23. Retrofit of a medical equipment steam sterilizer that utilizes a continuous water flow with a water tempering device.

24. Ultra High Efficiency Toilet.

B. REBATE AMOUNTS

~~The following~~ Rebates shall be issued by the District on a first-come, first-served basis as long as funds remain available. ***Rebate amounts shall be listed in Table XIV-1 which may be modified from time to time by resolution of the Board. At no time shall a Rebate exceed the purchase price of the Qualifying Device.***

Table XIV-1
Rebate Amounts

High Efficiency Toilet (per toilet.)	$200.00
Ultra High Efficiency Toilet shall be $250.	$250.00
Replacement of an Ultra-Low Flush Toilet with a High Efficiency Toilet	$50.00

High Efficiency Dishwasher	$125.00
High Efficiency Clothes Washer	$500.00
Instant-Access Hot Water System (per Qualifying Property)	$200.00
On-demand pump or point of source water heater as part of an Instant-Access Hot Water System (per component, to a maximum of two components per Qualifying Property)	$100.00
Zero Water Consumption Urinal	$300.00
Smart Controller	$100 for up to four stations. An additional $10 shall be available per station up to twenty (20) stations
Soil Moisture Sensor(s) on a conventional automatic Irrigation SystemGypsum block Soil Moisture Sensors shall not qualify for Rebate.	$25.00
Cistern water tanks installed on Sites supplied with water from the Monterey Peninsula Water Resource System (per Qualifying Property)	$50 per 100 gallons for the first 500 gallons and $25 per 100 gallons of water storage capacity to a maximum storage capacity of 25,000 gallons
Lawn removal and replacement with low water use plants or permeable surfaces (per Qualifying Property)	$1.00 per square-foot to a maximum of 2,500 square-feet
High Efficiency Urinal	$200.00
Pint Urinal	$300.00
Rotating Sprinkler Nozzle (minimum purchase and installation of ten)	$4.00
Water Broom	$150.00
Commercial High Efficiency Clothes Washer. *A Multi-Family Residential Qualifying Property with a Common Laundry Room shall be considered a Non-Residential use.*	$1,000.00
Cooling Tower Conductivity Controller	$1,000.00
CEE Tier II Water Efficient Ice Machine	$500.00
X-ray film processor recirculation system	$2,500.00
Cooling Tower Conductivity/pH Controller	$2,500.00
Dry Vacuum Pumps (per 0.05 HP to a limit of 4 HP)	$200.00
High Efficiency Connectionless Food Steamer (per compartment)	$1,500.00
High Efficiency Commercial Dishwasher	
a. $500 for an under counter model	$500.00

b. $1,000 for a single tank door type model	$1,000.00
c. $1,500 for a single tank conveyor	$1,500.00
d. $2,000 for a multi-tank conveyor	$2,000.00
Graywater Irrigation System supplied by one Clothes Washer for irrigation	$100.00
Graywater Irrigation System supplied by one or more Bathrooms that have a Bathtub/Shower connected to a Graywater Irrigation System. Residential limit: 4.	$100.00
Non-Residential Graywater Irrigation System	Inquire
Medical equipment steam sterilizer retrofit with a water tempering device	$1,500.00

~~At no time shall the Rebate amount exceed the price of the Qualifying Device.~~

1. ~~The Rebate for a High Efficiency Toilet shall be $200~~ ***~~$100~~*** ~~per toilet.~~

2. ~~The Rebate for High Efficiency Dishwasher shall be $125.~~

3. ~~The Rebate for High Efficiency Clothes Washer shall be $500.~~

4. ~~The Rebate for an Instant-Access Hot Water System shall be $200 per Qualifying Property.~~

5. ~~The Rebate for an on-demand pump or point of source water heater as part of an Instant-Access Hot Water System shall be $100 per component, to a maximum of two components per Qualifying Property.~~

6. ~~The Rebate for Zero Water Consumption Urinal shall be $300.~~

7. ~~The Rebate for a Smart Controller shall be $100 for up to four stations. An additional $10 shall be available per station up to twenty (20) stations or the actual cost, whichever is less. The District shall maintain a list of qualifying Smart Controllers.~~

8. ~~The Rebate for installation and use of one or more Soil Moisture Sensor(s) on a conventional automatic Irrigation System shall be $25 per sensor or the actual cost, whichever is less. Gypsum block Soil Moisture Sensors shall not qualify for Rebate.~~

9. ~~The Rebate for Cistern water tanks installed on Sites supplied with water from the Monterey Peninsula Water Resource System shall be $50 per 100~~

~~gallons for the first 500 gallons and $25 per 100 gallons of water storage capacity to a maximum storage capacity of 25,000 gallons per Qualifying Property.~~

10. ~~The Rebate for Lawn removal and replacement with low water use plants or permeable surfaces shall be $1.00 per square foot to a maximum of 2,500 square feet per Qualifying Property.~~

11. ~~The Rebate for a High Efficiency Urinal shall be $200.~~

12. ~~The Rebate for a Pint Urinal shall be $300.~~

13. ~~The Rebate for a Rotating Sprinkler Nozzle (minimum purchase and installation of ten) shall be $4.00 each.~~

14. ~~The Rebate for a Water Broom shall be $150.~~

15. ~~The Rebate for a Commercial High Efficiency Clothes Washer shall be $1,000. For the purpose of this Rebate, a Multi-Family Residential Qualifying Property with a Common Laundry Room shall be considered a Non-Residential use.~~

16. ~~The Rebate for a Cooling Tower Conductivity Controller shall be $1,000.~~

17. ~~The Rebate for a CEE Tier II Water Efficient Ice Machine shall be $500.~~

18. ~~The Rebate for an X-ray film processor recirculation system shall be $2,500.~~

19. ~~The Rebate for a Cooling Tower Conductivity/pH Controller shall be $2,500.~~

20. ~~The Rebate for Dry Vacuum Pumps shall be $200 per 0.05 HP to a limit of 4 HP.~~

21. ~~The Rebate for a High Efficiency Connectionless Food Steamer shall be $1,500 per compartment.~~

22. ~~The Rebate for a High Efficiency Commercial Dishwasher shall be:~~

    a. ~~$500 for an under counter model.~~

    b. ~~$1,000 for a single tank door type model.~~

~~c. $1,500 for a single tank conveyor.~~

~~d. $2,000 for a multi-tank conveyor.~~

~~23. The Rebate for a Graywater Irrigation System supplied by one Clothes Washer for irrigation shall be $100.~~

~~24. The Rebate for a Graywater Irrigation System supplied by one or more Bathrooms that have a Bathtub/Shower connected to a Graywater Irrigation System shall be $100 per Bathroom. Residential limit: 4.~~

~~25. The Rebate for a Non-Residential Graywater Irrigation System shall be considered on a case-by-case basis by the General Manager.~~

~~26. The Rebate for a medical equipment steam sterilizer retrofit with a water tempering device shall be $1,500.~~

~~27. The Rebate for an Ultra High Efficiency Toilet shall be $250~~ ***~~$150~~*** ~~.~~

~~28. The Rebate for replacement of an Ultra-Low Flush Toilet with a High Efficiency Toilet shall be $50.~~

C. REBATE ELIGIBILITY

1. Rebates shall be issued for Qualifying Devices installed on Sites located within the District that are served by Water Distribution Systems regulated by the District. The Site shall be in compliance with District Rules prior to issuance of a Rebate.

2. No Rebate shall be issued for installation of Qualifying Devices that are required to be installed and maintained by Regulation XIV of the District ***with the exception of High Efficiency Toilets installed at Sites owned and operated by California Non-Profit Corporations.*** ~~, and~~ ***n No*** Rebate shall be issued for installation of Qualifying Devices that have been used to obtain a Water Permit. Rebates shall be available ~~for all retrofits~~ until the date the retrofit becomes mandatory, such as the date a Change of Ownership or Change of Use occurs~~,~~ ***or*** a Water Permit is issued~~, or the date a Non-Residential retrofit is required pursuant to Regulation XIV~~. Rebates shall not be available for Qualifying Devices that ~~become~~ ***have been required to be installed and maintained*** ~~mandated~~ by local, State, or Federal water conservation programs.

3. Rebates shall be available only for the initial purchase of a Qualifying Device. Rebates shall not be issued for replacement of an existing Qualifying Device with the exception of ***High Efficiency*** Clothes Washers that have been removed from the Qualifying Property by a previous owner/tenant. Applicants submitting an application for a High Efficiency Clothes Washer Rebate on a Site that has previously qualified for a High Efficiency Clothes Washer Rebate may be required to provide information to substantiate a subsequent Rebate.

4. Ultra High Efficiency Toilets shall meet or exceed the EPA WaterSense labeling criteria and shall bear the WaterSense Label and be listed on the WaterSense website.

5. Rebates shall be available for a maximum of twenty (20) toilets on all Non-Residential Qualifying Properties with the exception of Qualifying ~~Properites~~ ***Properties*** owned and operated by a California Non-Profit Corporation.

6. Outdoor Water Use Rebates

    a. Rebates for Cisterns shall be limited to 25,000 gallons of storage capacity on a Qualifying Property. All Cistern Rebate Sites shall have sufficient roof area to fill the capacity of the Cistern(s) after first flush during a "normal" Water Year and shall require verification of usable roof area by Site inspection.

    b. Rebates for Lawn removal shall be available only to Qualifying Properties irrigated with water from the Monterey Peninsula Water Resource System.

    c. To be eligible for any Rebate for Lawn Removal, Lawns must be green, regularly maintained at a low even height, irrigated regularly, and be well cared for at the time of application for a Rebate. Dead Lawns or Lawns that have been removed prior to issuance of a Lawn Rebate prequalification statement from the District shall not be eligible for a Rebate.

    d. A minimum of 250 square-feet of Lawn shall be removed to qualify for Rebate.

e. Eligibility for any Lawn Removal Rebate shall be determined upon receipt of a complete application as described in Rule 141-E. The District will notify the Applicant by written prequalification documentation that the proposed Lawn removal and replacement proposal has been "prequalified."

7. Non-Residential Rebates

a. Water Efficient Ice Machines shall be listed as CEE Tier II.

b. An X-ray film processor recirculation system shall be listed as a qualifying model by the California Urban Water Conservation Council Resource Center.

c. Rebates for Dry Vacuum Pumps shall be available only when the Qualifying Device is replacing a water (liquid) ring pump.

d. Rebates for retrofitting medical steam sterilizers with water tempering devices are limited to those sterilizers that use a continuous water flow to cool the steam discharge.

~~e. Rebates for Commercial High Efficiency Clothes Washers shall be limited to twenty (20) per Site unless specific authorization for a greater number has been secured from the General Manager.~~

Section XXX: Amendment to Rule 161, Stage 1 Water Conservation

Rule 161-A shall be amended as shown below, with added language as shown in ***bold italic*** type face, and deleted language shown in ~~strikeout~~ type face.

Stage 1 is the first stage in the District's Expanded Water Conservation and Standby Rationing Plan. During Stage 1:

A. California American Water shall maintain its Water Year (October 1 through September 30) production from the Carmel River System ***in compliance with regulatory restrictions imposed on the Carmel River basin*** ~~below 11,285 Acre-Feet (20 percent below historical production as determined in 1995)~~.

Section XX: Amendment to Rule 164, Stage 4, Water Conservation/Rationing

Rule 164 shall be amended as shown below, with added language as shown in ***bold italic*** type face, and deleted language shown in ~~strikeout~~ type face.

1. Trigger

   1. Physical Shortage Trigger

      Stage 4 shall take effect for any Water Distribution System that relies, in whole or in part, on production or production offsets from the Carmel River System or the Seaside Coastal Subareas, on June 1 or such earlier date as may be set by the Board following the District's May Board meeting if total usable storage in the Carmel River System and the Seaside Coastal Subareas on May 1 is ~~less than~~ ***within the Stage 4 Rationing range shown on Table XV-4.*** ~~27,807 Acre-Feet and greater than 21,802 Acre-Feet. If total usable storage is equal or greater than 27,807 Acre-Feet on May 1, no water rationing shall be imposed.~~ ***Table XV-4 shall be periodically updated by Resolution of the Board.***

   2. Regulatory Trigger – Continued Non-Compliance with Regulatory Limits through Stage 3

      Stage 4 shall be enforced for all Water Distribution Systems presently at Stage 3 when Stage 3 has been in effect for at least thirty (30) days and when the California American Water year-to-date production from the MPWRS shown in Table XV-1 exceeds one of the following standards:

      a. The year-to-date target at month end during the months of October through March; or

      b. The year-to-date targets for a consecutive seven (7) day period during the months of April, May or June; or

      c. California American Water's production from the MPWRS shown in Table XV-1 on a year-to-date basis exceeds the year-to-date target on any single (1) day during July, August, or September.

   3. Regulatory Trigger – Legally Ordered Reduction in Supply

      Stage 4 shall be enforced in any Water Distribution System that does not rely to any extent upon production or production offsets from the Main California

American Water System when that system is required to comply with a final Cease and Desist Order by the State Water Resources Control Board, the Seaside Watermaster or any other final court order that reduces available supplies by fifteen percent (15%) from base year production. The term "base year" shall refer to the Water Year immediately preceding any triggering order.

4. Emergency Trigger

Stage 4 shall be implemented for any Water Distribution System, private Well, or Water User upon adoption of a Resolution of the Board of Directors. In that Resolution, the Board shall find there is an immediate need to reduce production by fifteen percent (15%).

5. Delay of Stage Implementation

The General Manager may delay implementation of this Stage to ensure adequate operation of the program. Delays authorized by the General Manager shall not exceed ninety (90) days.

B. SUNSET OF STAGE 4

1. Water Supply Availability

Stage 4 shall continue until rescinded by Resolution of the Board of Directors. ~~In that Resolution the Board shall find that the total usable storage in the Carmel River System and the Seaside Coastal Subareas portions of the MPWRS is greater than 27,807 Acre-Feet. This determination will normally be made at the Board's May meeting. However, a determination to rescind Stage 4 may be made as early as the January Board meeting if the total usable storage in the Carmel River System and the Seaside Coastal Subareas portions of the MPWRS is equal to or greater than 27,807 Acre-Feet on January 1~~.

2. In the event total usable storage is greater than 27,807 Acre-Feet, the General Manager shall review California American Water's year-to-date production. Upon compliance with the monthly year-to-date goals specified in Table XV-1 of Rule 162 and, unless otherwise specified in the Resolution rescinding Stage 4, Water Users shall revert to Stage 1. If California American Water's year-to-date production exceeds the year-to-date goal specified in Table XV-1 of Rule 162, California American Water Users shall revert to either Stage 2 or Stage 3.

If year-to-date production in the California American Water subsystems exceeds the year-to-date target specified in Table XV-2 of Rule 162, Bishop, Hidden Hills and Ryan Ranch Water Users shall revert to Stage 3.

Section XX: Amendment to Rule 165-167, Stages 5-7 Water Rationing

Rules 165-A-1, 166-A-1, and 167-A-1 shall be amended as shown below, with appropriate adjustments for each Rule's numbering, with added language as shown in ***bold italic*** type face, and deleted language shown in ~~strikeout~~ type face.

A. TRIGGER

1. Physical Shortage Trigger

Stage {5-7} shall take effect for any Water Distribution System that relies, in whole or in part, on production or production offsets from the Carmel River System or the Seaside Coastal Subareas, on June 1 or such earlier date as may be set by the Board following the District's May Board meeting if total usable storage in the Carmel River System and the Seaside Coastal Subareas on May 1 is ~~less than~~ ***within the Stage {5-7} Rationing range shown on Table XV-4.*** ~~27,807 Acre-Feet and greater than 21,802 Acre-Feet. If total usable storage is equal or greater than 27,807 Acre-Feet on May 1, no water rationing shall be imposed.~~ ***Table XV-4 shall be periodically updated by Resolution of the Board.***

Rules 165-B-1, 166-B-1, and 167-B-1 shall be amended as shown below, with appropriate adjustments for each Rule's numbering, with added language as shown in ***bold italic*** type face, and deleted language shown in ~~strikeout~~ type face.

B. SUNSET OF STAGE 5

1. Water Supply Availability

Stage 5 shall continue until rescinded by Resolution of the Board of Directors. In that Resolution, the Board shall find that the total usable storage in the Carmel River System and the Seaside Coastal Subareas is greater than ***the Stage {5-7} Rationing range shown on Table XV-4***~~21,802 Acre-Feet~~. This determination will normally be made at the Board's May meeting. However, a determination to rescind Stage {5-7} may be made as early as the following

January Board meeting ~~if the total usable storage in the Carmel River System and the Seaside Coastal Subareas is equal to or greater than 27,807 Acre-Feet on January 1~~.

2. In the event total usable storage is greater than ***the amount required to trigger Stage 4 Rationing*** ~~27,807 Acre-Feet~~, the General Manager shall review California American Water's year-to-date production. Upon compliance with the monthly year-to-date goals specified in Table XV-1 of Rule 162 and, unless otherwise specified in the Resolution rescinding Stage 5, Water Users shall revert to Stage 1.

3. Where Stage 5 has been imposed upon any Water Distribution System to comply with a final Cease and Desist Order by the State Water Resources Control Board, the Seaside Watermaster or any other final court order, Stage 5 shall continue until a Resolution of the Board of Directors is adopted that finds that the triggering order has been lifted or no longer applies to that Water Distribution System.

The remaining provisions of Rule 165-167 shall remain unchanged by this ordinance.

Section XX: Amendment to Rule 172-E, Landscape Water Audits

Rules 172-E shall be amended as shown below, with added language as shown in bold italic type face, and deleted language shown in ~~strikeout~~ type face.

A. Rule 172-E shall be amended as shown in bold italics (***bold italics***) and strikethrough (~~strikethrough~~).

LANDSCAPE IRRIGATION RESTRICTIONS

~~Unless watering is by drip irrigation or through a hand-held hose with a Positive Action Shut-Off Nozzle, t~~***T***he following watering schedule shall apply:

1. ~~Odd-Numbered Properties~~ ***All Sites that require irrigation*** shall water ~~after 5 p.m. or~~ before 9 a.m. ***or after 5 p.m.*** on Saturdays and Wednesdays only. ~~This schedule shall also apply to properties located on the South or West side of the street in cities where no street address is available.~~

~~2. Even Numbered Properties shall water after 5 p.m. or before 9 a.m. on Sundays and Thursdays only. This schedule shall also apply to properties located on the North or East side of the street in cities where no street address is available.~~

~~3~~*2*. Sprinkler irrigation overseen by a professional gardener or landscaper who is available on Site may occur between 9 a.m. and 5 p.m., but ***in no case shall irrigation occur on more than*** ~~shall not exceed two watering~~ ***two*** days per week.

3. Non-sprinkler water efficient irrigation managed by a properly set and maintained Smart Controller shall be allowed.

4. Hand watering with a hose shall require a quick acting Positive Action Shut-Off Nozzle.

Section XX: Publication and Application

The provisions of this ordinance shall cause the republication and amendment of the permanent Rules and Regulations of the Monterey Peninsula Water Management District.

Section XX: Effective Date and Sunset

This ordinance shall take effect at 12:01 a.m. on the 30th day after it has been enacted on second reading.

This Ordinance shall not have a sunset date.

Section XX: Severability

If any subdivision, paragraph, sentence, clause or phrase of this ordinance is, for any reason, held to be invalid or unenforceable by a court of competent jurisdiction, such invalidity shall not affect the validity or enforcement of the remaining portions of this ordinance, or of any other provisions of the Monterey Peninsula Water Management District Rules and Regulations. It is the District's express intent that each remaining portion would have been adopted irrespective of the fact that one or more subdivisions, paragraphs, sentences, clauses, or phrases be declared invalid or unenforceable.

On motion by Director _____, and second by Director _____, the foregoing ordinance is adopted upon this _____ day of _____, 2015, by the following vote:

AYES:

NAYS:

ABSENT:

I, David J. Stoldt, Secretary to the Board of Directors of the Monterey Peninsula Water Management District, hereby certify the foregoing is a full, true and correct copy of an ordinance duly adopted on the _____ day of _____, 2015.

Witness my hand and seal of the Board of Directors this _____ day of _____ 2015.

_____

David J. Stoldt, Secretary to the Board

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ITEM: PUBLIC HEARING

13. CONSIDER FIRST READING OF ORDINANCE NO. 164 ESTABLISHING WATER PERMIT REQUIREMENTS FOR OUTDOOR SEATING AT RESTAURANTS

Meeting Date:	**March 16, 2015**	**Budgeted:**	**N/A**
From:	**David J. Stoldt, General Manager**	**Program/ Line Item No.:**	**N/A**
Prepared By:	**Stephanie Locke**	**Cost Estimate:**	**N/A**

General Counsel Review: Yes
Committee Recommendation: The Water Demand Committee recommends approval (February 12, 2015)
CEQA Compliance: In progress. The Board will consider a CEQA determination prior to consideration of adoption.

SUMMARY: As directed by the Board on December 15, 2014, draft Ordinance No. 164 (**Exhibit 13-A)** changes the District's administrative practice of not issuing Water Permits for outdoor restaurant/bar seating. The new rule allows one-half the number of interior seats to be used outdoors without a permit requirement. A Water Permit is required for exterior seats in excess of this "standard exterior seat allowance." The draft ordinance also adds definitions to Rule 11 for Fast Food Restaurants and Wine Tasting Rooms and amends the permit exemption for temporary and unenclosed structures (including temporary exterior restaurant seats).

To implement the rule, existing and planned exterior restaurant seating (i.e., new seating approved by the Jurisdiction before September 1, 2015) will be "grandfathered" and exempted from the permit requirement. Sites that have a restaurant Water Permit on file with MPWMD will continue to be restricted to the permitted number of interior seats, but will receive a Water Permit for existing exterior seating in use as of the effective date of the ordinance. There will be no charge for documenting the existing exterior seating. After adoption, the District will contact restaurant water account holders and property owners of the pending policy change and the September 1, 2015, deadline for permitting existing exterior seating. Staff will work with the hospitality industry, the local Chambers of Commerce, and the Jurisdictions to document exterior seat counts prior to the deadline.

The ordinance has been recommended to the Board by the Water Demand Committee and has been vetted by hospitality and business interest groups. Staff also provided and discussed the ordinance with Save Our Carmel River representatives and with the Technical Advisory Committee (TAC).

An Initial Study will be circulated for comment prior to second reading. The review period will end in early April 2015, allowing staff to present any comments to the Board prior to consideration of adoption.

RECOMMENDATION: The Board should discuss the draft ordinance, receive public comment, and approve the first reading of Ordinance No. 164.

EXHIBIT

13-A Draft Ordinance No. 164 including Table 2: Non-Residential Water Use Factors

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EXHIBIT 13-A

DRAFT
ORDINANCE NO. 164

AN ORDINANCE OF THE BOARD OF DIRECTORS OF THE MONTEREY PENINSULA WATER MANAGEMENT DISTRICT ESTABLISHING WATER PERMIT REQUIREMENTS FOR OUTDOOR SEATING AT RESTAURANTS

FINDINGS

1. The Water Management District is charged under the Monterey Peninsula Water Management District Law with the integrated management of the ground and surface water resources in the Monterey Peninsula area.

1. The Water Management District has general and specific power to cause and implement water conservation activities as set forth in Sections 325 and 328 of the Monterey Peninsula Water Management District Law.

2. Downtown revitalization programs in the cities of Monterey and Pacific Grove have focused attention on the growing popularity of al fresco dining as a means to attract more patrons to restaurants.

3. MPWMD's administrative practice has been to not require a Water Permit for Exterior Restaurant Seating. This practice has been in place since the 1980's.

4. Board action in November 1990 (appeal of staff decision to not allow credit for an outdoor seating area for Rappa's Seafood Restaurant) supported the administrative practice to disallow credit for outdoor seating. As a result, District Water Permit administration practices continued to affirm that outdoor seating has no measurable Water Use Capacity.

5. The District Non-Residential Water Use Factor for Restaurant is 0.02 AF per indoor seat.

6. A & N Technical Services conducted a *Technical Analysis of Non-Residential Water Use Factors for the Monterey Peninsula Water Management District (MPWMD)*[1]. The MPWMD factor for Full Serve Restaurants was found to be statistically sound, although

[1] October 10, 2011, Technical Memorandum.

slightly higher than the A & N finding.

7. It has been asserted that overall water consumption on the Monterey Peninsula is not impacted as a result of Exterior Restaurant Seating. The overall demand for restaurant dining within the District is not affected by outdoor seating unless a statistically significant number of new visitors to the region are attracted to the region due to outdoor dining. This has not been documented. Rather, al fresco dining creates competition between restaurants for an existing customer's demand.

8. Fire codes dictate the number of Interior Restaurant Seats that are allowed within a specified area. Locally, that number is one seat per 15 square-feet[2].

9. Many restaurants operate below Capacity. That is, the restaurant is not turning a table continuously for the duration of the businesses operating hours. In addition, the hours of operation vary significantly from one restaurant to another and are subject to change. For these reasons, the location of the diner (indoors or out) has de minimis impact on potential consumption.

10. The Water Demand Committee recommended the Board allow fifty percent of the interior seat count as a standard exterior seating allowance. That is, up to fifty percent of the number of interior seats could be used outdoors without a measurable impact to Capacity.

11. There are a number of days each year when weather and climate affect the use of Exterior Restaurant Seats, making outdoor dining undesirable. Therefore, Exterior Restaurant Seating in excess of the "standard Exterior Restaurant Seat allowance" has a lower potential Water Use Capacity than Interior Restaurant Seats.

12. This ordinance defines a "Temporary Structure" to provide clarification during the Water Permit process.

13. Table 2: Non-Residential Water Use Factors is amended to delete an exemption for unenclosed structures, as there are factors related to permitted uses that could occur in such a structure.

14. This ordinance shall amend and republish the Rules and Regulations of the Water Management District.

[2] City of Monterey, Todd Bennett, Associate Planner, February 3, 2015

NOW THEREFORE be it ordained as follows:

ORDINANCE

Section One: Short Title

This ordinance shall be known as the ***2015 Exterior Restaurant Seating Ordinance*** of the Monterey Peninsula Water Management District.

Section Two: Purpose

This ordinance codifies Water Permit requirements for exterior seating at Restaurant establishments. This ordinance also defines a category for "Wine Tasting Room" for purposes of issuing a Water Permit, and clarifies the definition of "Temporary Structures" related to occupancy that requires a Water Permit.

Section Three: Amendment of Rule 11, Definitions

Rule 11, Definitions, shall be amended as follows, with added language shown in ***bold italic*** type face and deleted language shown in ~~strikeout~~ type face.

> ***CONDITIONED SPACE[3] – "Conditioned Space" shall mean an enclosed space within a building where there is intentional control of the space thermal conditions within defined limits using natural, electrical, or mechanical means. Spaces that do not have heating or cooling systems but rely on natural or mechanical flow of thermal energy from adjacent spaces to maintain thermal conditions within defined limits are considered conditioned spaces. Examples include restrooms that use exhaust fans to draw in conditioned air to maintain thermal conditions and atria that rely on natural convection flow to maintain thermal conditions.***
>
> ***EXTERIOR RESTAURANT SEAT – "Exterior Restaurant Seat" shall mean a dining/bar seat used by a Restaurant that is located in an area that is in or exposed to the open air outside the Restaurant building or structure.***
>
> ***FAST FOOD RESTAURANT – "Fast-Food Restaurant" shall mean a restaurant that prepares and provides food quickly through a drive-through system or while you wait at the counter. Menu choices typically focus on hand-held food offerings prepared in***

[3] National Renewable Energy Laboratory definition

quantity by a standard method, where a significant amount of the food is intended to be consumed off-site and is served in disposable packaging.

INTERIOR RESTAURANT SEAT – "Interior Restaurant Seat" shall mean a dining/bar seat used by a Restaurant that is located inside a building or that is in a Conditioned Space.

RESTAURANT – "Restaurant" shall mean premises where patrons order, sit, and eat a meal that is prepared and served and that is not a private residence. The defining characteristic of full-service Restaurants as categorized by the District as a "Group III Restaurant" is the use of china, glassware, or other reusable materials to serve the food/beverage(s). This definition of Group III Restaurant use shall also apply to bars/brew pubs, and to cafeterias and Restaurants at institutional facilities that serve on china, glassware, or other reusable materials.

TEMPORARY EXTERIOR RESTAURANT SEAT – "Temporary Exterior Restaurant Seat" shall mean a dining/bar seat that is located in an area that is in or exposed to the open air outside the Restaurant building or structure and that is temporary in nature (i.e., for a single event or temporary use).

TEMPORARY STRUCTURE – "Temporary Structure" shall mean a structure that is erected to be temporary in nature, usually without a permanent foundation or permanent plumbing.

WINE TASTING ROOM – "Wine Tasting Room" shall mean a location intended for use in association with an Alcoholic Beverage Control (ABC) Type 02 License with or without an ABC Type 20 License; or a location intended for use in association with an ABC Type 20 License with an ABC Type 41 License. A Wine Tasting Room may offer "limited food preparation" as defined by California Health and Safety Code Section 113818, but is neither a Restaurant nor a bar/brew pub because the primary use of the site is for tasting, consumption and retail sale of wine.

Section Four: Amendment to Rule 20-B

Rule 20-B-5, Permits to Connect to or Modify a Connection to a Water Distribution System, shall be amended as follows, with added language shown in ***bold italic*** type face and deleted language shown in ~~strikeout~~ type face.

The following action requires a Water Permit:

5. Any Change of Use ~~and~~ ***or*** any expansion of a Non-Residential use to a more intensive use as ~~shown on Table 2 (~~***determined by*** Rule 24~~)~~, ***with the*** except***ion of*** ~~when the Change of Use or expansion~~ ~~modifies~~ ~~(1) an unenclosed structure that has no plumbing~~ ~~or (2) a~~ ~~t~~***T***emporary ~~s~~***S***tructure***s and Temporary Exterior Restaurant Seats*** ~~(i.e., a structure without permanent occupancy and without a permanent foundation and that has no plumbing)~~ ***that are not occupied or in use for longer than thirty (30) consecutive days.***

Section Five: Amendment to Rule 24-B

Rule 24-B, shall be amended as follows, with added language shown in ***bold italic*** type face and deleted language shown in ~~strikeout~~ type face.

B. NON-RESIDENTIAL CALCULATION OF WATER USE CAPACITY

Non-Residential Water Use Capacity shall be calculated using Table 2: Non-Residential Water Use Factors. Each Non-Residential use shall be assigned a factor that when multiplied by a specified measurement shown on Table 2 (i.e., square-footage, number of rooms/seats, etc.) results in an estimate of the approximate annual Water Use Capacity in Acre-Feet. Non-Residential applications shall be reviewed to determine if there is an increase in water demand as a result of the proposed Project. Amendments to Table 2 henceforth shall be made by Resolution of the Board of Directors.

1. Methodology for Determining Water Use Capacity

The following process shall be used to determine if there is an increase in Water Use Capacity:

a. The General Manager shall estimate Water Use Capacity of the proposed Project using the Water Use Factors from Table 2: Non-Residential Water Use Factors.

(1) New Construction: When the Non-Residential Water Use Factor is based on a square-footage factor, the entire square-footage shall be applied to the factor for construction of a new building.

(2) Tenant Improvements: When the Non-Residential Water Use Factor is based on a square-footage for a Tenant Improvement, the usable square-footage shall be applied to the factor.

b. When a Non-Residential Project proposes two or more of the uses set forth in Table 2, each proposed use shall be subject to a separate calculation. By way of example, a motel/restaurant would be subject to both the motel use by unit and the restaurant use by seat calculation. Similarly, a gas station with a retail facility would be subject to both the gas station use by pump and the retail use by square-footage. Where a proposed use may be designated as more than one category, the category which most accurately depicts projected water use shall be selected or the uses shall be calculated based on the square-footage or other factor for each area in which the use occurs. When the proposed use appears to fall into more than one category, the higher intensity use category shall be chosen.

c. For New Construction on Vacant Lots, the General Manager shall add the quantity of water determined to be the exterior water demand based on the ETWU to the total Estimated Annual Water Use Capacity determined in 24-B-2.

d. If the application includes a Non-Residential use that is not identical to or similar to those uses shown on Table 2: Non-Residential Water Use Factors, the General Manager shall research the projected annual consumption of the use and shall recommend a value to the Board that corresponds to the Estimated Annual Water Use Capacity.

e. The General Manager shall compare the pre-Project Estimated Annual Water Use Capacity against the Estimated Annual Water Use Capacity shown on the Construction Plans submitted with the Water Release Form and Water Permit application. Pre-Project Estimated Annual Water Use Capacity may be verified by inspection.

f. The General Manager shall reduce the Estimated Annual Water Use Capacity by any verified Water Use Credit or On-Site Water Credit applicable to the application as shown on the Water Release Form and Water Permit application and shall determine the Adjusted Water Use Capacity of the proposed project.

g. Based upon the review conducted in 24-B-1-f, the General Manager shall determine if the Project will result in a positive, neutral or reduced Water Use Capacity on the Site.

(1) An increase in Capacity (Intensification of Use) shall cause the calculation and collection of a Capacity Fee prior to issuance of a Water Permit.

(2) No Capacity Fee shall be assessed when there is no increase in Water Use Capacity.

(3) A reduction in Water Use Capacity shall result in a Water Credit upon verification that the former use has been abandoned. This credit shall be established in conformance with Rule 25.5.

h. Projects at Public School District Sites shall be considered to have a zero Adjusted Water Use Capacity when the entire Public School District Site meets or exceeds Rule 143 Water Efficiency Standards for Existing Non-Residential Uses.

i. A Restaurant's Water Use Capacity shall be determined by the maximum Interior Restaurant Seat count authorized by the Jurisdiction and District. Exterior Restaurant Seats may be maintained for al fresco dining without a requirement for a new or amended Water Permit provided the maximum number of Exterior Restaurant Seats does not exceed one-half the number of authorized Interior Restaurant Seats (the "standard exterior seat allowance".) Exterior Restaurant Seating not in compliance with this paragraph shall require a new or amended Water Permit.

Section Six: **Amendment to Rule 24, Table 2: Non-Residential Water Use Factors**

Rule 24, Table 2: Non-Residential Water Use Factors, shall be amended as shown on **Attachment 1**, with added language shown in ***bold italic*** type face and deleted language shown in ~~strikeout~~ type face.

Section Seven: **Amendment to Rule 25.5-E**

Rule 25.5-E, shall be amended as follows, with added language shown in ***bold italic*** type face and deleted language shown in ~~strikeout~~ type face.

E. The following types of Permanent Abandonment of Capacity shall qualify for a Water Use Credit under this Rule:

1. Demolition of a building or use that has been recognized by the District as being a lawful water use***;***

2. ***Demolition or removal of Exterior Restaurant Seats specifically permitted by debiting Water Use Capacity from an Allocation, Entitlement, or Water Credit.***

Section Eight: **Interior and Exterior Restaurant Seating Existing as of the Effective Date of this Ordinance**

1. Interior and Exterior Restaurant Seats in use as of the effective date of this ordinance, and Exterior Restaurant Seats that have the Jurisdictional permit(s) approved as of September 1, 2015, shall be exempt from this ordinance, provided each such Restaurant/Bar with Exterior Restaurant Seats that exceed the fifty percent (50%) of the Interior Restaurant Seat count shall, on or before September 1, 2015, obtain a Water Permit from the District to document the existing conditions. No fee shall be assessed and no Water Release Form shall be required for the District to issue a Water Permit pursuant to this paragraph. Seats documented under this paragraph shall not qualify for a Water Credit upon demolition or removal.

2. After September 1, 2015, the District shall no longer issue Water Permit documentation under Paragraph 1 of this Section for Exterior Restaurant Seats that existed prior to the effective date of this Ordinance.

Section Nine: Publication and Application

The provisions of this ordinance shall cause the republication and amendment of the permanent Rules and Regulations of the Monterey Peninsula Water Management District.

Section Ten: Effective Date and Sunset

This ordinance shall take effect at 12:01 a.m. on the 30th day after it has been enacted on second reading.

This Ordinance shall not have a sunset date.

Section Eleven: Severability

If any subdivision, paragraph, sentence, clause or phrase of this ordinance is, for any reason, held to be invalid or unenforceable by a court of competent jurisdiction, such invalidity shall not affect the validity or enforcement of the remaining portions of this ordinance, or of any other provisions of the Monterey Peninsula Water Management District Rules and Regulations. It is the District's express intent that each remaining portion would have been adopted irrespective of the fact that one or more subdivisions, paragraphs, sentences, clauses, or phrases be declared invalid or unenforceable.

On motion by Director _____, and second by Director _____, the foregoing ordinance is adopted upon this ___ day of _____, 2015 by the following vote:

AYES:

NAYS:

ABSENT:

I, David J. Stoldt, Secretary to the Board of Directors of the Monterey Peninsula Water Management District, hereby certify the foregoing is a full, true and correct copy of an ordinance duly adopted on the ___ day of _____ 2015.

Witness my hand and seal of the Board of Directors this ____ day of ____ 2015.

_____

David J. Stoldt, Secretary to the Board

TABLE 2: NON-RESIDENTIAL WATER USE FACTORS

Group I

Auto Uses	Retail	Warehouse	Dental Clinic	Office	Bank	Supermarket
Church	Nail Salon	Family Grocery	Medical Clinic	***Wine Tasting Room***	Fast Photo	Convenience Store
Dry Cleaner (No On-Site Laundry)			Veterinary Clinic	School	Gym	

Group II

Users in this category prepare and sell food/beverages that are primarily provided to customers on disposable tableware. Food with high moisture content and liquid food may be served on reusable tableware. Pizza must be served on reusable platters or on disposable plates. Glassware may be used to serve beverages.

Bakery	Pizza	Coffee House	Ice Cream Shop
Catering	Deli	Bistro	Sandwich Shop

Group III

Assisted Living (more than 6 beds)[1]	0.085 AF/Bed
Beauty Shop/Dog Grooming	0.0567 AF/Station
Child***/Dependent Adult Day*** Care	0.0072 AF/~~Child~~ ***Person***
Dormitory[2]	0.040 AF/Room
Gas Station	0.0913 AF/~~Pump~~ ***Fuel Dispenser***
Laundromat	0.2 AF/Machine
Meeting Hall***/Banquet Room***	0.00053 AF/SF
Motel/Hotel/Bed & Breakfast~~:~~	0.1 AF/Room
w/Large Bathtub (Add to room factor)	0.03 AF/Tub
Irrigated Areas beyond ten feet of any building	ETWU
Plant Nursery	0.00009 AF/SF ~~Total~~ Land ***Area***
Public Toilet~~s~~	0.058 AF/Toilet
Public Urinal~~s~~	0.036 AF/Urinal
Zero Water Consumption Urinal~~(s)~~	No Value
Restaurant (including Bar/Brewpub Seats)	0.02 AF/***Interior Restaurant*** Seat
Exterior Restaurant Seats above the "Standard Exterior Seat Allowance"[3]	***0.01 AF/Exterior Restaurant Seat***
Exterior Restaurant Seats within the "Standard Exterior Seat Allowance"	***No Value***
Restaurant (24-Hour and Fast Food)	0.038 AF/***Interior Restaurant*** Seat
Self-Storage	0.0008 AF/Storage Unit
Skilled Nursing***/Alzheimer's Care***	0.12 AF/Bed
Spa	0.05 AF/Spa
Swimming Pool	0.02 AF/100 SF ***of*** Surface Area
Theater	0.0012 AF/Seat

Group IV - MODIFIED NON-RESIDENTIAL USES

Users listed in this category have reduced water Capacity from the types of uses listed in Groups I-III and have received a Water Use Credit for modifications. ~~The General Manager shall maintain a list of specific properties in this Group that have received a Water Use Credit pursuant to Rule 25.5 for permanent reduction in use.~~ ***Please inquire for specific property information.***

All New Connections: Refer to Rule 24-B, Exterior Non-Residential Water Demand Calculations

Notes: Any Non-Residential water use which cannot be characterized by one of the use categories set forth in Table 2 shall be designated as "other" and assigned a factor which has a positive correlation to the anticipated Water use Capacity for that Site.

~~Unenclosed structures are exempt from the Non-Residential Permit requirements and have no Water Credit value.~~

[1] Assisted living Dwelling Units shall be permitted as Residential uses per Table 1, Residential Fixture Unit Count Values.

[2] Dormitory water use at educational facilities is a Residential use, although the factor is shown on Table 2.

[3] ***See Rule 24-B-1 and Rule 25.5 for information about the "Standard Exterior Seat Allowance"***

ITEM: PUBLIC HEARING

14. CONSIDER ADOPTION OF APRIL THROUGH JUNE 2015 QUARTERLY WATER SUPPLY STRATEGY AND BUDGET

Meeting Date:	**March 16, 2015**	**Budgeted:**	**N/A**
From:	**David J. Stoldt, General Manager**	**Program/ Line Item No.:**	**N/A**
Prepared By:	**Kevan Urquhart & Jonathan Lear**	**Cost Estimate:**	**N/A**

General Counsel Review: N/A
Committee Recommendation: N/A
CEQA Compliance: Notice of Exemption, CEQA, Article 19, Section 15301 (Class 1)
ESA Compliance: Consistent with the 2001 Conservation Agreement, 2009 Settlement Agreement between the National Marine Fisheries Service and California American Water to minimize take of listed steelhead in the Carmel River, and SWRCB WR Order Nos. 95-10, 98-04, 2002-0002, and 2009-0060.

SUMMARY: The Board will accept public comment and take action on the April through June 2015 Quarterly Water Supply Strategy and Budget for California American Water's (Cal-Am) Main and Laguna Seca Subarea Water Distribution Systems (WDS). The proposed budgets, which are included as **Exhibit 14-A and 14-B**, show monthly production by source of supply that is required to meet projected customer demand in CalAm's Main and Laguna Seca Subarea systems, i.e., Ryan Ranch, Bishop, and Hidden Hills, during the April through June 2015 period. The proposed strategy and budgets are designed to maximize the long-term production potential and protect the environmental quality of the Seaside Groundwater and Carmel River Basins.

Exhibit 14-A shows the anticipated production by Cal-Am's Main system for each production source and the actual production values for the Water Year (WY) 2015 to date through the end of February 2015. The anticipated production values assume that Cal-Am's annual main system production for customer service will not exceed 12,196 acre-feet (AF), including 2,251 AF from Cal-Am's wells in the Coastal Subareas of the Seaside Groundwater Basin, 300 AF from Sand City Desalination Plant, 215 AF to be recovered from what has been stored so far by ASR, and 9,430 AF from the Carmel River Basin. The total from the Carmel River Basin is consistent with State Water Resources Control Board (SWRCB) Order No. 95-10 and 2009-0060. The total from the Seaside Groundwater Basin is consistent with the Seaside Basin Adjudication Decision. For the purpose of this budget, it is conservatively assumed that Below Normal inflow conditions will occur for the rest of WY 2015.

Exhibit 14-B shows the anticipated production by Cal-Am's Laguna Seca Subarea systems for each production source and the actual production values for WY 2015 to date through the end of February 2015. Please note that the budgeted production values assume that Cal-Am's annual production for WY 2015 will not exceed 48 AF from the Laguna Seca Subarea of the Seaside

Groundwater Basin, whereas actual demand will exceed that amount. This total is consistent with the Seaside Basin adjudication decision.

If stream flow in the Carmel River exceeds the instream flow requirements specified by National Marine Fisheries Service (NMFS), a portion of the "excess" water may be diverted by Cal-Am for injection into the Seaside Groundwater Basin as part of Water Projects 1 and 2. The amount of water diverted from the Carmel River that is treated and delivered for injection will also depend on competing customer demand and the capacity of Cal-Am's Carmel Valley wells at that time.

RECOMMENDATION: The Board should receive public input, close the Public Hearing, and discuss the proposed quarterly water supply budget. District staff recommends adoption of the proposed budget. The budgets are described in greater detail in **Exhibit 14-C**, Quarterly Water Supply Strategy Report: April – June 2015.

BACKGROUND: The Quarterly Water Supply Strategy and Budget pertains to production within Cal-Am's Main and Laguna Seca Subarea systems for the three-month period of April, May, and June 2015. Staff from the District, Cal-Am, California Department of Fish and Wildlife (CDFW), United states Fish and Wildlife Service (USFWS), and the National Marine Fisheries Service (NMFS) cooperatively reviewed and approved this strategy on March 10, 2015. Staff from the State Water Resources Control Board's Division of Water Rights (SWRCB-DWR) were unable to attend the meeting by conference call. Based on current reservoir and Carmel Alluvial Aquifer storage conditions, and river flows in October 2014 through February 2015, it was agreed that "Below Normal" year inflows would be used to conservatively assess Cal-Am's operations and set monthly production targets for Cal-Am's systems.

To meet customer demand in its main system, Cal-Am intends to try to avoid producing any groundwater from its wells in the Upper Carmel Valley during April through June 2015, and will focus instead on producing approximately 1,018, 1,194, and 1,112 AF of groundwater from its wells in the Lower Carmel Valley during April, May, and June 2015, respectively. It is assumed that 200 AF of this total quarterly production would be diverted from the Carmel River and injected for storage into the Seaside Groundwater Basin during April and May 2015.

It was also agreed that, subject to rainfall and runoff conditions in the Carmel River Basin, Cal-Am would produce 100, 125, and 150 AF of water each month in April, May and June 2015, respectively, from the Coastal Subareas of the Seaside Basin, in addition to 25 AF per month from the Sand City Desalination Plant during this period. It was also agreed that Cal-Am would budget to produce 3, 5, and 5 AF of groundwater from its wells in the Laguna Seca Subarea for its customers in the Ryan Ranch, Bishop, and Hidden Hills systems, respectively, during this period. Lastly, it was agreed that Cal-Am would not divert any water from San Clemente Reservoir through the Carmel Valley Filter Plant during this quarter. Cal-Am will operate its wells in the Lower Carmel Valley in a downstream-to-upstream order. If actual inflows are more or less than projected for the budget period, the group will reconvene and adjust the diversion and release rates accordingly.

Rule 101, Section B of the District Rules and Regulations requires that a Public Hearing be held

at the time of determination of the District water supply management strategy. Adoption of the quarterly water supply strategy and budget is categorically exempt from the California Environmental Quality Act (CEQA) requirements as per Article 19, Section 15301 (Class 1). A Notice of Exemption will be filed with the Monterey County Clerk's office, pending Board action on this item.

EXHIBITS

14-A Quarterly Water Supply Strategy and Budget for CAW Main System: April - June 2015

14-B Quarterly Water Supply Strategy and Budget for CAW Laguna Seca Subarea: April - June 2015

14-C Quarterly Water Supply Strategy and Budget Report: April - June 2015

EXHIBIT 14-A

California American Water Main Distribution System
Quarterly Water Supply Strategy and Budget: April - June 2015

Proposed Production Targets by Source and Projected Use in Acre-Feet

SOURCE/USE	MONTH			YEAR-TO-DATE		
	Apr-15	May-15	Jun-15	Oct-14 to Feb-15	% of YTD	% of Annual Budget
Source						
Carmel Valley Aquifer						
Upper Subunits	0	0	0	**222**		
Lower Subunits	918	1,094	1,112	**2,643**	81%	28%
ASR Diversion	100	100	0	**215**		
Total	**1,018**	**1,194**	**1,112**	**3,080**		
Seaside Groundwater Basin						
Coastal Subareas	100	125	150	**785**	78%	35%
Phase 1 ASR Recovery	0	0	0	**0**		
Sand City Desalination	25	25	25	**86**	69%	29%
Total	**125**	**150**	**175**	**871**		
Use						
Customer Service	1,043	1,244	1,287	**3,736**	85%	31%
Phase 1 ASR Injection	100	100	0	**215**		
Total	**1,143**	**1,344**	**1,287**			

Notes:

1. The budget reflects "Below Normal" inflow conditions and assumes that the monthly unimpaired inflows at the San Clemente Dam site during the April 2015 - June 2015 period will be approximately 3,886, 1,993 and 756 AF, respectively. The exceedence values are based on the 1902-2014 period of record.
2. The annual budget period corresponds to the Water Year, which begins on October 1 and ends on September 30 of the following Calendar Year.
3. Total monthly production for "Customer Service" in CAW's main system was calculated by multiplying total annual production (12,196 AF) times the average percentage of annual production for April, May, and June (7.6%, 9.3%, and 9.6%, respectively). According to District Rule 162, the annual production total was based on the assumption that production from the Coastal Subareas of the Seaside Groundwater Basin would not exceed 2,251 AF and production from Carmel River sources, without adjustments for water produced from water resources projects, would not exceed 9,945 AF in WY 2015. The average production percentages were based on monthly data for customer service from WY 2005 to 2014.
4. Maximum daily production values for "Phase 1 and 2 ASR Storage" are based on an average diversion rate of approximately 3,000 gallons per minute (gpm) or 13.3 AF per day and 1,500 gpm or 6.6 AF per day, respectively, from CAW's sources in the Carmel River Basin. Maximum daily production for Phase 1 and 2 ASR sites is 19.9 AF per day. Total monthly production is estimated by multiplying the maximum daily production by operational days per month for "Below Normal" flow conditions at San Clemente Dam.
5. The production targets for CAW's wells in the Upper Subunits of the Carmel Valley Aquifer are set at 0, based on CAW's goal to avoid use of these wells, year round. However, production could be higher to support ASR injection under existing State water rights and interagency operating agreements.
6. The production targets for CAW's wells in the Seaside Coastal Subareas are based on the assumption that sufficient flow will occur in the Carmel River at the targeted levels, to support ASR injection. It is planned that Coastal Subarea pumping will not occur, or will be proportionally reduced, if ASR injection does not occur at targeted levels.
7. The production targets for CAW's wells in the Seaside Coastal Subareas are based on the need for CAW to produce its full Standard Allocation during WY 2015 to be in compliance with SWRCB WRO No. 95-10.
8. It should be noted that monthly totals for Carmel Valley Aquifer sources may be different than those shown in MPWMD Rule 162, Table XV-3. These differences result from monthly target adjustments needed to be consistent with SWRCB WRO 98-04, which describes how Cal-Am Seaside Wellfield is to be used to offset production in Carmel Valley during low-flow periods. Adjustments are also made to the Quarterly Budgets to ensure that compliance is achieved on an annual basis with MPWMD Rule 162 totals.

EXHIBIT 14-B

California American Water Laguna Seca Subarea Distribution Systems
Quarterly Water Supply Strategy and Budget: April - June 2015

Proposed Production Targets by Source and Projected Use in Acre-Feet

SOURCE/USE	MONTH			YEAR-TO-DATE		
	Apr-15	May-15	Jun-15	Oct-14 to Feb-15	% of YTD	% of Annual
Source						
Seaside Groundwater Basin						
Laguna Seca Subarea	3	5	5	**120**	748.4%	249.5%
Other	0	0	0	**0**	0.0%	0.0%
Use						
Customer Service	3	5	5			
Total	**3**	**5**	**5**	**120**	748.4%	249.5%

Notes:
1. The annual budget period corresponds to the Water Year, which begins on October 1 and ends on September 30 of the following Calendar Year.
2. Total monthly production for "Customer Service" in CAW's Laguna Seca Subarea systems was calculated by multiplying total annual production (48 AF) times the average percentage of annual production for April, May, and June (7.1%, 9.7%, and 10.6%, respectively). The average production percentages were based on monthly data for customer service from WY 2005 to 2013. The 48 AF annual production limit is specified in the Seaside Basin Adjudication Decision and is subject to change.
3. It should be noted that, based on recent historical use, actual monthly use will likely exceed the proposed monthly production target. In this context, the production targets represent the maximum monthly production that should occur so that CAW remains within its Standard Production Allocation for the Laguna Seca Subarea specified in the Seaside Decision. Accordingly, actual production beyond these production targets will be subject to replenishment assessment by the Seaside Basin Watermaster.
4. "Other" production sources refer to supplies transferred to Laguna Seca Subarea customers from CAW's Carmel River sources or water rights acquired from other producers in the Seaside Basin to produce additional water. For example, under emergency conditions, water can be transferred from sources that serve customers in CAW's main system, via an existing interconnection , to customers in CAW's Ryan Ranch system.

EXHIBIT 14-C
Quarterly Water Supply Strategy and Budget Report
California American Water
Main Water Distribution System: April- June 2015

1. Management Objectives

The Monterey Peninsula Water Management District (District) desires to maximize the long-term production potential and protect the environmental quality of the Carmel River and Seaside Groundwater Basins. In addition, the District desires to maximize the amount of water that can be diverted from the Carmel River Basin and injected into the Seaside Groundwater Basin while complying with the instream flow requirements recommended by the National Marine Fisheries Service (NMFS) to protect the Carmel River steelhead population. To accomplish these goals, a water supply strategy and budget for production within California American Water's (Cal-Am) Main and Laguna Seca Subarea water distribution systems is reviewed quarterly to determine the optimal strategy for operations, given the current hydrologic and system conditions, and legal constraints on the sources and amounts of water to be produced.

2. Quarterly Water Supply Strategy: April - June 2015

On March 10, 2015, staff from the District, Cal-Am, the California Department of Fish and Wildlife (CDFW), the United States Fish and Wildlife Service (USFWS), and NMFS met and discussed the proposed water supply strategy and related topics for the April - June 2015 period. The was State Water Resources Control Board's, Division of Water Rights (SWRCB-DWR) was unable to participate by conference call. Currently, flow in the Carmel River is unregulated and Los Padres Reservoir (LPR) is spilling. LPR is currently at ~104% of maximum effective storage capacity, i.e., 1,731 AF that occurs with the Los Padres Dam (LPD) spillway's notch flashboard removed, or 101% of the 1,775 AF of storage capacity achieved when the notch's flashboard is in place. The LPD notch is open, but may soon be closed to conserve storage, since this is such a dry water year in an ongoing drought. The flashboard was placed into the notch earlier than normal during March of the last Water Year 2014. This was done in order to maximize any potential storage that could be gained last year, so that it could be allocated to sustaining minimum flows in the river over the summer and fall. A similar decision could soon be made by the Low Flow MOA group of agencies. Flow in the Carmel River became and remains continuous to the lagoon, as a result of the two major December and February storms. The lagoon mouth was closed most of January, but reopened regularly with February rains. Without additional rainfall and flow, the lagoon mouth will likely close by the end of March, and remain so until next winter. Rainfall during Water Year (WY) 2015 to date at San Clemente Dam in the upper watershed has totaled 13.85 inches or 90% of the long-term average to date of 15.43 inches at this site, and 65% of the long-term annual average of 21.18 inches. Further, unimpaired runoff at San Clemente Dam for WY 2015 through February has totaled approximately 17,372 AF or about 48% of the long-term average to date for this site of 36,250 AF, and 26% of the long-term annual average of 67,842 AF, making this a "Below Normal" Water Year Type, to date. However, without additional small amounts of rain, the Water Year rating could decline to "Dry" in a few months.

EXHIBIT 14-C
Quarterly Water Supply Strategy and Budget Report
California American Water
Main Water Distribution System: April- June 2015

Carmel River Basin Given these conditions, and runoff to date, it was agreed that "Below Normal" year inflows would be initially assumed to assess Cal-Am's operations during the April through June 2015 period. To meet customer demand, Cal-Am would operate its wells in the Lower Carmel Valley in a downstream-to-upstream sequence, as needed. For the quarterly budget, it was agreed that Cal-Am would attempt to produce no groundwater from its wells in the Upper Carmel Valley during April through June 2015. If sufficient flow in the Carmel River at the District's Don Juan Bridge gage in Garland Park, i.e., any day of 20 or more cubic feet per second (cfs), continues to occur to justify operations allowed under the less restrictive high-flow period, Cal-Am could operate these wells if needed. In addition, it is projected that Cal-Am would produce approximately 1,018, 1,194, and 1,112 AF of groundwater from its wells in the Lower Carmel Valley during April, May and June 2015, respectively, for both customer service and Water Project 1 and 2 (ASR) injection to storage. **Table 1** was not included in this month's Staff Note due to the unpredictability of future hydrology in this relatively unprecedented water year. This table will be revised and updated with March and April flow and storage data, for the April or May, 2015 Board meeting as a formal part of the Annual Low Flow MOA.

Lastly, it was assumed that a total of 200 AF of water would be diverted from the Carmel River Basin and injected into the Seaside Groundwater Basin at a rate of 100 AF each month during April and May, 2015, respectively. Because of the uncertainty in predicting future rainfall and runoff amounts, this assumption is subject to change. A total of 215 AF of water has been injected for storage by Water Project 1 and 2 (ASR) in WY 2105, to date.

Seaside Groundwater Basin It was also agreed that, subject to rainfall and runoff conditions in the Carmel River, Cal-Am would continue production at 100, 125, and 150 AF per month from their wells in the Coastal Subareas, for April, May and June 2015, in addition to the planned 25 AF per month of production from the Sand City Desalination Plant, so as to achieve maximum utilization of the native water available in the basin under the Seaside Basin Adjudication Decision and in compliance with SWRCB Orders 95-10 and 2002-0060. For this budget period, projected Coastal Subarea production could vary from the values shown, depending on whether flows are sufficient to reinitiate Water Project 1 and 2 (ASR) injection operations. These operations may require some minor production from the Seaside wells in April and May to pressurize the delivery system and enable ASR injection. It was also agreed that only 3, 5, and 5 AF of groundwater would be budgeted from Cal-Am's wells in the Laguna Seca Subarea of the Seaside Basin for customers in the Ryan Ranch, Bishop, and Hidden Hills systems during April, May and June 2015, respectively. It is recognized that, based on recent historical use, Cal-Am's actual production from the Laguna Seca Subarea during this period will undoubtedly exceed the proposed monthly targets, which are based on Cal-Am's allocation specified in the Seaside Basin Adjudication Decision. For example, in the April through June 2014 period, Cal-Am produced 26, 35, and 35 AF from the Laguna Seca Subarea to meet customer demand in the Ryan Ranch, Bishop, and Hidden Hills systems. In this context, the production targets represent the maximum monthly production that should occur so that Cal-Am

remains within its adjudicated allocation for the Laguna Seca Subarea. Under the amended Seaside Basin Adjudication Decision, Cal-Am is allowed to use production savings in the Coastal Subareas to offset over-production in the Laguna Seca Subarea, but such savings are unlikely to occur in WY 2015, and Cal-Am would instead incur a replenishment fee.

ITEM: PUBLIC HEARING

15. CONSIDER ADOPTION OF 2014 MPWMD ANNUAL REPORT

Meeting Date:	**March 16, 2015**	**Budgeted:**	**N/A**
From:	**David J. Stoldt, General Manager**	**Program/ Line Item No.:**	**N/A N/A**
Prepared By:	**Arlene Tavani**	**Cost Estimate:**	**N/A**

General Counsel Approval: N/A
Committee Recommendation: N/A
CEQA Compliance: N/A

SUMMARY: According to the Water Management District's Enabling Legislation, §118-351, a public hearing on the annual report of the activities of the District shall be conducted in March of each year. The enabling legislation also specifies that public notice of the hearing be published ten days in advance of the hearing. In order to comply with public notice requirements, a public hearing on the 2014 Annual Report will be conducted at the April 20, 2015 Board meeting.

ITEM: DISCUSSION ITEM

16. DISCUSS PUBLIC RELEASE OF PROPOSED AMENDMENT TO STATE WATER RESOURCES CONTROL BOARD CEASE AND DESIST ORDER WR 2009-0060 (CDO)

Meeting Date:	**March 16, 2015**	**Budgeted:**	**N/A**
From:	**David J. Stoldt General Manager**	**Program/ Line Item No.:**	
Prepared By:	**David J. Stoldt**	**Cost Estimate:**	

General Counsel Approval: N/A
Committee Recommendation: N/A
CEQA Compliance: N/A

SUMMARY: This is an update from Item 19 of the Board's February agenda. Due to a variety of reasons, many beyond the control of Cal-Am, as well as the community, the Monterey Peninsula Water Supply Project (MPWSP) has been delayed to the point where it is impossible for Cal Am to meet the State Water Resources Control Board (SWRCB) Cease and Desist Order (CDO) 2009-0060 deadline of December 31, 2016.

The attached proposal (**Exhibit 16-A**) was developed jointly by representatives of Cal-Am, the District, the Mayor's Water Authority, Carmel River Steelhead Association, The Sierra Club, the Pebble Beach Company, and attorneys representing Peninsula cities and Carmel Valley pumpers. It reflects many compromises between the parties, but reflects commitments all the parties believe they can support. The proposal was shared with SWRCB staff and Directors on March 10th.

RECOMMENDATION: The General Manager recommends the Board receive and discuss the proposal to obtain an extension of the CDO 2009-60 deadline date of December 31, 2016.

DISCUSSION:

As discussed in previous closed sessions, representatives of the plaintiffs in the earlier, but now suspended, lawsuit over the CDO have been in discussion with the California State Water Resources Control Board (SWRCB) staff in an effort to develop proposals acceptable enough to secure staff concurrence with a formal request for a CDO extension that will be made to the State Board in 2015.

Of particular importance during these discussions is that the District and other public officials are opposed to rationing and financial penalties or other measures that might be mandated by the SWRCB and that could result in unfair or punitive impacts on ratepayers who have exceeded conservation goals and who have no responsibility for the delay. While the potential terms of an extension to any CDO remain under discussion, key principles that might be included in an agreement to extend the CDO include the following:

- A four-year extension of the CDO deadline from December 31, 2016 to December 31, 2020.
- An immediate reduction of pumping limits by 1,000 AF. At the District's request this reduction is based on the 2013-14 water year. The previous version reviewed by the Board

was based on the 2014-15 water year. This proposal "softens" the new pumping limit by 121 AF.

- A new reduction schedule in regular increments during the extension, but suspension of the prescribed reductions if MPWSP milestones are satisfied.
- At the District's request, language was revised such that a reduction corresponding to a missed milestone would be suspended if Cal-Am, MPWMD, and the Water Authority determine that the milestone was missed due to circumstances beyond the control of Cal-Am, MPWMD, and the Water Authority.

Discussions continue under a tight timeline, since, for a variety of reasons, we believe we need to have an agreement in draft early in 2015.

Presently, District staff and General Counsel support the proposed draft, but the proposal will leave very little factor of safety against a rebound in consumer demand for water, but the proposal does not appear to trigger immediate adverse impacts under existing conservation and rationing rules.

Further, under Section 3(b) of the original CDO, "the MPWMD may petition the State Water Board Deputy Director for Water Rights for relief from annual reductions imposed under condition 3., a (2). [if] (c) a showing is made that public health and safety will be threatened if relief is not granted." The District will retain this right. The District does not lose its ability to reinstate the lawsuit or initiate a new lawsuit if relief is not granted or unexpected future penalties arise from the amended CDO.

The Coalition of Peninsula Businesses has expressed their concerns over the January 14, 2015 draft proposal in a letter attached as **Exhibit 16-E**.

EXHIBITS

16-A Draft Proposal to Amend SWRCB Order (Carmel River CDO)
16-B Proposed Modifications Chart - Best Case Scenario
16-C Proposed Modifications Chart - Worst Case Scenario
16-D Historical Carmel River Production versus Limits
16-E Letter from the Coalition of Peninsula Businesses

EXHIBIT 16-A

STAFF PRELIMINARY WORKING DRAFT FOR INTERNAL USE ONLY
PURSUANT TO CALIFORNIA GOVERNMENT CODE SECTION 6254(a)
DRAFT 3/10/2015 10:40 AM

Proposal to Amend
SWRCB Order WR 2009-0060 (Carmel River CDO)

A. Good Cause Exists to Modify WRO 2009-0060: California American Water ("CAW") and other Parties have diligently and aggressively implemented measures to comply with WRO 2009-0060 ("CDO"). CAW and other Parties have: (1) implemented efficiency and conservation measures to control and reduce customer demand and system losses within CAW's Monterey district, such that the community is currently outperforming targets for production of Carmel River water set in the CDO; (2) diligently pursued the Monterey Peninsula Water Supply Project ("MPWSP"), which will supply the replacement water supply necessary to eliminate all unauthorized diversions from the Carmel River; (3) developed, permitted and implemented projects to replace and supplement Carmel River diversions subject to the CDO[1]; and (4) permitted and implemented measures to enhance and improve conditions for fish and wildlife resources in the Carmel River watershed, and to minimize or avoid impacts to fish and wildlife that could result from extension of WRO 2009-0060 timelines. In consideration of these activities and the further commitments described below, CAW and other Parties support the State Water Resources Control Board's ("SWRCB's") finding of good cause to modify the CDO as requested.

B. Modifications to WRO 2009-0060: CAW is currently meeting or has met all of the conditions of the CDO, but factors beyond CAW's control make it unlikely that several future conditions can be met. Therefore, in coordination with other Parties, CAW will submit a request for the following modifications to the CDO:

1. A four-year extension of the deadline set forth in ordering Condition no. 1, from December 31, 2016 to December 31, 2020.

2. Add a process to Condition no. 1 delegating to the Executive Director authority to administratively extend the time for compliance with Condition no. 1, for good cause shown.

3. Amend Condition no 3.a.(2) to state that, effective Water Year 2015-2016, CAW shall further reduce unlawful diversions from the river by an additional 1,000 acre feet annually ("afa") from the existing cumulative reduction level in place for Water Year 2013-2014 under Table 1 of the CDO. *See* Attachment 1. For good cause shown, the Executive Director may exercise discretion to relax this diversion reduction to address circumstances that may arise in future years. A showing of good cause to justify a modification of this diversion reduction shall include, but shall not be limited to, circumstances in which CAW, MPWMD, and/or MPRWA submit credible evidence that: (1) the existing demand or projected demand within the CAW system is likely to exceed the cumulative reduction levels in effect, or projected cumulative

[1]These projects include: Seaside Middle School Aquifer Storage and Recovery ("ASR") Well #3 (completed up to an additional 500 acre feet per annum); Acquisition of additional rights to legally appropriate Carmel River water via Permit 21330 (up to 1488 acre feet per annum); Seaside Middle School ASR Well #4 (in process, up to 500 acre feet per annum).

reduction levels to take effect, as set forth in Table 1 of the CDO; and (2) CAW has exercised all reasonable care, and the MPRWA and MPWMD have provided all reasonable cooperation and support, to meet the milestones set forth in Condition no. 3.a.(2)(i). CAW, MPRWA and/or MPWMD shall have the right to request the full SWRCB to reconsider any determination by the Executive Director under this Condition no 3.a.(2).

4. Replace Attachment 1 to the CDO with Attachment 1 to this Proposal to Amend.

5. Add a Condition no. 3.a.(2)(i) stating that the reduced diversion level set forth in amended Condition no 3.a.(2) will be maintained, i.e., no additional annual reduction in diversions will be required under the CDO, if CAW meets the following milestones as they accrue:

	Milestone	**Deadline**
a.	Substantial completion of downstream fish passage facilities at the Los Padres Dam[2], meaning facilities are sufficiently complete and appropriately permitted to allow for their operation as intended	September 30, 2016
b.	Start of construction for any of the CAW Components[3] of the MPWSP, meaning commencement of physical work after issuance of required regulatory permits and authorizations to begin work[4]	September 30, 2017
c.	(1) Drilling activity for at least one MPWSP source water production well[5] complete; (2) foundation and structural framing complete for MPWSP pretreatment, seawater reverse osmosis, and administration buildings at desalination plant; (3) excavation complete for MPWSP brine and backwash storage basins; and (4) 25% of MPWSP transmission pipelines installed based on total length[6]	September 30, 2018
d.	(1) 50% of drilling activity complete for MPWSP source water production wells based on total number of wells required; (2) mechanical systems for MPWSP brine and backwash storage	September 30, 2019

[2]CAW owns and operates Los Padres Dam at approximately River Mile 24.8 on the Carmel River. CAW has made various improvements to accommodate upstream fish passage over Los Padres Dam. Currently, when the lake elevation falls below the dam's spillway crest, no downstream fish passage corridor exists. To improve downstream fish passage opportunity, CAW and various stakeholders have agreed that the following downstream fish passage facilities should be constructed: behavioral guidance system; floating weir surface collector; fish bypass conduit; bypass access portals; and bypass outfall.

[3]For purposes of this proposal the CAW Components of the MPWSP include: source water production wells; desalination plant; brine disposal system; and transmission pipelines.

[4]Such work may include, among other things, any of the following: desalination plant site grading and preparation; electric utility installation; yard piping; subsurface excavation for structural foundations; transmission pipeline installation; and/or presence of source water well drilling equipment on-site.

[5]Not including the MPWSP Test Well completed in 2015.

[6]For transmission pipeline installation CAW will prioritize installation of the "Monterey Pipeline and other ASR related improvements," which will facilitate increased ASR diversion during high flows and other improved operations that will increase the amount of water in the Carmel River during dry months. *See* Paragraph C.1., below.

	basins complete; (3) Construction of MPWSP filtered water tanks and finished water tanks complete; (4) 50% of MPWSP transmission pipelines installed based on total length, including 100% installation of the "Monterey Pipeline and other ASR related improvements" described in Footnote 6 and Paragraph C.1., below	
e.	Substantial completion of the CAW Components of the MPWSP, meaning the CAW Components are sufficiently complete and appropriately permitted to allow delivery of MPWSP produced, potable water to CAW's Monterey Main system, no further CAW diversions of Carmel River water without valid basis of right	December 31, 2020

6. Add a Condition no. 3.a.(2)(ii) stating that, should CAW fail to meet any milestone described in new Condition no. 3.a.(2)(i) by its corresponding deadline, the reduced diversion level set forth in amended Condition no 3.a.(2) shall be further reduced by 1,000 afa. Any further reduction(s) required under this new Condition no. 3.a.(2)(ii) shall remain in force until the corresponding milestone is achieved. If a milestone is not achieved by its original deadline, but is subsequently achieved, the further reduction required in the water year in which the milestone is achieved shall be prorated and assessed at the end of that water year, and shall no longer be required for subsequent water years.[7]

7. Add a Condition no. 3.a.(2)(iii) stating that, if CAW fails to meet any milestone described in Condition no. 3.a.(2)(i), the corresponding further reduction described in new Condition no. 3.a.(2)(ii) shall be suspended if CAW, the Monterey Peninsula Regional Water Authority ("MPRWA") and the Monterey Peninsula Water Management District ("MPWMD"):

    a. Make a written joint notice to the Executive Director, with copies to counsel for the Sierra Club and the Carmel River Steelhead Association, no later than 60 days after the associated milestone deadline; and

        i. The notice includes credible information demonstrating that CAW has exercised all reasonable care, and the MPRWA and MPWMD have provided all reasonable cooperation and support to meet the milestone, and the milestone deadline was missed due to circumstances beyond the control of CAW, MPRWA and/or MPWMD;

        ii. If CAW, MPRWA, and MPWMD cannot agree on a joint notice, then any of these entities may submit an individual notice or notices following the procedure and form described in this Paragraph B.7. If such individual notice(s) are submitted, or the Executive Director does not agree with a joint notice submitted under this Paragraph B.7, the SWRCB shall determine whether to suspend the

[7]For example, if CAW failed to complete construction of downstream fish passage facilities at the Los Padres Dam by September 30, 2016, but completed these facilities by June, 2017, 75% (9/12^{ths}) of the corresponding 1,000 afa reduction (i.e., 750 afa) would be required as a reduction for water year 2016-2017. No reduction based on missing this milestone would be required for water year 2017-2018 or any future water years.

reduction that corresponds to the missed milestone. If any notice(s) are submitted following the form and process described in this Paragraph B.7, further reductions described in Condition no. 3.a.(2)(i) shall be tolled pending determination by the SWRCB or the Executive Director.

8. Amend Condition 3.a.(5) to state: "Water produced from new sources developed pursuant to Condition 5 of this order shall be subtracted from the base" (currently includes incorrect cross –reference to Condition no. 4 rather than Condition no. 5).

9. Amend the last sentence of Condition no. 3.a.(6) to state as follows: "After December 31, 2020, CAW shall divert water from the river to supply the holders of PBC's water entitlement only from CAW's legal water rights."

10. Add a Condition 3.a.(7) stating that, should CAW be able to identify suitable and willing transacting parties, CAW will use reasonable additional efforts to acquire supplemental water rights at acceptable costs, and/or will pursue other water acquisition and water right changes in order to increase flows in the Carmel River, and/or to decrease CAW's unauthorized diversions. Such acquisitions or water right changes may include leases and purchases of water rights along the Carmel River on a temporary or permanent basis, and/or water right change approvals or permits (permanent or temporary) from the SWRCB to increase opportunities to increase lawful diversions in order to reduce unauthorized diversions during periods of lower flow on the Carmel River. CAW shall quantify supplemental water supplies and increased flows developed pursuant to this Condition and such supplemental water and/or increased flows will be credited towards any further reduction required under new Condition no. 3.a.(2)(ii) (excepting supplies developed to satisfy Conditions 5 and 3.a.(5)).

11. Amend Condition no. 3.c. to add the following sentence after the last sentence: "Any ASR water stored in and recovered from the Seaside Groundwater Basin in excess of the (a) Estimated ASR Project Operational Yield and (b) the Estimated Small Project Output, as set forth in Table 1, shall be credited towards any further reduction required under new Condition no. 3.a.(2)(ii)." In addition, Condition no. 3.c. should be modified to extend the deadline for written submissions to recover ASR water to "not later than May 31 of each year", to allow CAW and the fisheries agencies appropriate time to consider information made available at agency meetings that occur after May 1 of each year.

C. Requests for Assistance by SWRCB. Additionally, CAW and other Parties request that the SWRCB commit to use reasonable efforts to assist with the following items:

1. Upon issuances of a Certificate of Public Convenience and Necessity ("CPCN") from the CPUC, provision of support for CAW's request(s) to the California Coastal Commission and other agencies with permitting jurisdiction for expedited permit issuance for the "Monterey Pipeline and other ASR related improvements," which will facilitate increased ASR diversion during high flows and other improved operations that will increase the amount of water in the Carmel River during dry months;

2. Provision of support in connection with an application by the MPWMD and the Monterey Regional Water Pollution Control Authority ("MRWPCA") to place the groundwater replenishment ("GWR") component of the MPWSP on the State Revolving Fund financing priority list;

3. Provision of support in connection with a request that the SWRCB Division of Financial Assistance award one percent (1.000%), thirty-year loan proceeds from the program announced March 19, 2014 for water recycling projects for the MPWMD/MRWPCA groundwater replenishment project, provided an application is submitted by December 2, 2015;

4. Provision of support and prioritization in connection with the MPWMD/MRWPCA GWR receipt of grant funds pursuant to Chapter 9 of AB 1471 (2014 Proposition 1); and

5. Provision of support , including expedited review, in connection with water rights Application 32263 of Monterey County Water Resources Agency, and any amendments thereto, in order to facilitate the MPWMD/MRWPCA groundwater replenishment project

D. In consideration of the foregoing, CAW and other Parties commit to implement, or have implemented, the following measures –

1. **Efficiency and Conservation Measures -** CAW and other Parties have implemented the following measures to control and reduce water demand and system losses within CAW's service area:

   a. CAW has implemented, and will continue during the CDO period, the current moratorium on new service connections within its Monterey district (*see* Revised C.P.U.C. SHEET NO.6509-W);

   b. CAW and the MPWMD will continue customer water conservation and efficiency programs, including:

      i. programs targeting high use commercial customers such as laundries, hotels and car washes;

      ii. programs targeting reductions in outdoor irrigation including replacement of irrigated turf with drought tolerant landscaping or artificial turf, incentives for installation of weather-based irrigation controllers, and mandatory installation of rain sensors on irrigation systems[8]; and

[8]MPWMD Regulation XIV.

iii. mandatory water efficiency requirements for all non-residential customers and certain residential customers.[9]

c. CAW will continue programs to detect and reduce non-revenue system losses, including:

i. replacement of older water mains and service lines in areas shown to be more leak prone;

ii. water meter replacement;

iii. active leak detection;

iv. technological solutions to manage lost water; and

v. operational fixes such as pressure reduction.

d. CAW will submit an application to modify revised Rule No. 14.1.1, Water Conservation and Rationing Plan for the Monterey District to the California Public Utilities Commission ("CPUC") for approval[10].

2. **Alternative and Supplemental Water Supplies** – CAW and other Parties have developed and/or are implementing projects to provide replacement and supplemental water supplies to CAW's Carmel River water supplies subject to the CDO:

a. CAW has submitted an application to the CPUC for approval of the MPWSP, which will allow CAW to eliminate all unauthorized diversions from the Carmel River in full compliance with the CDO. In September 2014 Governor Jerry Brown signed SB 936, authored by Senators Bill Monning and Anthony Cannella, with Assemblymen Mark Stone and Luis Alejo. This legislation will allow the MPWSP to utilize partial public financing if it is available at a lower rate than conventional, private project financing. The MPWSP includes the following components:

i. Desalination Plant and associated source wells and conveyance system, which will produce up to 9,752 acre feet per annum for system demand;

ii. ASR of water lawfully diverted from the Carmel River and stored in the Seaside Groundwater Basin, which may allow for an annual average storage of 1,300 acre feet; and

[9]MPWMD Regulation XIV.

[10]Rule 14.1.1 was reviewed by the CPUC in its "Decision Authorizing Modifications to the Rationing Plan in Rule 14.1 (D.09-07-023)" of 2007. Rule 14.1.1 has been implemented by CAW in coordination with MPWMD, though its Ordinance 137. CAW and MPWMD are developing further refinements to this plan.

iii. GWR, which is a project that could produce up to 3,500 acre feet per annum. CAW is pursuing GWR as an option in conjunction with, and with significant effort on funding and other aspects of the project by, MPWMD and MRWPCA.

b. CAW has also pursued various smaller projects to make use of lawful diversions from the Carmel River, including pursuing a permit for diversion under Table 13 of SWRCB D. 1632 (July 6, 1995), and supporting and facilitating changes to other water rights to permit beneficial uses within CAW's service area; and

c. CAW and other Parties have supported additional water development projects within the CAW service area, including:

i. Efforts by Pacific Grove to recycle and reuse municipal wastewater on city-owned golf course and cemetery; and

ii. Efforts by Pacific Grove to capture and use storm water for non-potable uses.

3. **Fish and Wildlife Protection and Enhancement Measures** – CAW and other Parties have developed and implemented measures to protect and enhance fish and wildlife resources in the Carmel River watershed, and to avoid or minimize effects to fish and wildlife associated with extension of the CDO deadline:

a. Pursuant to a 2009 agreement between CAW, the National Oceanic and Atmospheric Administration ("NOAA") and the California Department of Fish and Wildlife ("CDFW"), as amended in 2014, CAW made a one-time payment of $3.5MM in 2009, annual payments of $1.1MM per year for 2010 through 2013, and has committed to make annual payments of $1.1MM per year through 2016 to the California Coastal Conservancy ("CCC") for environmental protection and enhancement projects in the Carmel River watershed;

b. Provided that NOAA and CAW mutually agree to terms for extending the 2009 agreement described in Paragraph 3.a., above, CAW is committed to making additional annual payments of $1.1MM, to be pro-rated for any partial years until unpermitted diversions of water from the Carmel River are replaced by legal sources of water, for use on projects during the period of the requested extension of the CDO deadline;

i. Funding and administrative efforts will focus, with the support of CAW and other Parties, on projects that can be implemented during the extension period to mitigate potential effects of the extension;

ii. To the extent MPWMD receives funding to carry out or implement mitigation measures that arise out of the 2009 agreement described in 3.a. above, MPWMD will use best efforts, including by fully cooperating with NOAA, CDFW, CCC, and the Carmel River Steelhead Association, to identify, develop, then implement

projects that will convey mitigation benefits for the Carmel River before December 31, 2020.

c. CAW has permitted, initiated construction and is currently over half way done with construction activities to reroute the Carmel River and remove the San Clemente Dam. Status of the various construction activities include complete excavation of the reroute cut, nearly complete installation of the diversion dike and the moving of over one million cubic yards of rock and sediment;

d. Subject to final approval from CDFW, NOAA, and any other agencies with permitting jurisdiction, CAW is committed to implementing up to $2.5MM in other projects on the Carmel River to improve fish passage and habitat. These include, in order of priority and estimated costs: additional spawning gravel injections below San Clemente Dam using excess gravel from the San Clemente Dam removal project or from Los Padres reservoir should there be an insufficient quantity or type at San Clemente ($0.2MM); improvements to the existing upstream fish passage ladder and trap at Los Padres Dam ($0.2MM); installation of a fish screen at the lower outlet pipe on Los Padres Dam ($0.8MM); a pit tagging program ($0.8MM); and a through-reservoir survival study for Los Padres Reservoir ($0.5MM). Should the higher priority projects exceed the estimated amounts, funding will be pulled from the lower priority projects until the entire $2.5MM is utilized. Additionally, the estimated cost from the above projects may be used to supplement other related projects occurring on the Carmel River (i.e., pit tagging work being contemplated by MPWMD).

e. In July 2013 CAW requested the CPUC's approval to fund a study to determine the ultimate disposition of the Los Padres Dam and Carmel River;

1. If the CPUC approves expenditure of these funds before the close of the second quarter of 2015, CAW expects to:

2. Fund MPWMD to continue independently studying the fate of the Los Padres Dam. CAW will contribute up to $1.0MM minus CAW staff time of $24K per year to assist MPWMD. Studies will include evaluating upstream steelhead passage at Los Padres Dam, whether the public trust resources of the Carmel River will be adversely affected or enhanced by removal or alteration of Los Padres Dam, what options exist to maintain physical existing surface storage in Los Padres Reservoir, and analysis of the potential geomorphic effects of a resumption or increase of the natural flow of sediment;

3. Work with MPWMD to Develop the scope of work and award the feasibility study to a qualified environmental consultant by the close of the third quarter of 2015; and

4. Complete the study during 2018.

f. CAW will continue to fund mitigation measures pursuant to MPWMD's current mitigation program through December 31, 2020.

EXHIBIT 16-A

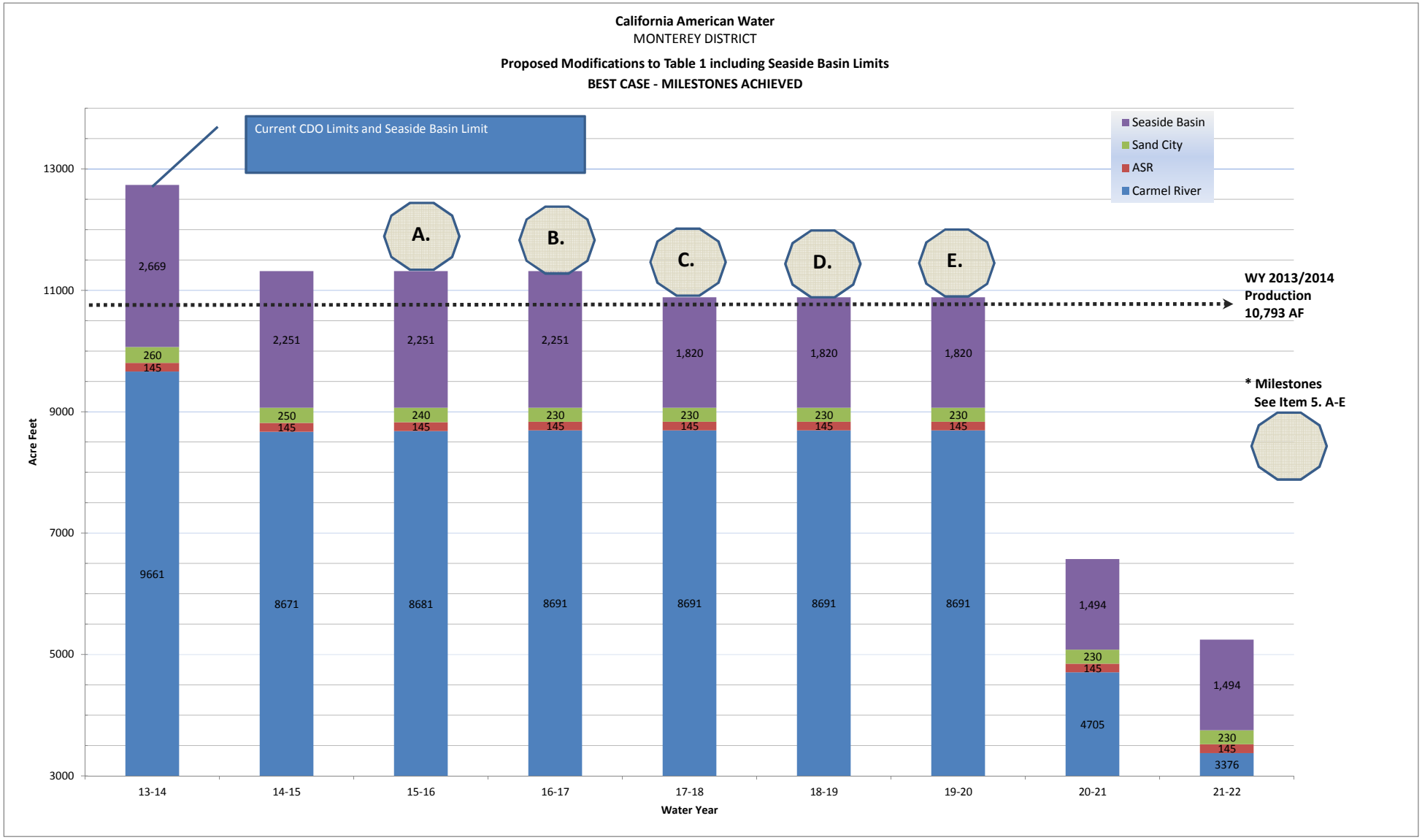
ATTACHMENT 1

TABLE 1

PROJECTED REDUCTIONS IN ILLEGAL DIVERSIONS FROM THE CARMEL RIVER (AF)

Water Year (Oct - Sep)	Base Amount	Mandatory Cumulative Annual Reduction	Potential Additional Rampdown if Condition 3 a.(2)(i)	Estimated ASR Project Operational Yield	Estimated Sand City Desal Plant	Estimated Small Project Output	Estimated Water Supply Project Output	Total to Base Amount	Total Estimated Amount Diverted from Carmel River	Estimated Amount Diverted w/o Valid Basis of Right
2009-2010	10,978	549	0	145	75	0	0	769	10,209	6,833
2010-2011	10,978	549	0	145	290	0	0	984	9,994	6,618
2011-2012	10,978	670	0	145	280	0	0	1,095	9,883	6,507
2012-2013	10,978	791	0	145	270	0	0	1,206	9,772	6,396
2013-2014	10,978	912	0	145	260	0	0	1,317	9,661	6,285
2014-2015	10,978	1,912	0	145	250	0	0	2,307	8,671	5,295
2015-2016	10,978	1,912	0	145	240	0	0	2,297	8,671	5,295
2016-2017	10,978	1,912	1,000	145	230	0	0	2,287	8,671	5,295
2017-2018	10,978	1,912	1,000	145	230	0	0	2,287	8,671	5,295
2018-2019	10,978	1,912	1,000	145	230	0	0	2,287	8,671	5,295
2019-2020	10,978	1,912	1,000	145	230	0	0	2,287	8,671	5,295
2020-2021	10,978	1,912	1,000	145	230	0	2,688	2,287	4,705	1,329
2021-2022	10,978	n/a	n/a	145	230	0	10,753	2,287	3,376	0

EXHIBIT 16-B


California American Water
MONTEREY DISTRICT
Proposed Modifications to Table 1 including Seaside Basin Limits
BEST CASE - MILESTONES ACHIEVED
Current CDO Limits and Seaside Basin Limit
Seaside Basin
Sand City
ASR
Carmel River
A.
B.
C.
D.
E.
WY 2013/2014
Production
10,793 AF
* Milestones
See Item 5. A-E
Acre Feet
13000
11000
9000
7000
5000
3000
13-14
14-15
15-16
16-17
17-18
18-19
19-20
20-21
21-22
Water Year
2,669
260
145
9661
2,251
250
145
8671
2,251
240
145
8681
2,251
230
145
8691
1,820
230
145
8691
1,820
230
145
8691
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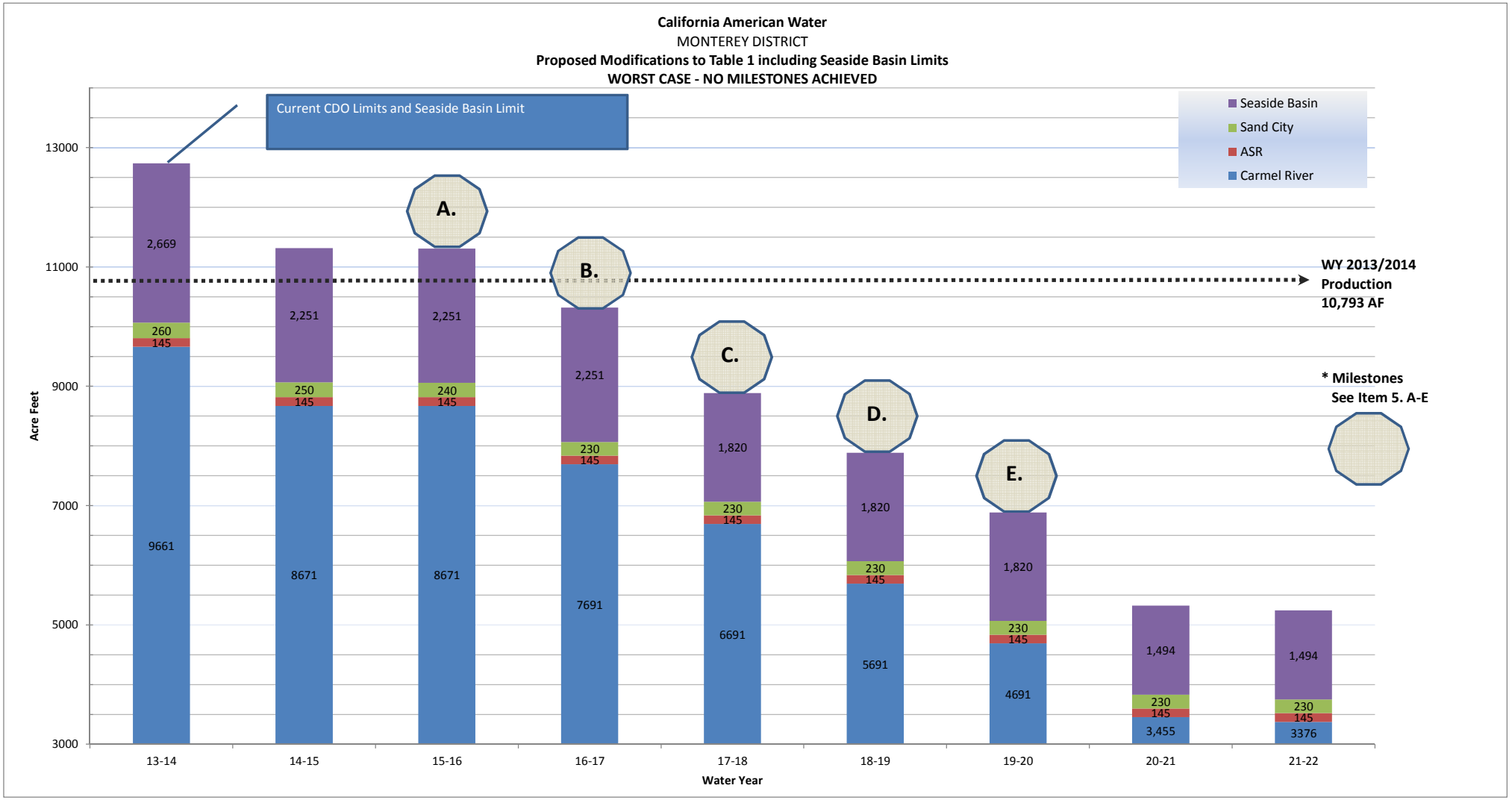
230
145
8691
1,494
230
145
4705
1,494
230
145
3376

EXHIBIT 16-C


California American Water
MONTEREY DISTRICT
Proposed Modifications to Table 1 including Seaside Basin Limits
WORST CASE - NO MILESTONES ACHIEVED
Current CDO Limits and Seaside Basin Limit
Seaside Basin
Sand City
ASR
Carmel River
A.
B.
C.
D.
E.
WY 2013/2014 Production 10,793 AF
* Milestones See Item 5. A-E
Acre Feet
Water Year
13000
11000
9000
7000
5000
3000
13-14
14-15
15-16
16-17
17-18
18-19
19-20
20-21
21-22
2,669
260
145
9661
2,251
250
145
8671
2,251
240
145
8671
2,251
230
145
7691
1,820
230
145
6691
1,820
230
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3,455
1,494
230
145
3376

EXHIBIT 16-D

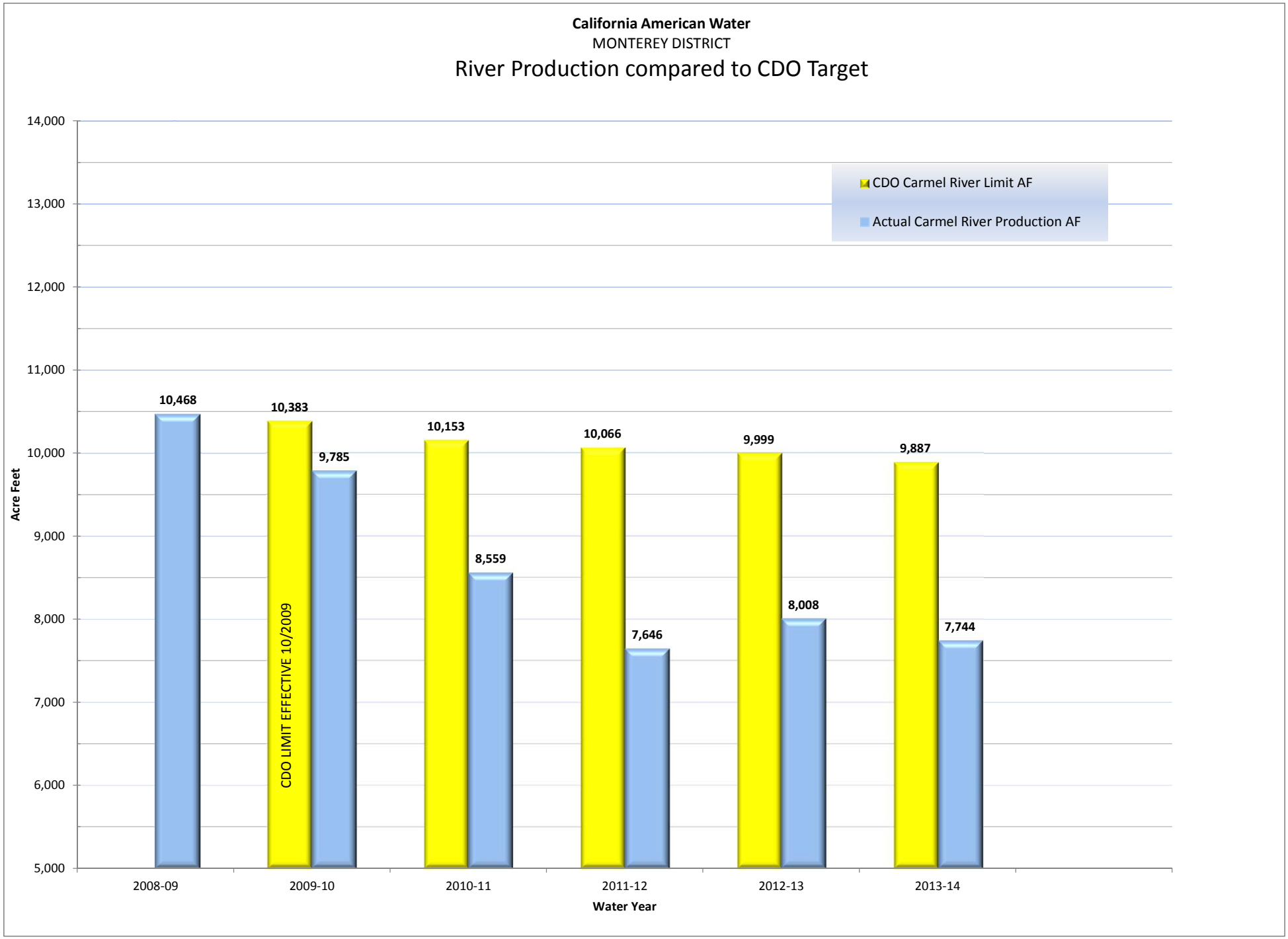
California American Water
MONTEREY DISTRICT
River Production compared to CDO Target
CDO Carmel River Limit AF
Actual Carmel River Production AF
Acre Feet
Water Year
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
10,468
10,383
9,785
10,153
8,559
10,066
7,646
9,999
8,008
9,887
7,744
CDO LIMIT EFFECTIVE 10/2009

EXHIBIT 16-E

M E M O R A N D U M

TO: **DISTRIBUTION**

FROM: **JOHN V. NARIGI**
COALITION OF PENINSULA BUSINESSES

DATE: **MARCH 5, 2015**

RE: **PROPOSAL TO AMEND SWRCB ORDER WR 2009-0600 (CARMEL RIVER CDO)**

Attached are preliminary comments and questions developed by the Coalition of Peninsula Businesses. This should not be considered a final document.

EXHIBIT 16-E

Preliminary Comments

Cal-Am Proposal
SWRCB Order WR 2009-0060 (Carmel River CDO)
March 5, 2015

1. A 4 year extension of deadline is positive but we are concerned about no new connections or intensification of use until 2020; we are not sure what "new connections" means. Is allocated but as yet unused water intended for use a "new connection?" A few Cal Am customers have, through substantial investment, saved on water use with the expectation they would be able to use the freed-up water (water credit) for other uses; they should be allowed to use the water. This could freeze the community in commercial, residential and economic growth.

2. In the document we should intend to negotiate that some of the new supply (when it comes online) is allowed for new connections or intensification of use. Human practices promoting conservation during this period will certainly produce additional supply once the project is complete.

3. There is no mention of wet years. If a wet year produces a surplus, could it be carried over for dry year use, thus avoiding penalty?

4. We are concerned with the milestones. Are they doable, and is Cal-Am going to execute in a timely fashion? Can we actually handle the suggested penalties without seriously jeopardizing the economic health of the region? Currently we don't have an achievable rationing plan. Any "miss" would put us into rationing. Will Cal Am guarantee that shareholders, not ratepayers, will pay for fines and penalties if milestones are not reached? The specific details of the milestones and realistic affects they could have on the community and economy must be detailed out.

5. Some provisions in document do ask for modifications if project is held up by means other than Cal-Am's actions or failure to progress according to schedule. The project is already delayed 1.5 years plus due to state and local agencies being difficult and uncooperative with Cal-Am's and the community's efforts. Provisions need to be detailed to include local and state jurisdiction delays and delays from any legal proceedings filed. Obstructionists are forceful and well funded in this area. The agreement should acknowledge that SWRCB shall support Cal Am and grant relief based on uncontrollable acts by others.

6. We are concerned that the agreement ties in GWR; the challenge it faces makes it difficult for GWR to be completed. Issues relating to source water, water rights and critical ag support continue and are unresolved even after years of negotiations. GWR is not directly associated with Cal-Am or the actual desal project coming on line; the desal should be built larger and its production could be scaled back if and when GWR comes online. Cal Am does not control the GWR process.

7. Progress depends on Cal-Am's construction of mitigation projects. There needs to be an independent professional review of Cal-Am's future schedule and obligations. The proposal is requesting our approval that all requirements of Cal-Am are executed as planned, yet there has been no independent confirmation that all requirements are completed and tasks required for future on schedule. This would include realistic assessment of any litigation or permit approval threats.

8. In presenting this doc, and if it is agreed to, are we foreclosing any future options? There are several pieces to this puzzle, tremendous amount of "must do's" for Cal-Am / numerous items that could affect the schedule and thus penalize Cal-Am and the community.

9. With an agreement in place, will legal action against the state still be an option? This is a right we cannot give up! Will an independent group be allowed to petition others at the state level with authority in an effort to get relief from the CDO and or move the project forward to accelerate the schedule and overall project, thus circumventing SWRCB and/or pressuring the CPUC.

10. As to the two graphs – Best Case / Worst Case. The worst case cannot be imposed. We suggest a more realistic graph of hitting 50% of the reductions. Analysis should be made of what affect that would have on our community, on the local economy, on local government, etc.?

11. Rationing is not an option for residential and commercial and especially the area's #1 industry and economic driver, Hospitality. Hospitality has done 95% of what can be accomplished, and further restrictions will affect the paying customer and will directly impact jobs, livelihoods and the local economy, with disastrous consequences.

12. To achieve cutbacks, if required, what will be required of the residential ratepayers? What does the actual rationing plan look like?

13. Real study and thought must be given to the unintentional consequences before this doc moves forward. It is essential that a detailed rationing plan with public input be developed before an amended proposal moves forward.

14. Seems odd, SWRCB cannot approve or otherwise aid in the solution to a new water source, yet they have the authority to discipline if milestone and timelines are not met.

15. Going forward, how does the procedure work between the state and Cal-Am? What is timeline for counter proposals? Will Cal-Am and the Authority determine a sub-committee to work with the content of modification requests with a goal to produce a revised version for approval by participating groups?

16. The area is 1,000 afy or more below the existing CDO cutback schedule; we should receive credit for this against any proposed cutbacks due to missing milestones and should be clearly stated in the amended proposal.

EXHIBIT 16-E

17. The Coalition of Peninsula Businesses is willing to serve and requests to be a party to future discussions and any committee work as it relates to any proposal to SWRCB on the amended proposal or the development of a rationing plan.

Brief Comments_Cal-Am Proposal

ITEM: DISCUSSION ITEM

17. PROPOSED EMERGENCY CONSERVATION REGULATIONS BY STATE WATER RESOURCES CONTROL BOARD

Meeting Date:	**March 16, 2015**	**Budgeted:**	**N/A**
From:	**David J. Stoldt, General Manager**	**Program/ Line Item No.:**	**N/A**
Prepared By:	**Stephanie Locke**	**Cost Estimate:**	**N/A**

General Counsel Review: N/A
Committee Recommendation: N/A
CEQA Compliance: N/A

SUMMARY: As the fourth year of a significant drought necessitates a state-wide call to action, the California State Water Resources Control Board (SWRCB) is scheduled to consider amending and re-adopting drought-related emergency regulations related to urban water conservation. The SWRCB will consider an amended regulation (**Exhibit 17-A**) at its March 17, 2015 meeting. The Emergency Regulations Digest (**Exhibit 17-B**) provides details and background information on the current drought and explains and justifies the proposed restrictions on water use throughout the state.

The proposed regulation is likely to have minimal impact on the District, as most of the regulations have been in place on the Peninsula for many years. There are three noteworthy modifications that will affect water users within MPWMD: First, the new regulation prohibits irrigation for up to 48 hours after the completion of measurable precipitation. The exact timing (i.e., 24, 36, 48 hours, or some other timeframe) will be discussed at the March 17th meeting. Compliance with this conservation measure will be supported by the District's 2010 automatic irrigation system rain sensor requirement that is triggered by a property transfer or a Water Permit and by Cal-Am's rain sensor installation program for large water users. The second addition to the regulations requires Cal-Am to provide prompt notice to a customer whenever Cal-Am obtains information that indicates a leak may exist on the customer's side of the meter. Finally, Cal-Am will be required to undertake additional monthly reporting, including descriptive statistics on water conservation compliance and enforcement efforts.

The Emergency Regulation prohibits the following:

- Application of potable water to outdoor landscapes in a manner that causes runoff onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots or structures;

- Use of potable water through a hose to wash vehicles, except where the hose is fitted with a quick acting automatic shut off nozzle;

- Application of potable water to driveways or sidewalks;

- Use of a fountain or other decorative water feature except where the water is part of a recirculating system;

- Application of potable water to outdoor landscapes during and up to 48 hours after measurable rainfall;

- Serving drinking water other than upon request in eating or drinking establishments, including but not limited to restaurants, hotels, cafes, cafeterias, bars, or other public places where food or drink are served and/or purchased.

- Hotels and motels must provide guests with the option of choosing not to have towels and linens laundered daily. Notice of this option must be displayed in each bathroom using clear and easily understood language.

The proposed regulation makes non-compliance an infraction punishable by a fine of up to $500 for each day the violation occurs. The District has additional Water Waste fees that are listed in Rule 60's Fees and Charges table.

RECOMMENDATION: This is a discussion item only.

BACKGROUND: On July 15, 2014, the SWRCB approved an emergency regulation for urban water conservation. On July 28, 2014, the emergency regulation became effective. The emergency regulation expires on April 25, 2015.

EXHIBITS
17-A Proposed Text of Emergency Regulations
17-B Emergency Regulations Digest

EXHIBIT 17-A

Article 22.5. Drought Emergency Water Conservation

Sec. 863 Findings of Drought Emergency

(a) The State Water Resources Control Board finds as follows:

(1) On January 17, 2014, the Governor issued a proclamation of a state of emergency under the California Emergency Services Act based on drought conditions;

(2) On April 25, 2014, the Governor issued a proclamation of a continued state of emergency under the California Emergency Services Act based on continued drought conditions;

(3) The drought conditions that formed the basis of the Governor's emergency proclamations continue to exist;

(4) The present year is critically dry and has been immediately preceded by two or more consecutive below normal, dry, or critically dry years; and

(5) The drought conditions will likely continue for the foreseeable future and additional action by both the State Water Resources Control Board and local water suppliers will likely be necessary to further promote conservation.

Authority: Wat. Code, § 1058.5.
References: Wat. Code, §§ 102, 104, 105.

Sec. 864 End-User Requirements in Promotion of Water Conservation

(a) To promote water conservation, each of the following actions is prohibited, except where necessary to address an immediate health and safety need or to comply with a term or condition in a permit issued by a state or federal agency:

(1) The application of potable water to outdoor landscapes in a manner that causes runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures;

(2) The use of a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle or device attached to it that causes it to cease dispensing water immediately when not in use;

(3) The application of potable water to driveways and sidewalks; and

(4) The use of potable water in a fountain or other decorative water feature, except where the water is part of a recirculating system.

(5) The application of potable water to outdoor landscapes during and up to 48 hours after measurable rainfall.

(6) The serving of drinking water other than upon request in eating or drinking establishments, including but not limited to restaurants, hotels, cafes, cafeterias, bars, or other public places where food or drink are served and/or purchased.

(b) To promote water conservation, operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily. The hotel or motel shall prominently display notice of this option in each bathroom using clear and easily understood language.

(c) The taking of any action prohibited in subdivision (a) or the failure to take any action required in subdivision (b), in addition to any other applicable civil or criminal penalties, is an infraction, punishable by a fine of up to five hundred dollars ($500) for each day in which the violation occurs.

EXHIBIT 17-A

Authority: Wat. Code, § 1058.5.
References: Wat. Code, §§ 102, 104, 105.

Sec. 865 Mandatory Actions by Water Suppliers

(a) The term "urban water supplier," when used in this section, refers to a supplier that meets the definition set forth in Water Code section 10617, except it does not refer to suppliers when they are functioning solely in a wholesale capacity, but does apply to suppliers when they are functioning in a retail capacity.

(b)(1) To promote water conservation, each urban water supplier shall implement all requirements and actions of the stage of its water shortage contingency plan that includes mandatory restrictions on the number of days that outdoor irrigation of ornamental landscapes or turf with potable water is allowed. Urban water suppliers with approved alternate plans as described in subdivision (b)(2) are exempted from this requirement.

(2) An urban water supplier may submit a request to the Executive Director for approval of an alternate plan that includes allocation-based rate structures that satisfies the requirements of chapter 3.4 (commencing with section 370) of division 1 of the Water Code, and the Executive Director may approve such an alternate plan upon determining that the rate structure, in conjunction with other measures, achieves a level of conservation that would be superior to that achieved by implementing limitations on outdoor irrigation of ornamental landscapes or turf with potable water by the persons it serves to no more than two days per week.

(c) To promote water conservation, each urban water supplier that does not have a water shortage contingency plan that restricts the number of days that outdoor irrigation of ornamental landscapes and turf with potable water is allowed, or has been notified by the Department of Water Resources that its water shortage contingency plan does not meet the requirements of Water Code section 10632 shall, within thirty (30) days, limit outdoor irrigation of ornamental landscapes or turf with potable water by the persons it serves to no more than two days per week.

(d) In furtherance of the promotion of water conservation each urban water supplier shall:

(1) Provide prompt notice to a customer whenever the supplier obtains information that indicates that a leak may exist within the end-users exclusive control.

(2) Prepare and submit to the State Water Resources Control Board by the 15th of each month a monitoring report on forms provided by the Board. The monitoring report shall include the amount of potable water the urban water supplier produced, including water provided by a wholesaler, in the preceding calendar month and shall compare that amount to the amount produced in the same calendar month in 2013. The monitoring report shall specify the population served by the urban water supplier, the percentage of water produced that is used for the residential sector, descriptive statistics on water conservation compliance and enforcement efforts, and the number of days that outdoor irrigation is allowed. The monitoring report shall also estimate the gallons of water per person per day used by the residential customers it serves.

EXHIBIT 17-A

(e) To promote water conservation, each distributor of a public water supply, as defined in Water Code section 350, that is not an urban water supplier shall, within thirty (30) days, take one or more of the following actions:

(1) Limit outdoor irrigation of ornamental landscapes or turf with potable water by the persons it serves to no more than two days per week; or

(2) Implement another mandatory conservation measure or measures intended to achieve a 20 percent reduction in water consumption by the persons it serves relative to the amount consumed in 2013.

Authority: Wat. Code, § 1058.5.
References: Wat. Code, §§ 102, 104, 105; 350; 10617; 10632.

EXHIBIT 17-B

Emergency Regulations Digest (Gov. Code , § 11346.1, subd. (b))

Prohibition of Activities and Mandatory Actions During Drought Emergency

FINDING OF EMERGENCY

The State Water Resources Control Board (State Water Board or Board) finds that an emergency exists due to severe drought conditions and that adoption of the proposed emergency regulation is necessary to address the emergency. California is currently in the fourth year of a significant drought resulting in severe impacts to California's water supplies and its ability to meet all of the demands for water in the State. On January 17, 2014, Governor Edmund G. Brown, Jr. declared a drought state of emergency. On April 25, 2014, the Governor signed an Executive Order (April 2014 Proclamation) stating, among things, "…*that severe drought conditions continue to present urgent challenges: water shortages in communities across the state, greatly increased wildfire activity, diminished water for agricultural production, degraded habitat for many fish and wildlife species, threat of saltwater contamination of large fresh water supplies conveyed through the Sacramento-San Joaquin Bay Delta, and additional water scarcity if drought conditions continue into 2015*." Due to these concerns, the April 2014 Proclamation, directs the State Water Board to adopt emergency regulations as it deems necessary, pursuant to Water Code section 1058.5, to ensure that urban water suppliers implement drought response plans to limit outdoor irrigation and other wasteful water practices. The April 2014 Proclamation suspended the requirement for review under the California Environmental Quality Act (CEQA) for certain activities, including adoption of emergency regulations by the State Water Board pursuant to Water Code Section 1058.5. On December 22, 2014, Governor Brown issued Executive Order B-28-14, which extended the suspension of the CEQA for certain activities contained in the January 2014 and April 2014 Proclamations, including the State Water Board adoption of emergency regulations pursuant to Water Code section 1058.5, through May 31, 2016.

On July 15, 2014, the State Water Board approved an emergency regulation for urban water conservation. On July 28, 2014, the emergency regulation became effective upon approval by the Office of Administrative Law (OAL). Absent further action, the emergency regulation will expire on April 25, 2015. Continued action is, however, needed to ensure urban water suppliers and all Californians are taking sufficient actions to conserve water and preserve the State's water supply.

Authority for Emergency Regulations

Water Code section 1058.5 grants the State Water Board the authority to adopt emergency regulations during a period when the Governor has issued a proclamation of emergency based upon drought conditions or in response to drought conditions that exist, or are threatened, in a critically dry year immediately preceded by two or more consecutive below normal, dry, or critically dry years. The State Water Board may adopt regulations under such circumstances to: "prevent the waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion, of water, to promote water recycling or water conservation, to require curtailment of diversions when water is not available under the diverter's priority of right, or in furtherance of

any of the foregoing, to require reporting of diversion or use or the preparation of monitoring reports."

Emergency regulations adopted under Water Code section 1058.5 may remain in effect for up to 270 days. Per Water Code section 1058.5, subdivision (b), any findings of emergency the State Water Board makes in connection with the adoption of an emergency regulation under the section are not subject to review by OAL.

Government Code section 11346.1, subdivision (a)(2) requires that, at least five working days prior to submission of the proposed emergency action to OAL, the adopting agency provide a notice of the proposed emergency action to every person who has filed a request for notice of regulatory action with the agency. After submission of the proposed emergency regulations to OAL, OAL shall allow interested persons five calendar days to submit comments on the proposed emergency regulations as set forth in Government Code Section 11349.6.

The information contained within this finding of emergency provides the information necessary to support the State Water Board's emergency rulemaking under Water Code section 1058.5 and also meets the emergency regulation criteria of Government Code section 11346.1 and the applicable requirements of section 11346.5.

Evidence of Emergency

The U.S. Drought Monitor currently classifies almost the entire state of California as experiencing severe to exceptional drought conditions. In most years, California receives about half of its precipitation in the months of December, January and February, with much of that precipitation falling as snow in the Sierra. Only a handful of large winter storms can make the difference between a wet year and a dry one. In normal years, the snowpack stores water during the winter months and releases it through melting in the spring and summer to replenish rivers and reservoirs. However, warm and relatively dry weather conditions this year have reduced the amount of snowpack in California's mountains. As of March 3, 2015, Sacramento Region cumulative precipitation was 87 percent of average for that date (8-Station Index). However, most of that precipitation fell as rain, and Northern Sierra snow water content remained extremely low, at 16 percent of average for that date. Similarly, Central and Southern Sierra snowpack is at 20 and 21 percent of average, respectively. Without significant March snowfall, the Sierra snow water content will be the lowest in recorded history. Due to the dry conditions, on January 23, 2015, the State Water Board issued a Notice of Surface Water Shortage and Potential for Curtailment of Water Right Diversions.

Due to these drought conditions and dry conditions for the past several years, storage in California's reservoirs is also at below average levels. Current storage levels in key reservoirs reflect this trend. Shasta Lake, California's and the Central Valley Project's (CVP) largest reservoir, is at 58 percent of its 4.5 million acre-feet (MAF) capacity (78 percent of its historical average for this date). Lake Oroville, the State Water Project's (SWP) principal reservoir, is at 49 percent of its 3.5 MAF capacity (70 percent of its historical average for the date). Folsom Reservoir is at 58 percent of its 1 MAF capacity (103 percent of average for this date). New Melones Reservoir is at 25 percent of its 2.4 MAF capacity (41 percent of average for this date).

New Don Pedro Reservoir is at 43 percent of its 2 MAF capacity (60 percent of average for this date).

Local, state, and federal water agencies across California have limited supplies due to the drought. In response, those agencies have taken various actions, including reducing or eliminating contract water deliveries and implementing mandatory and voluntary conservation efforts.

Need for the Regulation

Immediate action is needed to effectively increase water conservation so that remaining supplies are maintained to address the present drought emergency. Data collected by the State Water Board under the existing emergency regulation demonstrated that urban water conservation efforts could be augmented to minimize the risk of severe supply shortages should drought conditions persist. Without adequate reserves, water suppliers will be unable to address the drought emergency. The emergency regulation improves the State Water Board's and local agencies' abilities to quickly and effectively implement and enforce mandatory water conservation measures during the current drought to help preserve the State's supplies during the ongoing drought emergency.

Description and Effect of Proposed Regulation

The proposed regulation, as updated, consists of four main types of requirements: a prohibition on certain irrigation practices, restrictions on certain commercial activities, an order for all urban water suppliers to implement mandatory restrictions on outdoor irrigation, and an order for water suppliers with 3,000 or more service connections to provide monthly data on water production, compliance actions, and outdoor water conservation measures being implemented. The proposed regulation also includes reporting requirements. All of these requirements are intended to safeguard urban water supplies in the event of continued drought. It is both reasonable and prudent to maintain urban water supplies to the maximum extent feasible to provide local agencies with the necessary flexibility to meet the health and safety needs of Californians during the drought emergency. California has been subject to multi-year droughts in the past and there is minimal likelihood that precipitation this spring will lift the state out of the current drought conditions. Moreover, climate change science indicates that the Southwestern United States are becoming drier, increasing the likelihood of prolonged droughts. In addition, drought conditions have already forced the State Water Board to curtail surface water diversions, and many groundwater basins around the state are already in overdraft conditions that will likely worsen due to groundwater pumping this summer. Many water supply systems face a present or threatened risk of inadequate supply. Should drought conditions persist into 2016, more water supply systems will be at risk of depleting supplies, presenting a great risk to the health and safety of the people supplied by those systems. Maintaining urban water supplies through enhanced conservation will reduce the risks to health and safety, and reduce negative impacts to the State's economy.

Each of the specific prohibitions on water uses and other end user requirements are necessary to promote water conservation to maintain an adequate supply during the drought emergency,

which cannot be done if water is being used in an excessive or wasteful manner. These requirements affect practices that use excessive amounts of water or where more efficient and less wasteful alternatives are available. These practices are particularly unreasonable during a drought due to the need to conserve limited water supplies to meet health and safety needs. Exceptions to meet immediate health and safety concerns or to comply with state or federal permit requirements are available, however.

A prohibition on runoff of outdoor irrigation water is necessary to promote water conservation to address the drought emergency. Irrigating residential, commercial, industrial, and recreational landscapes to the point of visible runoff is an excessive use of water and more efficient alternatives are available. This practice depletes water supplies, whose maintenance is critical during a drought for health, safety, and, in some cases, operational flexibility. Runoff enters the storm drain system or evaporates, and does not provide for domestic use, sanitation, or fire protection, which are the primary needs that public water supply distributors must meet during drought periods (Water Code Section 354).

A prohibition on vehicle washing with a running hose (i.e., a hose that is not equipped with a shut-off nozzle) promotes water conservation to address the drought emergency through the use of more efficient and effective washing techniques and options. Washing cars at commercial car wash establishments--which are widely distributed throughout the state--or manual washing with a small amount of water in a bucket or with a hose equipped with a shut-off nozzle are efficient and reasonable techniques for those with a need to wash vehicles.

A prohibition on watering of hardscapes, such as driveways, sidewalks, and asphalt, promotes water conservation to address the drought emergency through the use of more efficient and effective cleaning methods for hardscapes. For example, many hardscapes can be cleaned with a broom, thus conserving water for other uses during a time of extreme scarcity.

A prohibition on the use of potable water without recirculation pumps for fountains and other decorative water fixtures promotes water conservation to address the drought emergency through saving water that would evaporate, leak, or not be reused. In addition, water fixtures do not provide for domestic use, sanitation, or fire protection, and therefore do not promote a use of paramount importance during the drought emergency.

A new prohibition on outdoor irrigation of turf and ornamental landscapes during and shortly after measureable precipitation events promotes water conservation to address the drought emergency by forgoing irrigation during times when landscape water requirements are met by rain.

A new requirement that water only be served on request in restaurants and other food and beverage service establishments promotes water conservation to address the drought emergency by saving water that might otherwise not be consumed and reduces water used in commercial dishwashing. Similarly, requirements on the operators of hotels and motels to provide guests with the option of choosing not to have towels and linens laundered daily promotes water conservation to address the drought emergency by reducing the wasteful use of water associated with unnecessarily washing towels and linens. These high visibility

commercial sector requirements will also increase public awareness of the ongoing drought and the need to conserve water.

The proposed update to the regulation to require urban water suppliers with 3,000 or more service connections to implement their Water Shortage Contingency Plans (WSCPs) at a level that includes mandatory restrictions on the number of days per week that outdoor landscape watering with potable water is allowed, and water suppliers without WSCPs and water suppliers which have fewer than 3,000 service connections to implement mandatory restrictions, is necessary to promote conservation to address the drought emergency because mandatory restrictions have proven to be effective at reducing water use. Data collected by the State Water Board under the existing emergency regulation indicate that more than 90 percent of California's large urban water suppliers (those with more than 3,000 service connections) have now formally invoked a stage of their WSCPs that requires mandatory restriction on outdoor water use. However, the mandatory outdoor water use restrictions being implemented vary widely by supplier. For example, some urban water suppliers require limits on the number of days per week that watering is allowed and have limits on the number of minutes that watering is allowed, while other urban water suppliers only have restrictions on the time of day that watering is allowed. The emergency regulation is therefore being updated to limit outdoor watering to two days per week for urban water suppliers that do not already have limits on the number of days per that outdoor watering is allowed. This addition will promote enhanced water conservation by reducing the number of days some residents and businesses irrigate outdoor landscapes.

These limits on outdoor water use are necessary to promote conservation to address the drought emergency because outdoor irrigation accounts for 44 percent of urban water use (see Table 1 below), outdoor irrigation is generally more discretionary than other types of use, and because studies have shown that urban landscapes are often over-watered. Limiting the number of days per week of outdoor irrigation increases conservation and reduces the likelihood of over-irrigation and visible runoff.

The proposed regulation to require urban water suppliers with 3,000 or more service connections to provide the State Water Board with monthly potable water production figures, estimates of residential gallons per capita per day (R-GPCD), details of outdoor use restrictions and local compliance and enforcement actions is necessary so that the State Water Board can track the effectiveness of the proposed regulation and urban water conservation actions. Such monitoring reports will promote the conservation necessary to address the drought emergency.

Estimate of Water Savings from Proposed Regulation

According to the Department of Water Resources' (DWR) Public Review Draft Water Plan Update 2013, total urban water use between 1998 and 2005 was 8.8million acre-feet. The breakdown of the urban use by customer class is provided in Table 1.

Table 1: Urban Water Use by Sector in Million Acre-Feet (MAF)

Sector	Volume (MAF)
Residential landscape	3
Large landscape	0.9
Indoor residential	2.7
Commercial, institutional, and industrial	1.7
Other	0.5
Total	**8.8**

Source: DWR Public Review Draft Water Plan Update 2013

Outdoor irrigation represents 44 percent of the total urban water use (3 MAF for residential landscape and 0.9 MAF for large landscapes). The proposed regulation prohibiting visible runoff affects the 44 percent of statewide urban use dedicated to outdoor irrigation. The proposed regulation to require implementation of WSCPs at a mandatory level by urban water suppliers would, in some cases, entail restrictions on use by other customer classes, including residential indoor use in instances where mandatory restrictions include rationing of residential use. However, a review of the State Water Board's May 2014 Urban Water Conservation Survey results and a select group of WSCPs indicates that water suppliers with significant supply shortages have already implemented mandatory restrictions and are therefore already in compliance with the proposed updated emergency regulation, while those that will need to invoke their WSCPs at a mandatory level to comply do not include restrictions on water use by the non-residential classes at the first level of mandatory restrictions. Thus, the State Water Board anticipates that the proposed updated regulation will have a minimal impact on the 56 percent of urban water used for purposes other than outdoor irrigation. As discussed below, the State Water Board is unable to make a definitive estimate of commercial use savings due to the use restrictions on the food service and hospitality sectors.

At the time that the State Water Board adopted the existing water conservation emergency regulation, many California urban water suppliers were already implementing water conservation measures commensurate with those required by the proposed regulation and therefore conservation savings attained by their customers are not attributable to the proposed regulation. Data collected from the State Water Board's May 2014 Urban Water Conservation Survey indicates that 53 of the 268 urban water suppliers who responded to the survey indicated that they had already formally invoked their drought shortage contingency plans and have implemented both mandatory restrictions on outdoor water use and prohibitions on runoff into streets and gutters. These 53 urban water suppliers represent approximately 10 million retail customers, which accounts for about 38 percent of the survey response by retail population. The State Water Board assumes that these 53 urban water suppliers are already implementing conservation measures that are commensurate with the requirements of the proposed updated emergency regulation. The State Water Board also assumes that all 268 of the survey respondents collectively are representative of the urban water conservation actions being taken at that time statewide. Based upon these assumptions, 62 percent of urban water use would continue to be affected by the State Water Board's adoption of the proposed updated

regulation, while 38 percent of urban water use would not be affected (i.e., they are already implementing the required conservation measures at the time the existing regulation was approved).

Various studies have analyzed the response of urban populations to mandatory use restrictions imposed during drought conditions. Multiple studies conclude that mandatory use restrictions are more effective than voluntary conservation measures because areas that have imposed mandatory use restrictions have achieved greater use reductions than areas that imposed only voluntary measures, controlling for other variables. The amount of conservation achievable through mandatory restrictions varies. Conservation savings of up to 29 percent have been observed. For example, a study conducted on the effects of water demand management policies of eight California water agencies during the period from 1989-1996, which included 3 years of drought (1989-1991), found that rationing and use restrictions were correlated with use reductions of 19 percent and 29 percent, respectively. The study's authors concluded:

> In general, relatively moderate (5-15%) reductions in aggregate demand can be achieved through modest price increases and "voluntary" alternative [Demand-Side Management] policy instruments, such as public information campaigns. However, to achieve larger reductions in demand (greater than 15%), policymakers will likely need to consider either relatively large price increases, more stringent mandatory policy instruments (such as use restrictions), or a package of policy instruments.

A recent study from UCLA on use reductions in Los Angeles during the 2007-2009 drought reached similar conclusions:

> Our results indicate that mandatory restrictions are most effective at reducing water consumption for [Single-Family Residential] households. The greatest impact of measures resulted from the combination of mandatory watering restrictions and the price increase, which led to a water reduction of 23% in July/August 2009, while voluntary restrictions led to only a 6% reduction in water use.

In addition, a study of Virginia's severe 2002 drought found that mandatory use restrictions, coupled with an aggressive information and enforcement campaign, led to a 22 percent reduction in use. At the time of adoption of the existing emergency regulation, the State Water Board anticipated up to a 20 percent reduction in outdoor water use, totaling 0.48 million acre-feet, as calculated below.

Total urban water use for outdoor irrigation: 3.9 MAF
Urban water use for outdoor irrigation affected by the proposed regulation: 3.9*0.62 = 2.4 MAF
Estimated conservation savings from adoption of the proposed regulation: 2.4*0.2 = 0.48 MAF

Based on data collected pursuant to the existing emergency regulation, approximately 0.37 MAF of water was actually saved between August 2014 and January 2015 as compared to the same period in 2013. This savings, however, was realized by all urban water suppliers, including those that were not required to make changes pursuant to the regulation (i.e., those that already had the same or similar requirements in place at the time the regulation was adopted). Thus, it is reasonable to attribute only approximately 62 percent of the 0.37 MAF of water savings to actions associated with the existing emergency regulation. This equates to

approximately 0.23 MAF of water saved through January 2015 as a result of adoption of the existing water conservation emergency regulation. The State Water Board anticipates another 0.02 to 0.1 MAF of conservation due to the existing emergency regulation through the end of March 2015.[1] This level of water savings is expected to continue during the next 270-day period that the updated regulation will be in effect. In addition, new provisions are included in the updated regulation that are expected to result in even greater savings. These new provisions include:

- Prohibiting irrigation of turf or ornamental landscapes during and 48-hours following measurable precipitation.
- Hospitality sector restrictions requiring that water only be served on request in restaurants and bars and requiring the operators of hotels and motels to offer patrons the option of not having their towels and linens washed each day of their stay.
- Requiring urban water suppliers, which do not have an existing limit on the number of days that outdoor watering is allowed, to limit outdoor irrigation of turf or ornamental landscapes to no more than two days per week.
- Requiring urban water suppliers to promptly notify their customers when they are aware of leaks within the customer's control.
- Additional reporting requirements for urban water suppliers on the number of days and duration that outdoor irrigation is allowed and the compliance and enforcement efforts being undertaken within their service areas.

Calculation of additional water savings as a result of these new requirements is not feasible for the following reasons:

- Reliable data is not available on the water savings that will be realized as result of the new hospitality sector restrictions.
- Many California restaurants and hotels already have similar restrictions in place.
- Many urban water suppliers already limit the number of days that watering is allowed and /or prohibit watering during and after precipitation.

It is therefore not possible to finely calculate the water saving resulting from new versus existing conservation actions. Given these uncertainties the State Water Board estimates that the potential water savings that could be achieved pursuant to the proposed updated emergency regulation is consistent with its original estimate of 0.48 MAF.

Additional Benefits of Proposed Regulation

The State Water Board has determined that additional benefits will be realized should it adopt the proposed updated regulation. These benefits include the following:

[1] The current emergency regulation is set to expire on April 25, 2014, but should the State Water Board adopt the proposed updated emergency regulation on March 17, 2015, it will go into effect on or about March 28, 2015, upon approval by OAL.

- Reduced water bills for customers that reduce water use (some of these savings will generate additional economic activity, such as investments in drought-tolerant landscaping).
- Increased water quality in receiving waters due to lower runoff volumes.
- Increased drought awareness and shared sense of responsibility among urban water users as well as out-of-state guests at California hotels, motels, restaurants and bars.
- More effective tracking of total urban water use.
- Reduced potential for severe economic disruption if 2016 is another dry year.

These benefits will offset some of the fiscal impacts to water suppliers when benefits and costs are viewed from a statewide perspective. Therefore, these benefits provide additional justification for adopting the proposed regulations.

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Informative Digest

Summary of Existing Laws and Regulations

Absent the existing emergency regulation, there is no statewide prohibition on specific water uses to promote conservation. There is also no law or regulation requiring urban water suppliers to affirmatively adopt drought shortage contingency plans, implement specific stages of their drought shortage contingency plans, or report the amount of water they produce to the state. There is also no law or regulation requiring distributors of public water supplies who are not urban water suppliers to adopt water shortage contingency plans, limit outdoor irrigation by their customers, or implement other mandatory conservation measures. The existing emergency regulation constitutes the first statewide directive to individuals and to urban water

suppliers to undertake specific actions to respond to the drought emergency; consequently, the proposed regulation is consistent and compatible with existing regulations on this subject. The proposed regulation neither differs from nor conflicts with an existing comparable federal statute or regulation.

Description and Effect of Proposed Regulation

The proposed emergency adoption of section 863 sets forth the State Water Resources Control Board's (State Water Board) findings of drought emergency. The proposed emergency adoption of section 864 directs individuals statewide to refrain from engaging in certain activities and contains other commercial sector restrictions to promote conservation to meet the drought emergency. The proposed emergency adoption of section 865 directs urban water suppliers to report information to the State Water Board and to take actions to promote conservation and directs all other water suppliers to take actions to promote conservation.

Proposed Emergency Regulation Section 863

Proposed section 863 sets forth the State Water Board's findings of drought emergency, noting the Governor's adoption of two emergency proclamations pertaining to drought conditions, the persistence of drought conditions, the dry nature of the preceding two years, and the likelihood that drought conditions will continue.

Proposed Emergency Regulation Section 864

Proposed section 864 prohibits several activities, except where necessary to address an immediate health and safety need or to comply with a term or condition in a permit issued by a state or federal agency, to promote conservation. The section prohibits the application of water to outdoor landscapes in a manner that causes visible runoff, the use of a hose to wash an automobile except where the hose is equipped with a shut-off nozzle, the application of water to hardscapes, the use of potable water in non-recirculating ornamental fountains, and the application of potable water to outdoor landscapes during or within 48-hours after measurable rainfall. This section also prohibits serving water except when requested in restaurants and bars and requires the operators of hotels and motels to offer patrons the option of not having their towels and linens washed daily.

Proposed Emergency Regulation Section 865

Proposed section 865 directs urban water suppliers to implement the stage of their water shortage contingency plan that imposes mandatory restrictions on the number of days that outdoor irrigation is allowed, requires those urban water suppliers without adequate drought shortage contingency plans to adopt them or other measures to promote conservation within thirty days, and report monthly water production information to the State Water Board. This section also requires urban water suppliers that don't already impose a limit on the number of days that outdoor watering is allowed to limit outdoor irrigation of turf and ornamental landscapes to no more than two days per week. This section also requires urban water suppliers to notify their customers when suppliers are aware of leaks within the customer's control. The section also directs distributors of public water supplies that are not urban water

suppliers to either limit outdoor irrigation or implement another mandatory conservation measure or measures to achieve conservation.

Authority and Reference Citations

For Section 863

Authority: Wat. Code, § 1058.5.

References: Wat. Code, §§ 102, 104, 105.

For Section 864

Authority: Wat. Code, § 1058.5.

References: Wat. Code, §§ 102, 104, 105.

For Section 865

Authority: Wat. Code, § 1058.5.

References: Wat. Code, §§ 102, 104, 105; 350; 10617; 10632.

Mandate on Local Agencies or School Districts

The State Water Board has determined that adoption of sections X and X.1 does not impose a new mandate on local agencies or school districts. The sections are generally applicable law.

The State Water Board has further determined that adoption of section X.2 does not impose a new mandate on local agencies or school districts, because the local agencies affected by the section have the authority to levy service charges, fees, or assessments sufficient to pay for the mandate program or increased level of service. (See Gov. Code, § 17556.)

Suspension of California Environmental Quality Act

On April 24, 2014, the Governor issued an executive order addressing the drought emergency, which, among other things, suspended the California Environmental Quality Act (CEQA) as applied to the State Water Resources Control Board's adoption of emergency regulations to "prevent the waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of water, to promote water recycling or water conservation, and to require curtailment of diversions when water is not available under the diverter's priority of right." On December 22, 2014, Governor Brown issued Executive Order B-28-14, which extended the suspension of CEQA and Water Code section 13247 contained in the January 17, 2014 and April 25 Proclamation through May 31, 2016. The proposed emergency regulation falls under this suspension.

Emergency Regulations Digest (Gov. Code , § 11346.1, subd. (b))

Appendix ##: Public Agency and Government Fiscal Impact Analysis

Summary

Ongoing and increased urban water conservation will result in reduced water use by the customer, which in turn will result in reduced water sales and lost revenue for urban water suppliers. This loss in revenue will be a function of the amount of water conserved (and therefore not sold) and the unit price that water would have sold for. California Urban Water Supplier water rates are primarily comprised of a fixed and a variable component. The variable portion of the rate is based on the volume of water used by the customer and generally the fixed portion does not change with use. The variable portion of the rate therefore represents the unit cost of lost revenue.

In addition to lost revenue from reduced water sales, urban water suppliers will also incur costs associated with water production reporting as required by the proposed emergency regulation.

Implementation of the proposed updated emergency regulation will result in additional workload for the State Water Board and to a lesser extent for the Department of Water Resources (DWR). Based on experience implementing the existing emergency regulation, the State Water Board estimates that one additional PY (at a cost of $127,000) will be needed to implement the updated emergency regulation. It is anticipated that any additional workload for DWR will be accomplished through redirection of existing resources.

Fiscal Impacts to Public Water Supply Agencies

Fiscal impacts to urban water agencies are assumed to result primarily from changes in water sale revenues. These are calculated below by developing a statewide average variable rate for water and multiplying it by the estimate of water sales reduction resulting from the proposed regulation.

Determination of Average Water Rates

Data was compiled from a 2013 Water Rate Survey prepared and published by Raftelis Financial Consultants, Inc. and the California-Nevada Section of the American Water Works Association to develop a statewide average estimate for the variable portion of urban water rates. The 2013 Rate Survey included information on the average fixed and variable water rates for 46 California Counties based on survey responses from 216 urban water suppliers statewide. The average rate (variable portion only) for each represented county was weighted by county population to determine a statewide average rate of $1,086.77 per acre foot of water sold.

Estimate of Water Savings from the Proposed Emergency Regulation

According to DWR's Public Review Draft Water Plan Update 2013, total urban water use between 1998 and 2005 was 8.8 million acre-feet (MAF). Outdoor irrigation represents 44 percent of the total urban water use (3 MAF for residential landscape and 0.9 MAF for large landscapes). The portions of the proposed regulation relating to outdoor irrigation therefore

affect the 44 percent of statewide urban use dedicated to outdoor irrigation. The portions of the proposed regulation that require implementation of WSCPs at a mandatory level by urban water suppliers would, in some cases, entail restrictions on use by other customer classes, including residential indoor use in instances where mandatory restrictions include rationing of residential use. However, a review of the State Water Board's May 2014 survey results and a select group of WSCPs indicates that water suppliers with significant supply shortages have already implemented mandatory restrictions and are therefore already in compliance with the proposed regulation, while those that will need to invoke their WSCPs at a mandatory level to comply generally do not include restrictions on water use by the non-residential classes at the first level of mandatory restrictions. Thus, the State Water Board estimates that the proposed regulation will have a minimal impact on the 56 percent of water used for purposes other than outdoor irrigation.

At the time that the State Water Board adopted the existing water conservation emergency regulation, many California urban water suppliers were already implementing water conservation measures commensurate with those required by the existing regulation and the proposed updated regulation and therefore conservation savings attained by their customers are not attributable to the regulations. Data collected from the State Water Board's May 2014 Urban Water Conservation Survey indicates that 53 of the 268 urban water suppliers who responded to the survey indicated that they had already formally invoked their drought shortage contingency plans and have implemented both mandatory restrictions on outdoor water use and prohibitions on runoff into streets and gutters. These 53 urban water suppliers represent approximately 10 million retail customers, which accounts for about 38 percent of the survey response by retail population. The State Water Board assumes that these 53 urban water suppliers are already implementing conservation measures that are commensurate with the requirements of the proposed updated regulation. The State Water Board also assumes that all 268 of the survey respondents collectively are representative of the urban water conservation actions being taken at that time statewide. Based upon these assumptions, 62 percent of urban water use would continue to be affected by Boards adoption of the proposed updated regulation, while 38 percent of urban water use would not be required to make changes (i.e., they are already implementing the required conservation measures at the time the existing regulation was approved).

Various studies have analyzed the response of urban populations to mandatory use restrictions imposed during drought conditions. Multiple studies conclude that mandatory use restrictions are more effective than voluntary conservation measures because areas that have imposed mandatory use restrictions have achieved greater use reductions than areas that imposed only voluntary measures, controlling for other variables. The amount of conservation achievable through mandatory restrictions varies. Conservation savings of up to 29 percent have been observed. For example, a study conducted on the effects of water demand management policies of eight California water agencies during the period from 1989-1996, which included 3 years of drought (1989-1991), found that rationing and use restrictions were correlated with use reductions of 19 percent and 29 percent, respectively. The study's authors concluded:

> In general, relatively moderate (5-15%) reductions in aggregate demand can be achieved through modest price increases and "voluntary" alternative [Demand-Side Management] policy instruments, such as public information campaigns. However, to achieve larger reductions in demand (greater than 15%), policymakers will likely need to consider either relatively large price increases, more stringent mandatory policy instruments (such as use restrictions), or a package of policy instruments.

A recent study from UCLA on use reductions in Los Angeles during the 2007-2009 drought reached similar conclusions:

> Our results indicate that mandatory restrictions are most effective at reducing water consumption for [Single-Family Residential] households. The greatest impact of measures resulted from the combination of mandatory watering restrictions and the price increase, which led to a water reduction of 23% in July/August 2009, while voluntary restrictions led to only a 6% reduction in water use.

In addition, a study of Virginia's severe 2002 drought found that mandatory use restrictions coupled with an aggressive information and enforcement campaign led to a 22 percent reduction in use. At the time of adoption of the existing emergency regulation, the State Water Board anticipated up to a 20 percent reduction in outdoor water use, totaling 0.48 million acre-feet, as calculated below.

Total urban water use for outdoor irrigation: 3.9 MAF
Urban water use for outdoor irrigation affected by the proposed regulation: 3.9*0.62 = 2.4 MAF
Estimated conservation savings from adoption of the proposed regulation: 2.4*0.2 = 0.48 MAF

Based on data collected pursuant to the existing emergency regulation, approximately 0.37 MAF of water was actually saved between August 2014 and January 2015 as compared to the same period in 2013. This savings, however, was realized by all urban water suppliers, including those that were not required to make changes pursuant to the regulation (i.e., those that already had the same or similar requirements in place at the time the regulation was adopted). Thus, it is reasonable to attribute only approximately 62 percent of the 0.37 MAF of water savings to actions associated with the existing emergency regulation. This equates to approximately 0.23 MAF of water saved through January 2015 as a result of adoption of the existing water conservation emergency regulation. The State Water Board anticipates another 0.02 to 0.1 MAF of conservation due to the existing emergency regulation through the end of March 2015.[2] This level of water savings is expected to continue during the next 270-day period that the updated regulation will be in effect. In addition, new provisions are included in the proposed updated regulation that are expected to result in even greater savings. These new provisions include:

- Prohibiting irrigation of turf or ornamental landscapes during and 48 hours following measurable precipitation.

[2] The existing emergency regulation is set to expire on April 25, 2014, but should the State Water Board adopt the proposed updated emergency regulation on March 17, 2015, it will go into effect on or about March 28, 2015 upon approval by OAL.

- Hospitality sector restrictions requiring that water only be served on request in restaurants and bars and requiring the operators of hotels and motels to offer patrons the option of not having their towels and linens washed each day of their stay.
- Requiring urban water suppliers that don't already have a limit on the number of days that outdoor watering is allowed to limit outdoor irrigation of turf or ornamental landscapes to no more than two days per week.
- Requiring urban water suppliers to promptly notify their customers when they are aware of leaks within the customer's control.
- Additional reporting requirements for urban water suppliers on the number of days and duration that outdoor irrigation is allowed and the compliance and enforcement efforts being undertaken within their service areas.

Calculation of additional water savings as a result of these new requirements is not feasible for the following reasons:

- Reliable data is not available on the water savings that will be realized as result of the new hospitality sector restrictions.
- Many California restaurants and hotels already have similar restrictions in place.
- Many urban water suppliers already limit the number of days that watering is allowed and /or prohibit watering during and after precipitation.

It is therefore not possible to finely calculate the water saving resulting from new versus existing conservation actions. Given these uncertainties the State Water Board estimates that the potential water savings that could be achieved pursuant to the proposed updated regulation is consistent with its original estimate of 0.48 MAF.

Reduction in Public Water Supplier Water Sales Volume

As described above, urban water use for outdoor irrigation affected by the proposed regulation is estimated to be up to 2.4 MAF per year. Urban Water suppliers in California, however, are comprised of both governmental agencies and investor owned utilities that are regulated by the California Public Utilities Commission (CPUC). Costs to investor owned utilities need not be considered for the purposes of estimating the costs of the proposed regulation on local agencies. The CPUC indicates that "there are 116 investor-owned water utilities under the CPUC's jurisdiction providing water service to about 16 percent of California's residents." The estimated 2.4 MAF per year of water used for outdoor irrigation can therefore be reduced by 16 percent for the purpose of determining the amount of conservation and corresponding revenue impact to local government resulting from adoption of the proposed regulation. This brings the total volume of outdoor irrigation water use down to approximately 2.016 MAF per year. Since the proposed regulation is estimated to achieve as much as a 20 percent reduction in water use it can be assumed that the proposed regulation could result in a reduction in water sales by local government agencies of 403,200 acre-feet per year (i.e., 20% of 2.016 MAF).

Calculation of Decreased Public Water Supplier Sales Revenues

The estimated decreased sales revenues are a function of the average variable water rate and the amount of decreased sales volume. The estimate of decreased sales revenues due to the proposed regulation is $438,185,664, as calculated below.

Average statewide variable water rate: $1,086.77 per acre-foot
Estimated conservation savings (local government portion) from proposed regulation: 403,200 acre-feet
Total revenue impact: $1086.77*403,200 = $438,185,664

Note on calculation methodology

This methodology likely overstates the fiscal impact of decreased revenues for several reasons. First, it does not account for the savings in energy and chemical costs water suppliers will realize due to decreased water production. Second, it does not account for the avoided cost of supply augmentation that could be necessary if not for the conservation savings generated by the proposed regulation.

Reporting Costs

The estimated cost of reporting as would be required by the proposed emergency regulation was determined by multiplying the total number of urban water suppliers that would be required to submit monthly water production reports by the estimated average time to compile and submit water production information and by an average staff cost per hour. Based on information collected by the State Water Board pursuant to the existing emergency regulation there are 411 urban water suppliers that are subject to the reporting requirements. The maximum amount of time to prepare and submit the water production data is estimated to be 4 hours per urban water supplier per month. The estimated average total hourly staff costs of urban water supplier staff required to complete the certification form is $65 per hour or $260 per monthly report. If adopted, the term of the proposed emergency regulation would be 270 days or almost 9 months. Therefore, the total maximum reporting costs to urban water suppliers as a result of the proposed regulation is estimated at $961,740 (411 urban water suppliers multiplied by the $260 cost per monthly report multiplied by 9 months).

Total Implementation Cost

The total estimated cost of implementing the proposed regulation is $439,147,404, which is the sum of estimated lost revenues to urban water suppliers and the estimated reporting costs as described above.

Emergency Regulations Digest (Gov. Code , § 11346.1, subd. (b))

References:

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Renwick, Mary E., and Green, Richard D., Do Residential Water Demand Side Management Policies Measure Up? An Analysis of Eight California Water Agencies, Journal of Environmental Economics and Management 40,37-55 (2000).

State of California, Department of Finance, E-1 Population Estimates for Cities, Counties and the State with Annual Percent Change — January 1, 2013 and 2014. Sacramento, California, May 2014

State Water Resources Control Board Water Conservation Survey results as of June 19, 2014, accessed from: http://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/workshops_results.shtml, on June 30, 2014

EXHIBIT 17-B

Emergency Regulations Digest (Gov. Code , § 11346.1, subd. (b))

State Water Resources Control Board, June 20, 2014 - Statewide Drought Related Curtailment of Water Diversions Emergency Regulations Digest - with Appendix 10, accessed from: http://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/docs/emergency_regulations/sw_eregs_digest_062014.pdf, on June 30, 2014

State Water Resources Control Board Water Conservation Survey results as of June 19, 2014, Sacramento, CA, accessed from: http://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/workshops_results.shtml

ITEM: INFORMATIONAL ITEMS/STAFF REPORTS

18. LETTERS RECEIVED

Meeting Date:	**March 16, 2015**	**Budgeted:**	**N/A**
From:	**David J. Stoldt, General Manager**	**Program/ Line Item No.:**	**N/A**
Prepared By:	**Arlene Tavani**	**Cost Estimate:**	**N/A**

General Counsel Review: N/A
Committee Recommendation: N/A
CEQA Compliance: N/A

There are no letters to submit for Board review.

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ITEM: INFORMATIONAL ITEMS/STAFF REPORTS

19. COMMITTEE REPORTS

Meeting Date:	**March 16, 2015**	**Budgeted:**	**N/A**
From:	**David J. Stoldt, General Manager**	**Program/ Line Item No.:**	**N/A**
Prepared By:	**Arlene Tavani**	**Cost Estimate:**	**N/A**

General Counsel Review: N/A
Committee Recommendation: N/A
CEQA Compliance: N/A

Attached for your review as **Exhibit 19-A** are final minutes of the February 10, 2015 Administrative Committee meeting.

EXHIBITS
19-A Final Minutes of February 10, 2015 Administrative Committee Meeting

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EXHIBIT 19-A

FINAL MINUTES
Monterey Peninsula Water Management District
Administrative Committee
February 10, 2015

Call to Order
The meeting was called to order at 3:30 PM in the District Conference Room.

Committee members present: Andrew Clarke
Brenda Lewis (arrived at 3:41 PM)
David Pendergrass

Staff present: David Stoldt, General Manager
Suresh Prasad, Administrative Services Manager/Chief Financial Officer
Sara Reyes, Office Services Supervisor

Oral Communications
None. General Manager David Stoldt announced two emergency items needed to be added to the agenda due to matters that arose after the agenda was distributed.

Adopt Minutes of January 21, 2015 Committee Meeting
On a motion by Clarke and second by Pendergrass, the minutes of the January 21, 2015 meeting were approved on a vote of 2 to 0. Director Lewis was absent for this item.

Items on Board Agenda for February 18, 2015

Consider Approval of Purchase of Internet License for Water Wise Gardening in Monterey County
On a motion by Pendergrass and second by Clarke, the committee voted 3 to 0 to recommend the Board approve the expenditure of $5,000 and authorize the General Manager to renew the contract with GardenSoft to purchase a web license for the Water Wise Gardening for Monterey County software.

Consider Adoption of Treasurer's Report for December 2014
On a motion by Clarke and second by Pendergrass, the committee voted 3 to 0 to recommend the Board adopt the December 2014 Treasurer's Report and financial statements, and ratification of the disbursements made during the month.

Receive and File Second Quarter Financial Activity Report for Fiscal Year 2014-2015
On a motion by Pendergrass and second by Clarke, the committee voted 3 to 0 to recommend the Board receive and file the Second Quarter Financial Activity Report for Fiscal Year 2014-2015.

Consider Approval of Second Quarter Fiscal Year 2014-2015 Investment Report
On a motion by Pendergrass and second by Clarke, the committee voted 3 to 0 to recommend the Board approve the Second Quarter Fiscal Year 2014-2015 Investment Report.

Consider Amendment to the Cost Sharing Agreement for the DeepWater Desal Project
On a motion by Pendergrass and second by Clarke, the committee voted 3 to 0 to add this item to the February 18, 2015 Board meeting agenda under the Consent Calendar.
This item was added to the Administrative Committee agenda at the request of the General Manager due to events that arose after the agenda had been distributed. The Board will discuss this item at its February 18, 2015 meeting and will be asked to consider extending the deadline for definitive agreements under Section 6.4 of the Cost Sharing Agreement with DeepWater Desal LLC to January 31, 2015.

Consider Budget Recommendation for Acquisition of the Pilot Plant Facilities at the Groundwater Replenishment Project
On a motion by Pendergrass and second by Clarke, the committee voted 3 to 0 to add this item to the February 18, 2015 Board meeting agenda under the Consent Calendar.
This item was added to the Administrative Committee agenda at the request of the General Manager due to events that arose after the agenda had been distributed. The Board will discuss this item at its February 18, 2015 meeting and will be asked to consider approving the addition of a not-to-exceed amount of $300,000 for the District's share of acquisition and reinstallation of Pure Water Monterey pilot plant facilities.

Other Business

Approve 2015 Administrative Committee Meeting Schedule
On a motion by Pendergrass and second by Clarke, the committee voted 3 to 0 to approve the 2015 Administrative Committee meeting schedule.

Review Second Quarter Legal Services Activity Report for Fiscal Year 2014-2015
This was presented as informational only. No action was required of the committee.

Review Draft Agenda for February 18, 2015 Regular Board Meeting
The committee voted 3 to 0 to add the following items to the Consent Calendar: 1) Consider Amendment to Cost Sharing Agreement with DeepWater Desal and 2) Consider Funding Purchase and Reestablishment of Pure Water Monterey Project Pilot Plant. General Manager Stoldt reported there would likely not be a closed session meeting. An additional Public Hearing item – Consider Distribution of Local Project Grant Funds to City of Pacific Grove, will also be added to the agenda.

Adjournment
The meeting was adjourned at 4:19 PM.

ITEM: INFORMATIONAL ITEM/STAFF REPORTS

20. MONTHLY ALLOCATION REPORT

Meeting Date:	**March 16, 2015**	**Budgeted:**	**N/A**
From:	**David J. Stoldt, General Manager**	**Program:** **Line Item No.:**	**N/A**
Prepared By:	**Gabriela Ayala**	**Cost Estimate:**	**N/A**

General Counsel Review: N/A
Committee Recommendation: N/A
CEQA Compliance: N/A

SUMMARY: As of February 28, 2015, a total of **24.515** acre-feet **(7.2%)** of the Paralta Well Allocation remained available for use by the Jurisdictions. Pre-Paralta water in the amount of **35.861** acre-feet is available to the Jurisdictions, and **30.788** acre-feet is available as public water credits.

Exhibit 20-A shows the amount of water allocated to each Jurisdiction from the Paralta Well Allocation, the quantities permitted in February 2015 ("changes"), and the quantities remaining. The Paralta Allocation had one credit in February 2015.

Exhibit 20-A also shows additional water available to each of the Jurisdictions and the information regarding the Community Hospital of the Monterey Peninsula (Holman Highway Facility). Additional water from expired or canceled permits that were issued before January 1991 are shown under "PRE-Paralta." Water credits used from a Jurisdiction's "public credit" account are also listed. Transfers of Non-Residential Water Use Credits into a Jurisdiction's Allocation are included as "public credits." **Exhibit 20-B** shows water available to Pebble Beach Company and Del Monte Forest Benefited Properties, including Macomber Estates, Griffin Trust. Another table in this exhibit shows the status of Sand City Water Entitlement.

BACKGROUND: The District's Water Allocation Program, associated resource system supply limits, and Jurisdictional Allocations have been modified by a number of key ordinances. These key ordinances are listed in **Exhibit 20-C**.

EXHIBITS
20-A Monthly Allocation Report
20-B Monthly Entitlement Report
20-C District's Water Allocation Program Ordinances

EXHIBIT 20-A

MONTHLY ALLOCATION REPORT
Reported in Acre-Feet
For the month of February 2015

Jurisdiction	Paralta Allocation*	Changes	Remaining	PRE-Paralta Credits	Changes	Remaining	Public Credits	Changes	Remaining	Total Available
Airport District	8.100	0.000	5.197	0.000	0.000	0.000	0.000	0.000	0.000	5.197
Carmel-by-the-Sea	19.410	0.000	1.397	1.081	0.000	1.081	0.910	0.000	0.182	2.660
Del Rey Oaks	8.100	0.000	0.000	0.440	0.000	0.000	0.000	0.000	0.000	0.000
Monterey	76.320	0.010 Cr	0.203	50.659	0.000	0.030	38.121	0.196	3.661	3.894
Monterey County	87.710	0.000	10.345	13.080	0.000	0.000	7.827	0.000	2.200	12.545
Pacific Grove	25.770	0.000	0.000	1.410	0.000	0.312	15.874	0.000	0.228	0.540
Sand City	51.860	0.000	0.000	0.838	0.000	0.000	24.717	0.000	23.373	23.373
Seaside	65.450	0.000	7.373	34.438	0.000	34.438	2.693	0.000	1.144	42.955
TOTALS	342.720	0.010 Cr	24.515	101.946	0.000	35.861	90.142	0.196	30.788	91.164

Allocation Holder	Water Available	Changes this Month	Total Demand from Water Permits Issued	Remaining Water Available
Quail Meadows	33.000	0.000	32.229	0.771
Water West	12.760	0.000	8.422	4.338

* Does not include 15.280 Acre-Feet from the District Reserve prior to adoption of Ordinance No. 73.

EXHIBIT 20-B

MONTHLY ALLOCATION REPORT
ENTITLEMENTS
Reported in Acre-Feet
For the month of February 2015

Recycled Water Project Entitlements

Entitlement Holder	Entitlement	Changes this Month	Total Demand from Water Permits Issued	Remaining Entitlement/and Water Use Permits Available
Pebble Beach Co. [1]	242.060	0.110	11.572	230.598
Del Monte Forest Benefited Properties [2] **(Pursuant to Ord No. 109)**	122.940	0.182	37.597	85.343
Macomber Estates	10.000	0.000	9.595	0.405
Griffin Trust	5.000	0.000	4.809	0.191
CAWD/PBCSD Project Totals	**380.000**	**0.292**	**63.573**	**316.537**

Entitlement Holder	Entitlement	Changes this Month	Total Demand from Water Permits Issued	Remaining Entitlement/and Water Use Permits Available
City of Sand City	165.00	0.000	3.377	161.623

Increases in the Del Monte Forest Benefited Properties Entitlement will result in reductions in the Pebble Beach Co. Entitlement.

EXHIBIT 20-C

District's Water Allocation Program Ordinances

Ordinance No. 1 was adopted in September 1980 to establish interim municipal water allocations based on existing water use by the jurisdictions. Resolution 81-7 was adopted in April 1981 to modify the interim allocations and incorporate projected water demands through the year 2000. Under the 1981 allocation, Cal-Am's annual production limit was set at 20,000 acre-feet.

Ordinance No. 52 was adopted in December 1990 to implement the District's water allocation program, modify the resource system supply limit, and to temporarily limit new uses of water. As a result of Ordinance No. 52, a moratorium on the issuance of most water permits within the District was established. Adoption of Ordinance No. 52 reduced Cal-Am's annual production limit to 16,744 acre-feet.

Ordinance No. 70 was adopted in June 1993 to modify the resource system supply limit, establish a water allocation for each of the jurisdictions within the District, and end the moratorium on the issuance of water permits. Adoption of Ordinance No. 70 was based on development of the Paralta Well in the Seaside Groundwater Basin and increased Cal-Am's annual production limit to **17,619** acre-feet. More specifically, Ordinance No. 70 allocated 308 acre-feet of water to the jurisdictions and 50 acre-feet to a District Reserve for regional projects with public benefit.

Ordinance No. 73 was adopted in February 1995 to eliminate the District Reserve and allocate the remaining water equally among the eight jurisdictions. Of the original 50 acre-feet that was allocated to the District Reserve, 34.72 acre-feet remained and was distributed equally (4.34 acre-feet) among the jurisdictions.

Ordinance No. 74 was adopted in March 1995 to allow the reinvestment of toilet retrofit water savings on single-family residential properties. The reinvested retrofit credits must be repaid by the jurisdiction from the next available water allocation and are limited to a maximum of 10 acre-feet. This ordinance sunset in July 1998.

Ordinance No. 75 was adopted in March 1995 to allow the reinvestment of water saved through toilet retrofits and other permanent water savings methods at publicly owned and operated facilities. Fifteen percent of the savings are set aside to meet the District's long-term water conservation goal and the remainder of the savings are credited to the jurisdictions allocation. This ordinance sunset in July 1998.

Ordinance No. 83 was adopted in April 1996 and set Cal-Am's annual production limit at **17,621** acre-feet and the non-Cal-Am annual production limit at **3,046** acre-feet. The modifications to the production limit were made based on the agreement by non-Cal-Am water users to permanently reduce annual water production from the Carmel Valley Alluvial Aquifer in exchange for water service from Cal-Am. As part of the agreement, fifteen percent of the historical non-Cal-Am production was set aside to meet the District's long-term water conservation goal.

Ordinance No. 87 was adopted in February 1997 as an urgency ordinance establishing a community benefit allocation for the planned expansion of the Community Hospital of the Monterey Peninsula (CHOMP). Specifically, a special reserve allocation of 19.60 acre-feet of production was created exclusively for the benefit of CHOMP. With this new allocation, Cal-Am's annual production limit was increased to **17,641** acre-feet and the non-Cal-Am annual production limit remained at **3,046** acre-feet.

Ordinance No. 90 was adopted in June 1998 to continue the program allowing the reinvestment of toilet retrofit water savings on single-family residential properties for 90-days following the expiration of Ordinance No. 74. This ordinance sunset in September 1998.

Ordinance No. 91 was adopted in June 1998 to continue the program allowing the reinvestment of water saved through toilet retrofits and other permanent water savings methods at publicly owned and operated facilities.

Ordinance No. 90 and No. 91 were challenged for compliance with CEQA and nullified by the Monterey Superior Court in December 1998.

Ordinance No. 109 was adopted on May 27, 2004, revised Rule 23.5 and adopted additional provisions to facilitate the financing and expansion of the CAWD/PBCSD Recycled Water Project.

Ordinance No. 132 was adopted on January 24, 2008, established a Water Entitlement for Sand City and amended the rules to reflect the process for issuing Water Use Permits.

ITEM: INFORMATIONAL ITEM/STAFF REPORTS

21. WATER CONSERVATION PROGRAM REPORT

Meeting Date:	**March 16, 2015**	**Budgeted:**	**N/A**
From:	**David J. Stoldt, General Manager**	**Program/ Line Item No.:**	**N/A**
Prepared By:	**Michael Boles**	**Cost Estimate:**	**N/A**

Committee Recommendation: N/A
CEQA Compliance: N/A

I. MANDATORY WATER CONSERVATION RETROFIT PROGRAM

District Regulation XIV requires the retrofit of water fixtures upon Change of Ownership or Use with High Efficiency Toilets (HET) (1.28 gallons-per-flush), 2.0 gallons-per-minute (gpm) Showerheads, 2.2 gpm faucet aerators, and Rain Sensors on all automatic Irrigation Systems. Property owners must certify the Site meets the District's water efficiency standards by submitting a Water Conservation Certification Form (WCC), and a Site inspection is often conducted to verify compliance.

A. Changes of Ownership

Information is obtained monthly from *Realquest.com* on properties transferring ownership within the District. The information is entered into the database and compared against the properties that have submitted WCCs. Details on **109** property transfers that occurred in Febuary 2015 were entered into the database.

B. Certification

The District received **43** WCCs between February 1, 2015 and February 28, 2015. Data on ownership, transfer date, and status of water efficiency standard compliance were entered into the database.

C. Verification

In February, **77** properties were certified to verify compliance with Rule 144 (Retrofit Upon Change of Ownership or Use). Of the **77** inspections certified, **65 (84%)** were in compliance. **Three** of the properties that passed inspection involved more than visit to verify compliance with all water efficiency standards.

District inspectors are tracking toilet replacement with High Efficiency Toilets (HET) in place of ULF toilets. These retrofits are occurring in remodels and new construction, and are the toilet of choice for Rule 144 compliance. State law mandated the sale and installation of HET by January 1, 2014, with a phase-in period that began in 2010. The majority of toilets sold in California are HET.

Savings Estimate

Water savings from HET retrofits triggered by Rule 144 verified in February 2015 are estimated at **0.978** acre-feet annually **(**AFA). Water savings from retrofits that exceeded requirements (i.e., HETs to Ultra High Efficiency Toilets) is estimated at **0.490** AFA (49 toilets). Year-to-date estimated savings occurring as a result of toilet retrofits is **3.019** AFA.

D. Water Waste Enforcement

In response to the State's drought emergency conservation regulation effective August 1, 2014, the District has increased its Water Waste enforcement. The District has a Water Waste Hotline 831-658-5653 or an online form to report Water Waster occurrences at www.mpwmd.net or www.montereywaterinfo.org. There were no Water Waste responses during the past month. There were **no** repeated incidences that resulted in fines.

II. WATER DEMAND MANAGEMENT

A. Permit Processing

District Rule 23 requires a Water Permit application for all properties that propose to expand or modify water use on a Site, including New Construction and Remodels. District staff processed and issued **61** Water Permits in February 2015. **Four** Water Permit were issued using water entitlements (Macomber, Pebble Beach Company, Griffin Estates, etc). **One** Water Permit involved a debit to a Public Water Credit Account.

All Water Permit applicants have received a disclaimer informing them of the Cease and Desist Order against California American Water and that MPWMD reports Water Permit details to California American Water. Disclaimers will continue to be provided to all Water Permit recipients with property supplied by a California American Water Distribution System.

District Rule 24-3-A allows the addition of a second Bathroom in an existing Single-Family Dwelling on a Single-Family Residential Site. Of the **61** Water Permits issued in February, **seven** were issued under this provision.

B. Permit Compliance

District staff completed **80** Water Permit final inspections during February 2015. **Twenty** of the final inspections failed due to unpermitted fixtures. Of the **60** properties that were in compliance, **54** passed on the first visit. In addition, **four** pre-inspections were conducted in response to Water Permit applications received by the District.

C. Deed Restrictions

District staff prepares deed restrictions that are recorded on the property title to provide notice of District Rules and Regulations, enforce Water Permit conditions, and provide notice of public access to water records. In April 2001, the District Board of Directors adopted a policy regarding the processing of deed restrictions. In the month of February, the District prepared **50** deed restrictions. Of the **61** Water Permits issued in February, **35 (57%)** required deed restrictions. District staff provided Notary services for **57** Water Permits with deed restrictions.

III. JOINT MPWMD/CAW REBATE PROGRAM

The Water Conservation Rebate Program is available for purchase of Qualifying Devices.

Participation in the rebate program is detailed in the following chart. The table below indicates the program summary for California American Water Company.

	REBATE PROGRAM SUMMARY	February-2015			2015 YTD	1997 - Present
I	Application Summary					
	A. Applications Received	113			243	18988
	B. Applications Approved	93			195	14906
	C. Single Family Applications	107			225	17060
	D. Multi-Family Applications	4			13	955
	E. Non-Residential Applications	2			5	218
II	**Types of Fixtures Rebated**	**Quantity**	**Paid**	**Estimated Savings**		
	A. SFD HET	27	4,512.20	1.127196	47	2395
	B. SFD ULF to HET	36	1,800.00	0.360000	71	1075
	C. UHET	1	239.59	0.010000	4	1924
	D. SFD HE DW	6	750.00	0.018000	16	1886
	E. SFD HEW 5.0 or less Water Factor	32	15,899.00	0.515200	59	4553
	F. Instant Access Hot Water Systems	2	400.00		3	178
	G. On Demand Hot Water-Point of Source	0	0.00		0	51
	H. Cisterns	1	440.00		3	211.72
	I. Smart Controllers	0	0.00		0	61
	J. Residential Zero Water Using Urinals	0	0.00		0	2
	K. Residential Soil Sensors	0	0.00		0	2
	L. Graywater System	0	0.00		0	4
	M. Lawn Removal & Replacement	0	0.00	0.000000	0	170
	N. Rotating Sprinkler Nozzles	66	264.00		66	379
	O. MFD HET	2	319.00	0.083496	6	597
	P. MFD ULF to HET	0	0.00	0.000000	2	69
	Q. MFD UHET	0	0.00	0.000000	0	9
	R. MFD HE DW	0	0.00	0.000000	0	55
	S. MFD HEW 5.0 or less Water Factor	0	0.00	0.000000	3	163
	T. MFD Common Laundry	0	0.00	0.000000	0	21
	U. Non-Residential - HET	0	0.00	0.000000	0	620
	V. Non-Residential - ULF to HET	3	150.00	0.030000	3	272
	W. Non-Residential - UHET	0	0.00	0.000000	0	67
	X. Non-Residential HE Dishwasher	0	0.00	0.000000	2	7
	Y. Non-Residential HEW-Residential Grade 5.0 or less	0	0.00	0.000000	1	98
	Z. Non-Residential HEW-Commercial Grade 5.0 or less	0	0.00	0.000000	0	82
	AA. Non-Residential Zero Water Using Urinals	0	0.00	0.000000	0	145
	BB. Non-Residential High Efficiency Urinals	0	0.00	0.000000	0	13
	CC. Non-Residential Pint Urinals	0	0.00	0.000000	0	20
	DD. Non-Residential Ice Machines	0	0.00	0.000000	0	2
III	Rebate Refund					23
IV	Total Dollars Rebated		$24,773.79		$49,717.33	$4,460,243.62
V	Estimated Water Savings in Acre-Feet Annually*			2.143892	4.075	458.139

*** Retrofit savings are estimated at 0.041748 AF/HET; 0.01 AF/UHET; 0.01 AF/ULF to HET; 0.003 AF/dishwasher, 0.0161 AF/residential washer; 0.116618 AF/commercial washer; 0.0082 AF/100 square feet of lawn removal.**

ITEM: INFORMATIONAL ITEMS/STAFF REPORTS

22. CARMEL RIVER FISHERY REPORT FOR JANUARY/FEBRUARY 2015

Meeting Date:	**March 16, 2015**	**Budgeted:**	**N/A**
From:	**David J. Stoldt, General Manager**	**Program/ Line Item No.:**	**N/A**
Prepared By:	**Beverly Chaney**	**Cost Estimate:**	**N/A**

General Counsel Review: N/A
Committee Recommendation: N/A
CEQA Compliance: N/A

AQUATIC HABITAT AND FLOW CONDITIONS: After two weeks of very wet weather in early December that filled Los Padres Reservoir and finally rewetted the lower Carmel River with the first significant flow in nearly two years, January 2015 was the driest January in recorded history with 0.00 inches of rain recorded at California American Water's (CAW) San Clemente Dam (SCD) as well as much of Monterey County. Much of February was also dry, but a moderate early-month storm did increase river flows temporarily from 18 to 751 cubic-feet-per-second cfs (cfs) at the District's Sleepy Hollow Weir gaging station.

January's mean daily streamflow at the MPWMD Highway 1 gage (HW 1) ranged from 9.2 to 28 cfs (mean 15.7 cfs) with 967 total acre-feet (AF) of runoff. February's mean daily streamflow at the HW 1 gage ranged from 7.5 to 666 cfs (mean 111 cfs) with 6,160 total acre-feet of runoff.

Mean daily streamflow in February at the Sleepy Hollow Weir ranged from 18 to 751 cfs, with a mean monthly flow of 124 cfs. During February, 3.82 inches of rainfall were recorded at CAW's SCD gage. The rainfall total for WY 2015 (which started on October 1, 2014) is 13.85 inches, or 90% of the long-term year-to-date average of 15.43 inches.

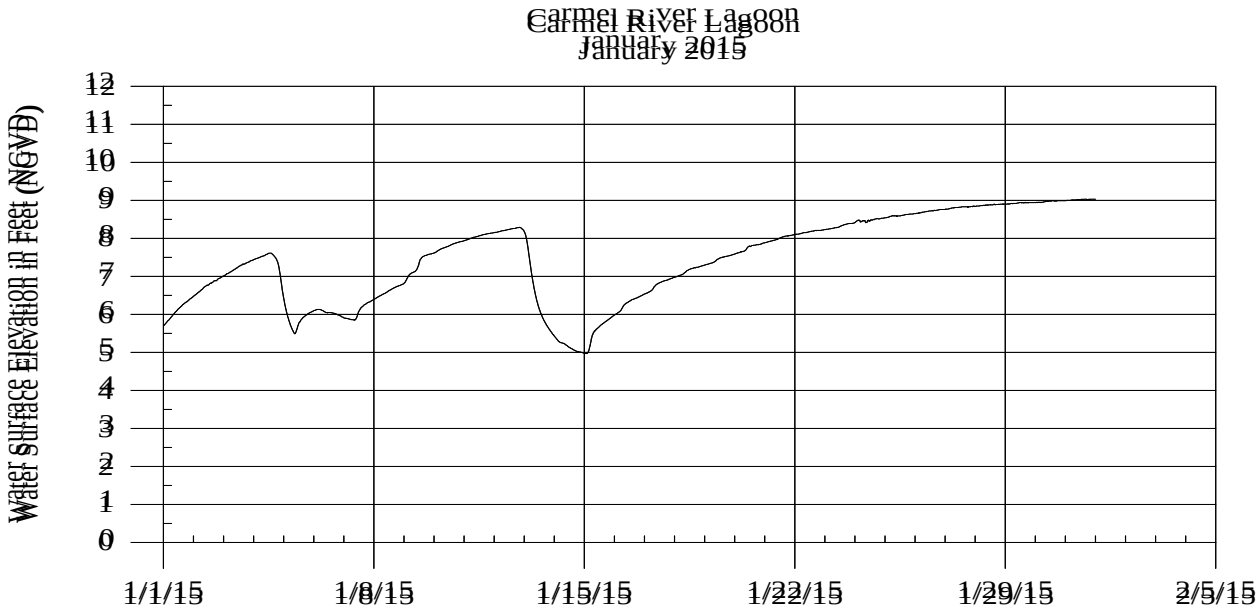
CARMEL RIVER LAGOON: On December 12, 2014, the lagoon filled and opened to the sea for the first time since May 24, 2013. In early January 2015, the lagoon opened briefly several times before closing, due to low inflow, until a moderate storm in early February finally filled the lagoon and opened the mouth. A pattern of tidally influenced daily open/close events persisted for the remainder of the month with the lagoon's water-surface elevation (WSE) ranging from approximately 1.5 – 10.5 feet above mean sea level (see graphs below).

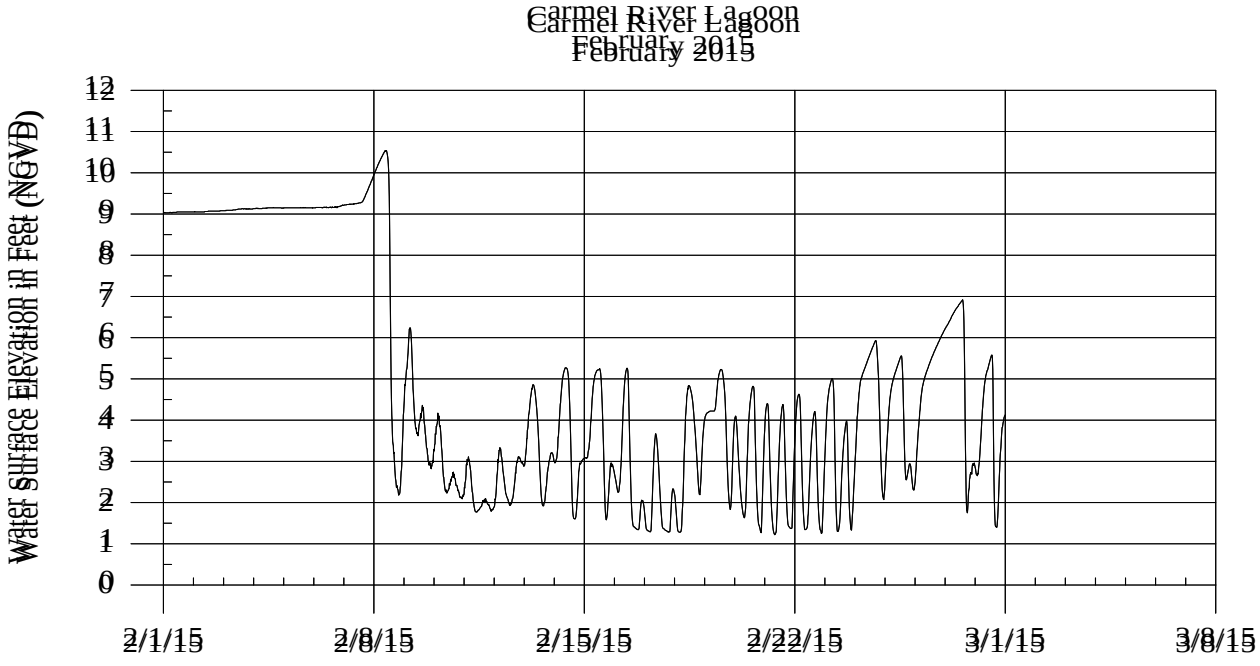
Water-quality profiles were conducted in mid-February at five lagoon sites. Conditions were generally "good" for steelhead rearing. Water temperatures were all in the mid-50's degrees F., dissolved oxygen (DO) ranged from 5 – 12 mg/L and salinity levels ranged from 0.5 - 25 ppt.

ADULT STEELHEAD AT SAN CLEMENTE DAM: The fish counter and video camera were installed and tested at the ladder in early December 2014. Through the end of February

there have been a total of 18 fish recorded at the counter: three in December, zero in January and 15 in February.

ADULT STEELHEAD AT LOS PADRES DAM: The fish ladder and trap are operational. Through the end of February 2015 there have been zero sea-run adult fish recorded in the trap.





ITEM: INFORMATIONAL ITEMS/STAFF REPORT

23. MONTHLY WATER SUPPLY AND CALIFORNIA AMERICAN WATER PRODUCTION REPORT

Meeting Date:	**March 16, 2015**	**Budgeted:**	**N/A**
From:	**David J. Stoldt, General Manager**	**Program/ Line Item No.:**	**N/A**
Prepared By:	**Jonathan Lear**	**Cost Estimate:**	**N/A**

General Counsel Review: N/A
Committee Recommendation: N/A
CEQA Compliance: N/A

Exhibit 23-A shows the water supply status for the Monterey Peninsula Water Resources System (MPWRS) as of **March 1, 2015**. This system includes the surface water resources in the Carmel River Basin, the groundwater resources in the Carmel Valley Alluvial Aquifer and the Seaside Groundwater Basin. **Exhibit 23-A** is for Water Year (WY) 2015 and focuses on four factors: rainfall, runoff, storage, and steelhead. The rainfall and Streamflow values are based on measurements in the upper Carmel River Basin at San Clemente Dam.

Water Supply Status: As shown, rainfall through **February** 2015 totaled **3.82 inches** and brings the cumulative rainfall total for WY 2015 to **13.85 inches,** which is **90%** of the long-term average through **February**. Estimated unimpaired runoff during **February** 2014 totaled **6,097 acre-feet (AF)** and brings the cumulative runoff total for WY 2015 to **17,372 AF,** which is **48%** of the long-term average through **February**. Usable storage, which includes surface and groundwater, was **30,870 AF**, or 99**%** of the long-term average through **February**. This storage equates to **82%** of system capacity. In addition, **18 adult steelhead** were counted in the fish ladder at San Clemente Dam through **February**.

Production Compliance: Under State Water Resources Control Board (SWRCB) Cease and Desist Order No. 2009-0060, California American Water (Cal-Am) is allowed to produce no more than 9,945 AF of water from the Carmel River in WY 2015. In addition, under the Seaside Basin Decision, Cal-Am is allowed to produce 2,259AF of water from the Coastal Subareas and 48 AF from the Laguna Seca Subarea of the Seaside Basin in WY 2015. Altogether, Cal-Am is currently allowed to produce 12,196 AF from Carmel River and Seaside Coastal sources for customers in its main Monterey system and 48 AF from the Laguna Seca Subarea for customers in Ryan Ranch, Hidden Hills, and Bishop Systems (not adjusted for ASR recovery or Sand City Desalination). For WY 2015 through **February**, Cal-Am has produced **3,856 AF** from the Carmel River, Seaside Basin, Sand City Desalination, and ASR recovery, for customer use. This water production is **550 AF** or **12.5 % less** than the target specified for Cal-Am's production from the MPWRS for WY 2015 through **February**. A breakdown of Cal-Am's production for WY 2015 through **February** is included as **Exhibit 23-B**. Cal-Am's production from the Carmel River Basin is reduced for diversions that are made for injection into the Seaside Basin; Cal-Am's "native" Seaside Basin production is reduced for injected water recovery. For WY 2015 through **February**, **215 AF** of Carmel River Basin groundwater have been diverted for Seaside Basin injection; **0 AF** have been recovered for customer use. **Exhibit 23-C** shows production breakdown from all sources for all uses. Some of the values in this report may be revised in the future as Cal-Am finalizes their production values and monitoring data.

EXHIBITS
23-A Water Supply Status: **March 1, 2015**
23-B Monthly Cal-Am Diversions from Carmel River and Seaside Groundwater Basins: Water Year 2015
23-C Monthly Cal-Am production by source: WY 2015

EXHIBIT 23-A

Monterey Peninsula Water Management District
Water Supply Status
March 1, 2015

Factor	Water Year 2015 Oct - Feb 15	Average To Date	Percent of Average	Water Year 2014 Oct - Feb 14
 **Rainfall** (Inches)	13.85	15.43	90%	5.91
 **Runoff** (Acre-Feet)	17,372	36,250	48%	1650
 **Storage** (Acre-Feet)	30,870	31,030	99%	27,590
 **Steelhead** (Adults) (Juveniles)	18	156 ---	12% ---	0 --

Notes:

1. Rainfall and runoff estimates are based on measurements at San Clemente Dam. Annual rainfall and runoff at San Clemente Dam average 21.3 inches and 68,400 acre-feet, respectively. Annual values are based on the water year that runs from October 1 to September 30 of the following calendar year. The rainfall and runoff averages at the San Clemente Dam site are based on records for the 1922-2014 and 1902-2014 periods, respectively.

2. The rainfall and runoff totals are based on measurements through **February 2015.**

3. Storage estimates refer to usable storage in the Monterey Peninsula Water Resources System (MPWRS) that includes surface water in Los Padres and San Clemente Reservoirs and ground water in the Carmel Valley Alluvial Aquifer and in the Coastal Subareas of the Seaside Groundwater Basin. The storage averages are end-of-month values and are based on records for the 1989-2014 period. The storage estimates are end-of-month values for **February 2015.**

4. The maximum usable storage capacity for the MPWRS at this time, with the flashboards lowered at San Clemente Dam, is 37,639 acre-feet. The flashboards were last lowered on August 27, 1996, and have not been raised since that time.

5. The adult steelhead count refers to the number of sea-run adults (> 15 inches) that have migrated up the fish ladder at San Clemente Dam in Water Year 2015. The juvenile count refers to the number of juveniles that were rescued by District staff from drying reaches of the Carmel River and its tributaries in Water Year 2015. The adult count average is based on records for the 1994-2014 period.

MONTHLY CALIFORNIA AMERICAN WATER MAIN SYSTEM PRODUCTION:
WATER YEARS 2001 THROUGH 2012 IN ACRE-FEET

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
2001	1,136	950	972	934	806	933	1,034	1,435	1,559	1,542	1,543	1,321	14,165
2002	1,296	1,002	831	840	817	945	1,145	1,370	1,460	1,577	1,555	1,443	14,281
2003	1,368	1,068	939	882	868	986	993	1,226	1,498	1,650	1,648	1,512	14,638
2004	1,425	1,008	912	885	852	1,074	1,325	1,606	1,525	1,486	1,473	1,441	15,012
2005	1,147	938	937	870	804	919	979	1,287	1,421	1,514	1,474	1,388	13,678
2006	1,314	1,086	878	834	875	860	812	1,291	1,418	1,594	1,522	1,321	13,805
2007	1,266	1,020	931	935	830	1,032	1,113	1,312	1,349	1,474	1,448	1,358	14,068
2008	1,169	1,057	911	878	840	1,042	1,149	1,322	1,391	1,436	1,405	1,389	13,989
2009	1,247	959	858	871	725	833	1,080	1,164	1,189	1,349	1,368	1,273	12,916
2010	1,053	963	828	777	720	844	857	1,058	1,188	1,275	1,252	1,187	12,002
2011	1,072	881	739	834	802	873	938	1,133	1,071	1,208	1,190	1,121	11,862
2012	991	849	887	865	808	832	823	1,069	1,126	1,194	1,178	1,059	11,681
2013	984	832	712	759	731	878	970	1,066	1,049	1,117	1,121	1,027	11,245
Mean	1,190	970	872	859	806	927	1,017	1,257	1,326	1,417	1,398	1,295	13,855
Percentage	**8.6%**	**7.0%**	**6.3%**	**6.2%**	**5.8%**	**6.7%**	**7.3%**	**9.1%**	**9.6%**	**10.2%**	**10.1%**	**9.3%**	**100.00%**

Notes:
1. The December-May production values were adjusted to account for water produced from the Carmel River Basin for injection into the Coastal Subareas of the Seaside Groundwater Basin. Accordingly, the values shown represent water produced solely for customer use.

MONTHLY CALIFORNIA AMERICAN WATER SATELLITE SYSTEMS PRODUCTION FOR CUSTOMER SERVICE:
WATER YEARS 2001 THROUGH 2010 IN ACRE-FEET

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
2001	33	26	29	25	17	24	30	46	51	54	56	52	443
2002	51	32	20	22	22	30	38	44	52	58	59	58	486
2003	55	38	28	21	22	30	30	43	53	59	58	52	489
2004	50	29	23	19	18	31	43	56	53	59	55	54	490
2005	37	24	24	20	18	22	26	39	50	58	62	56	437
2006	48	37	25	19	23	21	20	44	54	63	54	55	464
2007	49	34	25	25	21	29	35	49	55	58	60	54	494
2008	45	39	30	25	25	39	45	55	58	60	59	57	537
2009	52	39	30	29	21	26	41	47	53	62	61	55	516
2010	39	36	26	23	19	25	26	37	48	52	50	50	430
2011	39	27	21	21	21	21	29	38	36	42	44	42	381
2012	34	25	27	27	25	24	25	34	35	38	39	38	371
2013	34	24	19	19	20	24	32	44	40	43	40	38	377
Mean	44	31	25	23	21	27	32	44	49	54	54	51	455
Percentage	**9.57%**	**6.91%**	**5.55%**	**5.01%**	**4.60%**	**5.88%**	**7.11%**	**9.73%**	**10.80%**	**11.93%**	**11.76%**	**11.17%**	**100.00%**

Notes:
1. California American Water's satellite systems include the Ryan Ranch, Hidden Hills, and Bishop Units, which were annexed into the CAW service area in November 1989, March 1993, and October 1996, respectively.
2. The monthly production values for the Ryan Ranch Unit in Water Years 2003, 2004, 2005, 2006, 2007, and 2008 were adjusted for water produced from CAW's main system sources, i.e., Carmel River, and supplied to users in the Ryan Ranch Unit. Specifically, for Water Years 2003 through 2008, 26, 14, 2, 18, 59 , and 3 acre-feet, respectively, were added to the Ryan Ranch Unit production values to reflect actual demand within the unit during this period.

Annual Values				WY 2013	Total Main system **9,945**				Sattelite Systems **0**		MPWRS Total Monthly	MPWRS Total Cumulative
CV Limit	Coastal	Main System	Sattelite		Monthly %	CV Monthly	Coastal Monthly	Main monthly	Monthly %	acre-feet	acre-feet	acre-feet
9,945	2,251	12,196	48	october	8.96%	891	202	1,092	9.52%	5	1,097	1,097
9,945	2,251	12,196	48	november	7.53%	749	169	918	7.28%	3	922	2,019
9,945	2,251	12,196	48	december	6.64%	660	149	810	5.71%	3	812	2,831
9,945	2,251	12,196	48	january	6.65%	661	150	811	5.29%	3	813	3,644
9,945	2,251	12,196	48	february	6.23%	620	140	760	4.89%	2	763	4,407
9,945	2,251	12,196	48	march	7.08%	704	159	864	5.88%	3	867	5,274
9,945	2,251	12,196	48	april	7.62%	758	172	930	7.09%	3	933	6,207
9,945	2,251	12,196	48	may	9.27%	922	209	1,131	9.74%	5	1,135	7,342
9,945	2,251	12,196	48	june	9.63%	958	217	1,174	10.63%	5	1,180	8,522
9,945	2,251	12,196	48	july	10.48%	1,043	236	1,279	11.69%	6	1,284	9,806
9,945	2,251	12,196	48	august	10.32%	1,027	232	1,259	11.40%	5	1,264	11,070
9,945	2,251	12,196	48	september	9.58%	953	216	1,169	10.89%	5	1,174	12,244
				Ending		**9,945**	**2,251**	**12,196**		**48**	**12,244**	

Main System				Sattelite System		Totals
CV Limit	Regulatory Reduction	Seaside Coastal	Regulatory Reduction	Seaside Laguna Seca	Regulatory Reduction	
10978	-1033	3504	-1253	345		
-549	2010 rdn	-313	2009 rdn	-74	2009 rdn	
-121	2012 rdn	-104	2010 rdn	-25	2010 rdn	
-121	2013 rdn	-418	2012 rdn	-99	2012 rdn	
-121	2014 rdn	-418	2015 rdn	-99	2015 rdn	
-121	2015 rdn					
		2,251				
	Carry over					
9,945		2,251				
12,196				**48**		**12,244**

Table XV-1
Regulatory Water Production Targets
for All California American Water Systems from Sources
Within the Monterey Peninsula Water Resource System

(All Values in Acre-Feet)

Month	Monthly Target	Year-to-Date at Month-End Target
October	1,097	1,097
November	922	2,019
December	812	2,831
January	812	3,643
February	763	4,406
March	867	5,273
April	933	6,206
May	1,135	7,341
June	1,180	8,521
July	1,284	9,805
August	1,264	11,069
September	1,174	12,243
TOTAL	12,243	---

Notes:
Monthly and year-to-date at month-end production targets are based on the annual production limit specified for the California American Water (Cal-Am) systems for Water Year (WY) 2014 from Carmel River sources per State Water Resources Control Board Order WR 2009-0060 (10,066 acre-feet) and adjusted annual production limits specified for the Cal-Am satellite systems from its Coastal Subarea sources (2,669 acre-feet) and Laguna Seca Subarea sources (147 acre-feet) of the Seaside Groundwater Basin per the Seaside Basin adjudication decision. These values do not include consideration of any carryover credit in the Seaside Basin for WY 2014. This combined total (12,882 acre-feet) was distributed monthly based on Cal-Am's reported monthly average production for its main and satellite systems during the 2005 through 2012 period.

Table XV-2
Regulatory Water Production Targets
for California American Water Satellite Systems from Sources
Within the Monterey Peninsula Water Resource System

(All Values in Acre-Feet)

Month	Monthly Target	Year-to-Date at Month-End Target
October	5	5
November	3	8
December	3	11
January	3	14
February	2	16
March	3	19
April	3	22
May	5	27
June	5	32
July	6	38
August	5	43
September	5	48
TOTAL	48	---

Notes:
Monthly and year-to-date at month-end production targets are based on the adjusted annual production limit specified for the California American Water (Cal-Am) satellite systems for Water Year 2014 from its sources in the Laguna Seca Subarea of the Seaside Groundwater Basin per the Seaside Basin adjudication decision. This Laguna Seca Subarea total (147 acre-feet) was distributed monthly based on Cal-Am's reported monthly average production for its satellite systems during the 2005 through 2012 period.

Table XV-3
Regulatory Water Production Targets
for California American Water Systems from Carmel River Sources
Within the Monterey Peninsula Water Resource System

(All Values in Acre-Feet)

Month	Monthly Target	Year-to-Date at Month-End Target
October	891	891
November	749	1,639
December	660	2,300
January	661	2,961
February	620	3,581
March	704	4,285
April	758	5,043
May	922	5,965
June	958	6,923
July	1,043	7,965
August	1,027	8,992
September	953	9,945
TOTAL	9,945	---

Notes:
Monthly and year-to-date at month-end production targets are based on the annual production limit specified for California American Water (Cal-Am) for Water Year (WY) 2014 from its Carmel River system sources per State Water Resources Control Board Order WR 2009-0060 (9,945 acre-feet). This amount was distributed monthly based on Cal-Am's reported monthly average production for its Main system sources during the 2005 through 2012 period. These values incorporate consideration of thetriennial reductions specified for the Cal-Am systems in the Seaside Basin adjudication decision, in setting the monthly maximum production targets from each source as part of the MPWMD Quarterly Water Supply Budget Strategy.

	Main System		95-10			ASR		Total River	Seaside Coastal			Rule 162 MAIN	MAIN PROD ADJ	Sattelite Systems		Combine Systems	Water Resources Projects			Total Proposed Production	Rule 162 Total limits	Total Proposed Production
	Upper Valley Wells Water Diverted for Customer Use	Lower Valley Wells Water Diverted for Customer Use	Oct - Mar	Apr - Jun	Jul - Sep	Oct - Mar	Apr - Sep	Total Carmel River Diversions for Customer Service and ASR Injection	Oct - Mar	Apr - Jun	Jul - Sep	End of Month Production Limit Main System	COLUMN ONLY CORRECT TO CURRENT QUARTER	Allocation to Sattelite Systems	End of Month Total Production	End of Month Total Production for Customer use Main and Sattelite Systems	Cumulative End of Month Production for Customer Use	ASR Recovery Budget	Sand City Desal Budget	Oct - Mar agreed budgets	Takeen from rule 162 table tab	Oct - Current with actual Production and resluting Budgets
				Beg Total 9,945 Limit 9,430		1420				Adj 2,251 Enter Data				48		12,244		Recovery Goal 215	Annual Target 300	Limit 12,244 start WY	differences between these colums are due to rounding errors introduced by introducing whole numbers into seaside coastal	Limit 12,244
			start all colums with same values and then update with actual values																			
ate to new year																						
10/1/2014	0	667	667	614	614	0	0	614	400	279	279	1,092	1,092	5	5	1,097	1,097	0	25	1097	1097	923
11/1/2014	0	593	593	559	559	0	0	559	300	149	149	918	918	3	8	921	2,018	0	25	921	922	736
12/1/2014	35	649	684	470	470	145	145	615	100	159	159	809	809	3	11	812	2,830	0	25	812	812	657
1/1/2015	0	686	686	681	681	230	230	911	100	32	32	811	811	3	14	814	3,644	0	25	814	812	741
2/1/2015	0	635	635	541	541	320	320	861	100	100	100	760	760	2	16	762	4,406	0	25	762	763	668
3/1/2015	0	739	739	739	0	345	345	1,084	100	100	167	864	864	3	19	867	5,273	0	25	867	867	195
4/1/2015	0	918	905	918	0	100	100	1,018	0	100	0	930	1,043	3	22	933	6,206	0	25	1046	933	28
5/1/2015	0	1094	1106	1094	0	100	100	1,194	0	125	0	1,131	1,244	5	27	1,136	7,342	0	25	1249	1135	30
6/1/2015	0	1112	1149	1112	1112	0	0	1,112	0	150	0	1,174	1,287	5	32	1,179	8,521	0	25	1292	1180	1142
7/1/2015	0	944	738	944	831	0	0	944	301	208	358	1,279	1,214	6	38	1,285	9,806	215	25	1435	1284	1435
8/1/2015	0	947	834	947	834	0	0	947	400	400	400	1,259	1,259	5	43	1,264	11,070	0	25	1264	1264	1264
9/1/2015	0	807	694	807	694	0	0	807	450	450	450	1,169	1,169	5	48	1,174	12,244	0	25	1174	1174	1174
ated			**9,430**	**9,426**	**6,336**	**1,240**	**1,240**	**10,666**	**2,251**	**2,251**	**2,093**			**48**		**12,244**		**215**	**300**	**12,733**	**12,243**	
al Remaining			**0**	**4**	**3,094**				**0**	**0**	**158**							**0**				

Exhibit 27C

California American Water Production by Source: Water Year 2015

	Carmel Valley Wells [1]						Seaside Wells [2]						Total Wells			Sand City Desal		
	Actual		Anticipated [3]		Under Target		Actual		Anticipated		Under Target		Actual	Anticipated	Acre-Feet Under Target	Actual	Anticipated	Under Target
	Upper	Lower	Upper	Lower	Upper	Lower	Coastal	LagunaSeca	Coastal	LagunaSeca	Coastal	LagunaSeca						
	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet
Oct-14	0	614	0	667	0	53	279	33	400	5	121	-28	926	1,072	146	17	25	8
Nov-14	0	559	0	593	0	34	149	23	300	3	151	-20	731	896	165	20	25	5
Dec-14	87	497	35	649	-52	152	159	20	100	3	-59	-17	762	787	25	8	25	17
Jan-15	136	546	0	686	-136	140	32	24	100	3	68	-21	737	789	52	26	25	-1
Feb-15	0	643	0	635	0	-8	167	20	100	2	-67	-18	830	737	-93	14	25	11
Mar-15																		
Apr-15																		
May-15																		
Jun-15																		
Jul-15																		
Aug-15																		
Sep-15																		
To Date	222	2858	35	3230	-187.28	372	785	120	1000	16	215	-104	3985	4281	296	86	125	39

Total Production: Water Year 2015

	Actual	Anticipated	Acre-Feet Under Target
Oct-14	943	1,097	154
Nov-14	751	921	170
Dec-14	770	812	42
Jan-15	763	814	51
Feb-15	843	762	-81
Mar-15			
Apr-15			
May-15			
Jun-15			
Jul-15			
Aug-15			
Sep-15			
To Date	4,071	4,406	335

1. Carmel Valley Wells include upper and lower valley wells. Anticipate production from this source includes monthly production volumes associated with SBO 2009-60, 20808A, and 20808C water rights. Under these water rights, water produced from the Carmel Valley wells is delivered to customers or injected into the Seaside Groundwater Basin for storage.

2. Seaside wells anticipated production is associated with pumping native Seaside Groundwater (which is regulated by the Seaside Groundwater Basin Ajudication Decision) and recovery of stored ASR water (which is prescribed in a MOA between MPWMD , Cal-Am, California Department of Fish and Game, National Marine Fisheries Service, and as regulated by 20808C water right.

3. Current "anticipated" water budget reflects "Normal" Carmel River inflow conditions and monthly distribution of production based on long-term averages for the Cal-Am system.

EXHIBIT 23-B

California American Water Production Distributed by Associated Water Rights: Water Year 2015

(All Values in Acre-Feet)

	Carmel River Water Diverted by Cal-Am for Customer Service Under 95-10 Rights[1] Limit: **9,859** acre-feet [2]	Seaside Groundwater Diverted by Cal-Am from Coastal Subareas for Customer Service Under Adjudicated Rights[4] Limit: **2,251** acre-feet	Seaside Groundwater Diverted by Cal-Am from Laguna Seca Subarea for Customer Service Under Adjudicated Rights[4] Limit: **48** acre-feet	Total Seaside Basin Adjudicated Diversions for Customer Service[4] Limit: **2,299** acre-feet	Total Production Under 95-10 Rights and Seaside Basin Adjudicated Rights[1,3] Limit: **12,158** acre-feet	Carmel River Water Diverted by Cal-Am for ASR Injection Under 20808A and C Rights[2] Limit: **5,326** acre-feet	Seaside Groundwater Recovered by Cal-Am for Customer Service Under ASR Rights[4] Target: **215** acre-feet	Desalinated Water from Sand City Plant Target: **300** acre-feet
Oct-14	614	279	33	312	926	0	0	17
Nov-14	559	149	23	172	731	0	0	20
Dec-14	470	159	20	179	649	113	0	8
Jan-15	681	32	24	56	737	0	0	26
Feb-15	541	167	20	187	728	102	0	14
Mar-15								
Apr-15								
May-15								
Jun-15								
Jul-15								
Aug-15								
Sep-15								
Total	**2,865**	**785**	**120**	**905**	**3,770**	**215**	**0**	**86**

California American Water Limit Adjustments to Comply with Associated Water Rights : Water Year 2015

(All Values in Acre-Feet)

	Carmel River Water Diverted by Cal-Am for Customer Service Under 95-10 Rights[1] acre-feet	Carmel River Water Diverted by Cal-Am for ASR Injection Under 20808 Rights[3] acre-feet	Total Water Diverted from Carmel River for Customer Service and Injection acre-feet	Seaside Groundwater Recovered by Cal-Am for Customer Service Under ASR Rights[5] acre-feet	Desalinated Water from Sand City Plant[2] acre-feet	Total Adjustment to 95-10 Water Right acre-feet	95-10 Water Right Adjusted Monthly acre-feet	Total Production for Customer Service from MPWRS acre-feet
Oct-14	614	0	614	0	17	17	9,928	943
Nov-14	559	0	559	0	20	20	9,907	751
Dec-14	470	113	583	0	8	8	9,899	657
Jan-15	681	0	681	0	26	26	9,873	763
Feb-15	541	102	643	0	14	14	9,859	741
Mar-15								
Apr-15								
May-15								
Jun-15								
Jul-15								
Aug-15								
Sep-15								
Total	**2,865**	**215**	**3,080**	**0**	**86**	**86**		**3,856**

Notes:

1. "95-10 Rights" refer to water rights that were recognized by the State Water Resources Control Board (SWRCB) in Order No. WR 95-10 in July 1995 and assigned to California American Water. The rights total 3,376 acre-feet annually (AFA).
2. "20808A Rights" refer to water rights that are held jointly by MPWMD and Cal-Am for the Phase 1 ASR project. "ASR" refers to Aquifer Storage and Recovery. "20808A" refers to Water Right Permit 20808A that was issued by the SWRCB in November 2007, for a maximum annual diversion of 2,426 AF. "20808C" refers to water rights permit 20808C, issued in November 2011 for a maximim annual diversion of 2,900AF.
3. "Adjudicated Rights" refer to groundwater rights determined by the Superior Court of Monterey County in March 2006 and amended in February 2007. These limits are subject to change by action of the Seaside Basin Watermaster and were updated by the Watermaster on November 30, 2011.

EXHIBIT 23-B

Quarterly Water Budget Targets vs. Rule 162: Water Year 2015

(All Values in Acre Feet)

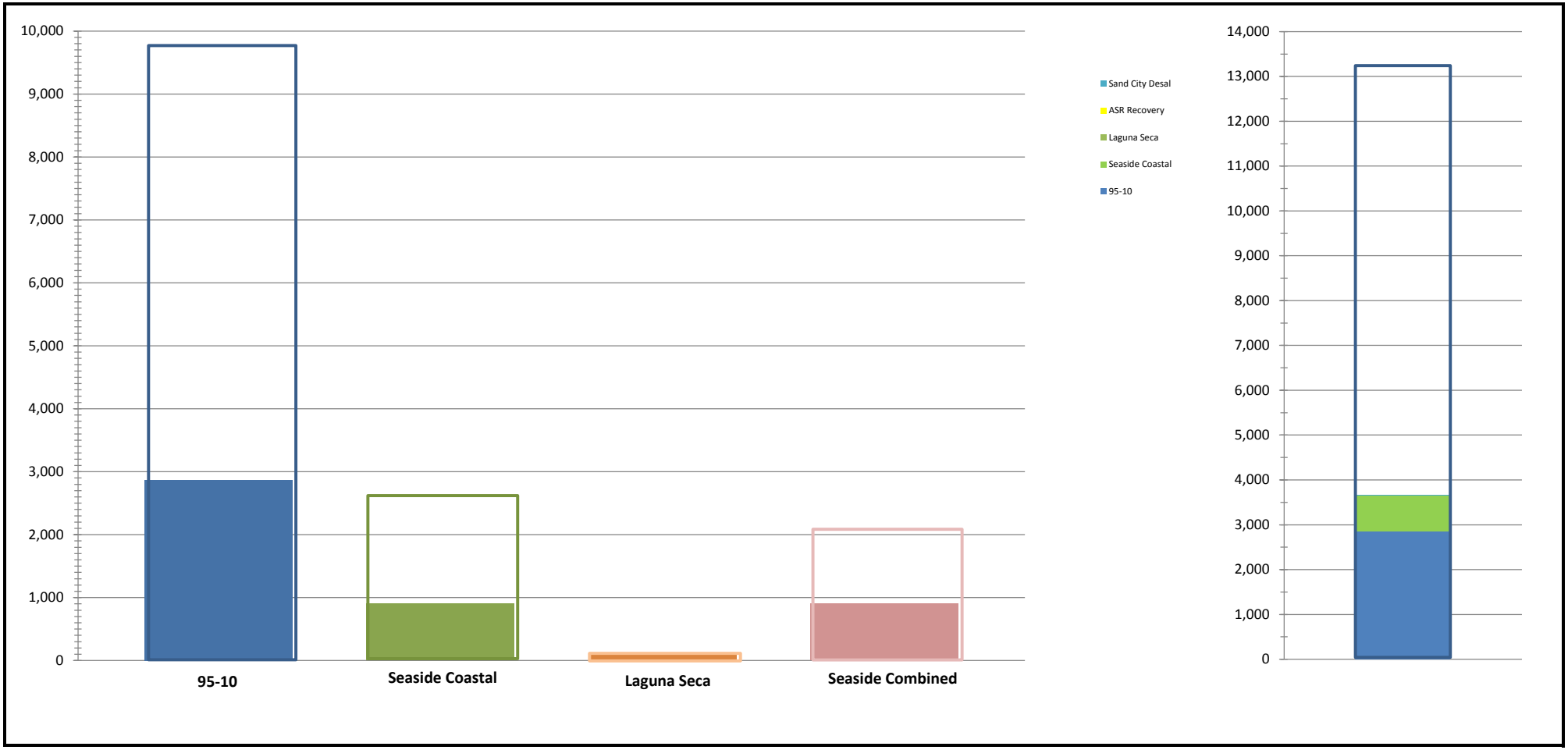
		Quarterly Budget									Rule 162		Production
		95-10 Monthly Budget	ASR Diversion for Injection	Total Carmel River Diversions for Customer Service and ASR Injection	Seaside Adjudication Monthly Budget (Coastal)	Seaside Adjudication Monthly Budget (Laguna Seca)	Seaside Adjudication Monthly Budget Combined	ASR Recovery Budget	Sand City Desal Budget	Monthly Production for Customer Use Target[5]	End of Month Production Adopted MPWRS	End of Month Cumulative to date MPWRS	MPWRS to date
		acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet
1st Qtr	Oct-14	667	0	667	400	5	405	0	25	1,097	1,097	1,097	943
	Nov-14	593	0	593	300	3	303	0	25	921	921	2,019	751
	Dec-14	684	145	829	100	3	103	0	25	812	812	2,831	657
2nd Qtr	Jan-15	686	230	916	100	3	103	0	25	814	814	3,643	763
	Feb-15	635	320	955	100	2	102	0	25	762	762	4,406	741
	Mar-15											5,273	
3rd Qtr	Apr-15											6,206	
	May-15											7,341	
	Jun-15											8,521	
4th Qtr	Jul-15											9,805	
	Aug-15											11,069	
	Sep-15											12,243	

California American Water Production vs. Water Budget and Water Right Limits: Water Year 2015

(All Values in Acre Feet)

		Cal-Am Production vs. Quarterly Water Budget Targets										Cal-Am Production vs. EOM Totals	
		95 - 10 Production for Customer Use vs. Monthly Targets		Seaside Coastal		Laguna Seca		Seaside Combined		Sand City Desal		Cal-Am Production vs. Rule 162	
		Monthly Comparison		Monthly Comparison		Monthly Comparison		Monthly Comparison		Monthly Comparison		Year to Date	
		acre-feet under	% Under	acre-feet under	% under	acre-feet under	% under	acre-feet under	% under	acre-feet under	% under	acre-feet under	% under
1st Qtr	Oct-14	53	0	121	0	-28	-6	93	0	8	0	154	14.0%
	Nov-14	34	0	151	1	-20	-7	131	0	5	0	170	18.4%
	Dec-14	214	0	-59	0	-17	-6	-76	-1	17	1	155	19.1%
2nd Qtr	Jan-15	5	0	68	2	-21	-7	47	0	-1	0	51	6.3%
	Feb-15	94	0	-67	0	-18	-9	-85	-1	11	0	21	2.7%
	Mar-15												
3rd Qtr	Apr-15												
	May-15												
	Jun-15												
4th Qtr	Jul-15												
	Aug-15												
	Sep-15												
Annual Statistics		AF Remaining	% Remaining	AF Remaining	% Remaining	AF Remaining	% Remaining	AF Remaining	% Remaining	AF Remaining	% Remaining	**550**	**12.5%**
		6,994	**70.9%**	**1,466**	**65.1%**	**-72**	**-149.5%**	**1,394**	**60.6%**	**214**	**71.3%**		

4. "Target" refers to the maximum amount of water that Cal-Am will try to recover each year for customer service as part of the Phase 1 and 2 ASR Project. The actual amount of water that is recovered will depend on the amount injected during a particular water year and previous water years.
5. Monthly Budget Target numbers from Quarterly Budget Meetings.
6. Budget Target vs. Rule 162 used for the purpose of tracking compliance with MPWMD water rationing rules.
7. Water Production vs. Water Budget and Water Rights Limits are tracked for compliance with Order 2009-0060 and Seaside Adjudication.
8. Production from ASR and Sand City Desalination plant reduce 95-10 water right.


10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
95-10
Seaside Coastal
Laguna Seca
Seaside Combined
Sand City Desal
ASR Recovery
Laguna Seca
Seaside Coastal
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14,000
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12,000
11,000
10,000
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8,000
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4,000
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1,000
0

EXHIBIT 17-A

California American Water Main Distribution System
Quarterly Water Supply Strategy and Budget: October - December 2014

Proposed Production Targets by Source and Projected Use in Acre-Feet

SOURCE/USE	MONTH			YEAR-TO-DATE		
	Oct-14	Nov-14	Dec-14	Oct-13 - Aug-14	% of YTD	% of Annual Budget
Source						
Carmel Valley Aquifer						
Upper Subunits	0	0	35	**83**	NA	NA
Lower Subunits (95-10)	667	593	649	**7,006**	84.9%	71.7%
Lower Subunits (ASR)	0	0	145	**0**	0.0%	0.0%
Total	**667**	**593**	**829**			
Seaside Groundwater Basin						
Coastal Subareas	400	300	100	**2,605**	104.2%	97.6%
ASR Recovery	0	0	0	**0**	NA	NA
Sand City Desalination	25	25	25	**173**	62.9%	57.7%
Total	**425**	**325**	**125**			
Use						
Customer Service	1,092	918	809			
Phase 1 ASR Injection	0	0	145			
Total	**1,092**	**918**	**954**			

Notes:
1. The budget reflects "Critically Dry" inflow conditions and assumes that the monthly unimpaired inflows at the San Clemente Dam site during the October-December 2014 period will equal 41, 227, and 596 AF, respectively. WY 2014 was the third consecutive dry or critically dry water year.
2. The annual budget period corresponds to the Water Year, which begins on October 1 and ends on September 30 of the following Calendar Year.
3. Total monthly production for "Customer Service" in CAW's main system was calculated by multiplying total annual production (12,196 AF) times the average percentage of annual production for October, November, and December (9.0%, 7.5%, and 6.6% , respectively). The annual production total was based on the assumption that production from the Coastal Subareas of the Seaside Groundwater Basin would not exceed 2,251 AF and production from Carmel River sources would not exceed 9,945 AF in WY 2015. The average production percentages were based on monthly data for customer service from WY 2006 to 2013.
4. Anticipated production for ASR injection is based on an average diversion rate of approximately 4,500 gallons per minute (gpm) or 19.9 AF per day from CAW's sources in the Carmel River Basin. "Total" monthly CAW "Use" includes water for customer service and water for injection into the Seaside Basin. This value is assumed in the event the WY becomes normal or wet through Dec 2014.
5. The production targets for CAW's wells in the Upper Subunits of the Carmel Valley Aquifer are set at 0 except as shown, based on CAW's goal to avoid use of these wells, during low flow periods. However, production could be higher under existing State water rights and interagency operating agreements.
6. The production target for CAW's wells in the Seaside Coastal Subareas in December is based on the assumption that sufficient flow will occur in the Carmel River at the targeted levels, to support ASR injection. It is planned that Coastal Subarea pumping will not occur, or will be proportionally reduced, if ASR injection does not occur at targeted levels.
7. The production targets for CAW's wells in the Seaside Coastal Subareas are based on the need for CAW to produce its full native water allocation during WY 2015 to be in compliance with SWRCB WRO No. 95-10.
8. It should be noted that monthly totals for Carmel Valley Aquifer sources may be different than those shown in MPWMD Rule 162, Table XV-3. These differences result from monthly target adjustments needed to be consistent with SWRCB WRO 98-04, which describes how the Cal-Am Seaside Wellfield is to be used to offset production in Carmel Valley during low-flow periods. Adjustments are also made to the Quarterly Budgets to ensure that compliance is achieved on an annual basis with MPWMD Rule 162 totals.

California American Water Laguna Seca Subarea Distribution Systems
Quarterly Water Supply Strategy and Budget: October 2014 - December 2014

Proposed Production Targets by Source and Projected Use in Acre-Feet

SOURCE/USE	MONTH			YEAR-TO-DATE		
	Oct-14	Nov-14	Dec-14	Oct-13 - Aug-14	% of YTD	% of Annual Budget
Source						
Seaside Groundwater Basin						
Laguna Seca Subarea	5	3	3	**330**	253.8%	224.5%
Other	0	0	0			
Use						
Customer Service	5	3	3			
				330		

Notes:
1. The annual budget period corresponds to the Water Year, which begins on October 1 and ends on September 30 of the following Calendar Year.
2. Total monthly production for "Customer Service" in CAW's Laguna Seca Subarea systems was calculated by multiplying total annual production (48 AF) times the average percentage of annual production October, November, and December (9.5%, 7.3%, and 5.7%, respectively). The annual production total was based on the assumption that production from the Laguna Seca Subarea of the Seaside Groundwater Basin would not exceed 48 AF. The average production percentages were based on monthly data for customer service from WY 2006 to 2013. The 48 AF annual production limit is specified in the Seaside Basin Adjudication Decision and is subject to change.
3. It should be noted that, based on recent historical use, actual monthly use will likely exceed the proposed monthly production target. In this context, the production targets represent the maximum monthly production that should occur so that CAW remains within its Standard Production Allocation for the Laguna Seca Subarea specified in the Seaside Decision. Accordingly, actual production beyond these production targets will be subject to replenishment assessment by the Seaside Basin Watermaster.
4. "Other" production sources refer to supplies transferred to Laguna Seca Subarea customers from CAW's Carmel River sources or water rights acquired from other producers in the Seaside Basin to produce additional water. For example, under emergency conditions, water can be transferred from sources that serve customers in CAW's main system, via an existing interconnection, to customers in CAW's Ryan Ranch system.

EXHIBIT X-A

California American Water Main Distribution System
Quarterly Water Supply Strategy and Budget: January - March 2015

Proposed Production Targets by Source in Acre-Feet

SOURCE/USE	MONTH			YEAR-TO-DATE		
	Jan-15	Feb-15	Mar-15	Oct-14 - Nov-14	% of YTD	% of Annual Budget
Source						
Carmel Valley Aquifer						
Upper Subunits (Service)	0	0	0	**87**	6%	1%
Lower Subunits (Service)	686	635	739	**1,086**	86%	12%
ASR Diversion	230	320	345	**0**		
Total	916	955	1,084			
Seaside Groundwater Basin						
Coastal Subareas	100	100	100	**428**	100%	3%
Phase 1 and 2 ASR Recovery	0	0	0	**0**	0%	0%
Sand City Desalination	25	25	25	**38**	76%	13%
Total	125	125	125	**466**		
Use						
Customer Service	811	760	864	**1,552**		
Phase 1 and 2 ASR Storage	230	320	345	**0**		
Total	**1,041**	**1,080**	**1,209**	**1,552**		

Notes:
1. The budget reflects "Dry" inflow conditions and assumes that the monthly unimpaired inflows at the San Clemente Dam site during the December 2014 - March 2015 period will equal the 75% exceedence flows , i.e., 1,015, 2,571, 3,908 and 4,216 AF, respectively. The exceedence values are based on simulated flows for the 1902 - 2013 period of record.
2. The annual budget period corresponds to the Water Year, which begins on October 1 and ends on September 30 of the following Calendar Year.
3. Total monthly production for "Customer Service" in CAW's main system was calculated by multiplying total annual production (12,196 AF) times the average percentage of annual production for January, February and March (6.6%, 6.2%, and 7.1%, respectively). According to District Rule 162, the annual production total was based on the assumption that production from the Coastal Subareas of the Seaside Groundwater Basin would not exceed 2,251 AF and production from Carmel River sources, without adjustments for water produced from water resources projects, would not exceed 9,945 AF in WY 2015. The average production percentages were based on monthly data for customer service from WY 2005 to 2013.
4. Anticipated production for ASR injection is based on an average diversion rate of approximately 4,500 gallons per minute (gpm) or 19.9 AF per day from CAW's sources in the Carmel River Basin. "Total" monthly CAW "Use" includes water for customer service and water for injection into the Seaside Basin. This value is assumed in the event the WY becomes normal or wet through Mar 2015.
5. The production targets for CAW's wells in the Upper Subunits of the Carmel Valley Aquifer are set at 0, based on CAW's goal to avoid use of these wells, year round. However, production could be higher under existing State water rights and interagency operating agreements.
6. The production targets for CAW's wells in the Seaside Coastal Subareas are based on the assumption that sufficient flow will occur in the Carmel River at the targeted levels, to support ASR injection. It is planned that Coastal Subarea pumping will not occur, or will be proportionally reduced, if ASR injection does not occur at targeted levels.
7. The production targets for CAW's wells in the Seaside Coastal Subareas are based on the need for CAW to produce its full Standard Allocation during WY 2015 to be in compliance with SWRCB WRO No. 95-10.
8. It should be noted that monthly totals for Carmel Valley Aquifer sources may be different than those shown in MPWMD Rule 162, Table XV-3. These differences result from monthly target adjustments needed to be consistent with SWRCB WRO 98-04, which describes how Cal-Am Seaside Wellfield is to be used to offset production in Carmel Valley during low-flow periods. Adjustments are also made to the Quarterly Budgets to ensure that compliance is achieved on an annual basis with MPWMD Rule 162 totals.

EXHIBIT X-B

California American Water Highway 68 Distribution Systems
Quarterly Water Supply Strategy and Budget: January - March 2015

Proposed Production Targets by Source and Projected Use in Acre-Feet

SOURCE/USE	MONTH			YEAR-TO-DATE		
	Jan-15	Feb-15	Mar-15	Oct-14 - Nov-14	% of YTD	% of Annual Budget
Source						
Seaside Groundwater Basin						
Laguna Seca Subarea	3	2	3	**56**	698.6%	116.4%
Other	0	0	0	**0**		
Use						
Customer Service	3	2	3			
Total	**3**	**2**	**3**	**56**		

Notes:
1. The annual budget period corresponds to the Water Year, which begins on October 1 and ends on September 30 of the following Calendar Year.
2. Total monthly production for "Customer Service" in CAW's Highway 68 systems was calculated by multiplying total annual production (147 AF) times the average percentage of annual production for January, February, and March (5.3%, 4.9%, and 5.9%, respectively). The annual production total was based on the assumption that production from the Laguna Seca Subarea of the Seaside Groundwater Basin would not exceed 48 AF. The average production percentages were based on monthly data for customer service from WY 2005 to 2013. The 48 AF annual production limit is based on procedures specified in the Seaside Basin Adjudication Decision.
3. It should be noted that, based on recent historical use, actual monthly use will likely exceed the proposed monthly production targets. In this context, the production targets represent the maximum monthly production that should occur so that CAW remains within its Standard Production Allocation for the Laguna Seca Subarea specified in the Seaside Decision. Accordingly, actual production beyond these production targets will be subject to replenishment assessment by the Seaside Basin Watermaster.
4. "Other" production sources refer to supplies transferred to Highway 68 customers from CAW's Carmel River sources, water rights acquired from other producers in the Seaside Basin, or supplies transferred from other systems outside of the Laguna Seca Subarea to produce additional water.
5. The production targets for CAW's wells in the Seaside Coastal Subareas are based on the need for CAW to produce its full Standard Allocation during WY 2014 to be in compliance with SWRCB WRO No. 95-10.
6. Year to date production numbers are estimated pending finilization of CAW production data.

EXHIBIT X-A

California American Water Main Distribution System
Quarterly Water Supply Strategy and Budget: April - June 2015

Proposed Production Targets by Source and Projected Use in Acre-Feet

SOURCE/USE	MONTH			YEAR-TO-DATE		
	Apr-15	May-15	Jun-15	Oct-14 to Feb-15	% of YTD	% of Annual Budget
Source						
Carmel Valley Aquifer						
Upper Subunits	0	0	0	**222**		
Lower Subunits	918	1,094	1,112	**2,643**	81%	28%
ASR Diversion	100	100	0	**215**		
Total	**1,018**	**1,194**	**1,112**	**3,080**		
Seaside Groundwater Basin						
Coastal Subareas	100	125	150	**785**	78%	35%
Phase 1 ASR Recovery	0	0	0	**0**		
Sand City Desalination	25	25	25	**86**	69%	29%
Total	**125**	**150**	**175**	**871**		
Use						
Customer Service	1,043	1,244	1,287	**3,736**	85%	31%
Phase 1 ASR Injection	100	100	0	**215**		
Total	**1,143**	**1,344**	**1,287**			

Notes:
1. The budget reflects "Below Normal" inflow conditions and assumes that the monthly unimpaired inflows at the San Clemente Dam site during the April 2015 - June 2015 period will be approximately 3,886, 1,993 and 756 AF, respectively. The exceedence values are based on the 1902-2014 period of record.
2. The annual budget period corresponds to the Water Year, which begins on October 1 and ends on September 30 of the following Calendar Year.
3. Total monthly production for "Customer Service" in CAW's main system was calculated by multiplying total annual production (12,196 AF) times the average percentage of annual production for April, May, and June (7.6%, 9.3%, and 9.6%, respectively). According to District Rule 162, the annual production total was based on the assumption that production from the Coastal Subareas of the Seaside Groundwater Basin would not exceed 2,251 AF and production from Carmel River sources, without adjustments for water produced from water resources projects, would not exceed 9,945 AF in WY 2015. The average production percentages were based on monthly data for customer service from WY 2005 to 2014.
4. Maximum daily production values for "Phase 1 and 2 ASR Storage" are based on an average diversion rate of approximately 3,000 gallons per minute (gpm) or 13.3 AF per day and 1,500 gpm or 6.6 AF per day, respectively, from CAW's sources in the Carmel River Basin. Maximum daily production for Phase 1 and 2 ASR sites is 19.9 AF per day. Total monthly production is estimated by multiplying the maximum daily production by operational days per month for "Below Normal" flow conditions at San Clemente Dam.
5. The production targets for CAW's wells in the Upper Subunits of the Carmel Valley Aquifer are set at 0, based on CAW's goal to avoid use of these wells, year round. However, production could be higher to support ASR injection under existing State water rights and interagency operating agreements.
6. The production targets for CAW's wells in the Seaside Coastal Subareas are based on the assumption that sufficient flow will occur in the Carmel River at the targeted levels, to support ASR injection. It is planned that Coastal Subarea pumping will not occur, or will be proportionally reduced, if ASR injection does not occur at targeted levels.
7. The production targets for CAW's wells in the Seaside Coastal Subareas are based on the need for CAW to produce its full Standard Allocation during WY 2015 to be in compliance with SWRCB WRO No. 95-10.
8. It should be noted that monthly totals for Carmel Valley Aquifer sources may be different than those shown in MPWMD Rule 162, Table XV-3. These differences result from monthly target adjustments needed to be consistent with SWRCB WRO 98-04, which describes how Cal-Am Seaside Wellfield is to be used to offset production in Carmel Valley during low-flow periods. Adjustments are also made to the Quarterly Budgets to ensure that compliance is achieved on an annual basis with MPWMD Rule 162 totals.

California American Water Laguna Seca Subarea Distribution Systems
Quarterly Water Supply Strategy and Budget: April - June 2015

Proposed Production Targets by Source and Projected Use in Acre-Feet

SOURCE/USE	MONTH			YEAR-TO-DATE		
	Apr-15	May-15	Jun-15	Oct-14 to Feb-15	% of YTD	% of Annual
Source						
Seaside Groundwater Basin						
Laguna Seca Subarea	3	5	5	**120**	748.4%	249.5%
Other	0	0	0	**0**	0.0%	0.0%
Use						
Customer Service	3	5	5			
Total	**3**	**5**	**5**	**120**	748.4%	249.5%

Notes:
1. The annual budget period corresponds to the Water Year, which begins on October 1 and ends on September 30 of the following Calendar Year.
2. Total monthly production for "Customer Service" in CAW's Laguna Seca Subarea systems was calculated by multiplying total annual production (48 AF) times the average percentage of annual production for April, May, and June (7.1%, 9.7%, and 10.6%, respectively). The average production percentages were based on monthly data for customer service from WY 2005 to 2013. The 48 AF annual production limit is specified in the Seaside Basin Adjudication Decision and is subject to change.
3. It should be noted that, based on recent historical use, actual monthly use will likely exceed the proposed monthly production target. In this context, the production targets represent the maximum monthly production that should occur so that CAW remains within its Standard Production Allocation for the Laguna Seca Subarea specified in the Seaside Decision. Accordingly, actual production beyond these production targets will be subject to replenishment assessment by the Seaside Basin Watermaster.
4. "Other" production sources refer to supplies transferred to Laguna Seca Subarea customers from CAW's Carmel River sources or water rights acquired from other producers in the Seaside Basin to produce additional water. For example, under emergency conditions, water can be transferred from sources that serve customers in CAW's main system, via an existing interconnection , to customers in CAW's Ryan Ranch system.

EXHIBIT 22-A

California American Water Main Distribution System
Quarterly Water Supply Strategy and Budget: July - September 2014

Proposed Production Targets by Source and Projected Use in Acre-Feet

SOURCE/USE	MONTH			YEAR-TO-DATE		
	Jul-14	Aug-14	Sep-14	Oct-13 - May-14	% of YTD	% of Annual
Source						
Carmel Valley Aquifer						
Upper Subunits	0	0	0	**222**	N/A	N/A
Lower Subunits (95-10)	831	834	694	**2,643**	80.9%	28.0%
Total	**831**	**834**	**694**	**2,865**		
Seaside Groundwater Basin						
Coastal Subareas	358	400	450	**785**	78.5%	34.9%
ASR Recovery	215	0	0	**0**	0.0%	
Sand City Desalination	25	25	25	**86**	68.9%	28.7%
Total	**1,429**	**1,259**	**1,169**	**871**		
Use						
Customer Service	1,429	1,259	1,169	**3,736**	85.1%	29.5%
Phase 1 ASR Injection	0	0	0	**215**	0.0%	0.0%
Total	**1,429**	**1,259**	**1,169**	**3,952**		

Notes:
1. The budget reflects "Critically Dry" inflow conditions and assumes that the monthly unimpaired inflows at the San Clemente Dam site during the July 2014 - September 2014 period will be approximately 30, 38, and 56 AF, respectively. The exceedence values are based on the 1902-2013 period of record. Estimates assume a similar precipitation pattern to that experienced in WY 1989.
2. The annual budget period corresponds to the Water Year, which begins on October 1 and ends on September 30 of the following Calendar Year.
3. Total monthly production for "Customer Service" in CAW's main system was calculated by multiplying total annual production (12,735 AF) times the average percentage of annual production for Julyl, August, and September (10.6%, 10.4%, and 9.8%, respectively). According to District Rule 162, the annual production total was based on the assumption that production from the Coastal Subareas of the Seaside Groundwater Basin would not exceed 2,669 AF and production from Carmel River sources, without adjustments for water produced from water resources projects, would not exceed 10,066 AF in WY 2014. The average production percentages were based on monthly data for customer service from WY 2005 to 2012.
4. The production targets for CAW's wells in the Upper Subunits of the Carmel Valley Aquifer are set at 0, based on CAW's goal to avoid use of these wells, year round. However, production could be higher under existing State water rights and interagency operating agreements.
5. The production targets for CAW's wells in the Seaside Coastal Subareas are based on the need for CAW to produce its full Standard Allocation during WY 2014 to be in compliance with SWRCB WRO No. 95-10.
6. Year to date production numbers are estimated pending finalization of CAW production data.
7. The production targets for CAW's wells in the Seaside Coastal Subareas are based on the need for CAW to produce its full Standard Allocation during WY 2014 to be in compliance with SWRCB WRO No. 95-10.
8. It should be noted that monthly totals for Carmel Valley Aquifer sources may be different than those shown in MPWMD Rule 162, Table XV-3. These differences result from monthly target adjustments needed to be consistent with SWRCB WRO 98-04, which describes how Cal-Am Seaside Wellfield is to be used to offset production in Carmel Valley during low-flow periods. Adjustments are also made to the Quarterly Budgets to ensure that compliance is achieved on an annual basis with MPWMD Rule 162 totals.

California American Water Laguna Seca Subarea Distribution Systems
Quarterly Water Supply Strategy and Budget: July - September 2014

Proposed Production Targets by Source and Projected Use in Acre-Feet

SOURCE/USE	MONTH			YEAR-TO-DATE		
	Jul-14	Aug-14	Sep-14	Oct-13 - May-14	% YTD	% of Annual Budget
Source						
Seaside Groundwater Basin						
Laguna Seca Subarea	6	5	5	**120**	748.4%	249.5%
Other	0	0	0	**0**	0.0%	0.0%
Use						
Customer Service	6	5	5			
Total	**6**	**5**	**5**	**120**		

Notes:
1. The annual budget period corresponds to the Water Year, which begins on October 1 and ends on September 30 of the following Calendar Year.
2. Total monthly production for "Customer Service" in CAW's Laguna Seca Subarea systems was calculated by multiplying total annual production (147AF) times the average percentage of annual production for July, August, and September (11.9%, 11.8%, and 11.2%, respectively). The annual production total was based on the assumption that production from the Laguna Seca Subarea of the Seaside Groundwater Basin would not exceed 147 AF. The 147 AF annual production limit is specified in the Seaside Basin Adjudication Decision and is subject to change.
3. It should be noted that, based on recent historical use, actual monthly use will likely exceed the proposed monthly production target. In this context, the production targets represent the maximum monthly production that should occur so that CAW remains within its Standard Production Allocation for the Laguna Seca Subarea specified in the Seaside Decision. Accordingly, actual production beyond these production targets will be subject to replenishment assessment by the Seaside Basin Watermaster.
4. "Other" production sources refer to supplies transferred to Laguna Seca Subarea customers from CAW's Carmel River sources or water rights acquired from other producers in the Seaside Basin to produce additional water. For example, under emergency conditions, water can be transferred from sources that serve customers in CAW's main system, via an existing interconnection, to customers in CAW's Ryan Ranch system.

MONTHLY CALIFORNIA AMERICAN WATER MAIN SYSTEM PRODUCTION:
WATER YEARS 2001 THROUGH 2012 IN ACRE-FEET

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
2001	1,136	950	972	934	806	933	1,034	1,435	1,559	1,542	1,543	1,321	14,165
2002	1,296	1,002	831	840	817	945	1,145	1,370	1,460	1,577	1,555	1,443	14,281
2003	1,368	1,068	939	882	868	986	993	1,226	1,498	1,650	1,648	1,512	14,638
2004	1,425	1,008	912	885	852	1,074	1,325	1,606	1,525	1,486	1,473	1,441	15,012
2005	1,147	938	937	870	804	919	979	1,287	1,421	1,514	1,474	1,388	13,678
2006	1,314	1,086	878	834	875	860	812	1,291	1,418	1,594	1,522	1,321	13,805
2007	1,266	1,020	931	935	830	1,032	1,113	1,312	1,349	1,474	1,448	1,358	14,068
2008	1,169	1,057	911	878	840	1,042	1,149	1,322	1,391	1,436	1,405	1,389	13,989
2009	1,247	959	858	871	725	833	1,080	1,164	1,189	1,349	1,368	1,273	12,916
2010	1,053	963	828	777	720	844	857	1,058	1,188	1,275	1,252	1,187	12,002
2011	1,072	881	739	834	802	873	938	1,133	1,071	1,208	1,190	1,121	11,862
2012	991	849	887	865	808	832	823	1,069	1,126	1,194	1,178	1,059	11,681
2013	984	832	712	759	731	878	970	1,066	1,049	1,117	1,121	1,027	11,245
Mean	1,190	970	872	859	806	927	1,017	1,257	1,326	1,417	1,398	1,295	13,855
Percentage	**8.6%**	**7.0%**	**6.3%**	**6.2%**	**5.8%**	**6.7%**	**7.3%**	**9.1%**	**9.6%**	**10.2%**	**10.1%**	**9.3%**	**100.00%**

Notes:
1. The December-May production values were adjusted to account for water produced from the Carmel River Basin for injection into the Coastal Subareas of the Seaside Groundwater Basin. Accordingly, the values shown represent water produced solely for customer use.

MONTHLY CALIFORNIA AMERICAN WATER SATELLITE SYSTEMS PRODUCTION FOR CUSTOMER SERVICE:
WATER YEARS 2001 THROUGH 2010 IN ACRE-FEET

WATER YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
2001	33	26	29	25	17	24	30	46	51	54	56	52	443
2002	51	32	20	22	22	30	38	44	52	58	59	58	486
2003	55	38	28	21	22	30	30	43	53	59	58	52	489
2004	50	29	23	19	18	31	43	56	53	59	55	54	490
2005	37	24	24	20	18	22	26	39	50	58	62	56	437
2006	48	37	25	19	23	21	20	44	54	63	54	55	464
2007	49	34	25	25	21	29	35	49	55	58	60	54	494
2008	45	39	30	25	25	39	45	55	58	60	59	57	537
2009	52	39	30	29	21	26	41	47	53	62	61	55	516
2010	39	36	26	23	19	25	26	37	48	52	50	50	430
2011	39	27	21	21	21	21	29	38	36	42	44	42	381
2012	34	25	27	27	25	24	25	34	35	38	39	38	371
2013	34	24	19	19	20	24	32	44	40	43	40	38	377
Mean	44	31	25	23	21	27	32	44	49	54	54	51	455
Percentage	**9.57%**	**6.91%**	**5.55%**	**5.01%**	**4.60%**	**5.88%**	**7.11%**	**9.73%**	**10.80%**	**11.93%**	**11.76%**	**11.17%**	**100.00%**

Notes:
1. California American Water's satellite systems include the Ryan Ranch, Hidden Hills, and Bishop Units, which were annexed into the CAW service area in November 1989, March 1993, and October 1996, respectively.
2. The monthly production values for the Ryan Ranch Unit in Water Years 2003, 2004, 2005, 2006, 2007, and 2008 were adjusted for water produced from CAW's main system sources, i.e., Carmel River, and supplied to users in the Ryan Ranch Unit. Specifically, for Water Years 2003 through 2008, 26, 14, 2, 18, 59 , and 3 acre-feet, respectively, were added to the Ryan Ranch Unit production values to reflect actual demand within the unit during this period.

Annual Values				WY 2013	Total Main system **9,945**				Sattelite Systems **0**		MPWRS Total Monthly	MPWRS Total Cumulative
CV Limit	Coastal	Main System	Sattelite		Monthly %	CV Monthly	Coastal Monthly	Main monthly	Monthly %	acre-feet	acre-feet	acre-feet
9,945	2,251	12,196	48	october	8.96%	891	202	1,092	9.52%	5	1,097	1,097
9,945	2,251	12,196	48	november	7.53%	749	169	918	7.28%	3	922	2,019
9,945	2,251	12,196	48	december	6.64%	660	149	810	5.71%	3	812	2,831
9,945	2,251	12,196	48	january	6.65%	661	150	811	5.29%	3	813	3,644
9,945	2,251	12,196	48	february	6.23%	620	140	760	4.89%	2	763	4,407
9,945	2,251	12,196	48	march	7.08%	704	159	864	5.88%	3	867	5,274
9,945	2,251	12,196	48	april	7.62%	758	172	930	7.09%	3	933	6,207
9,945	2,251	12,196	48	may	9.27%	922	209	1,131	9.74%	5	1,135	7,342
9,945	2,251	12,196	48	june	9.63%	958	217	1,174	10.63%	5	1,180	8,522
9,945	2,251	12,196	48	july	10.48%	1,043	236	1,279	11.69%	6	1,284	9,806
9,945	2,251	12,196	48	august	10.32%	1,027	232	1,259	11.40%	5	1,264	11,070
9,945	2,251	12,196	48	september	9.58%	953	216	1,169	10.89%	5	1,174	12,244
				Ending		**9,945**	**2,251**	**12,196**		**48**	**12,244**	

Main System				Sattelite System		Totals
CV Limit	Regulatory Reduction	Seaside Coastal	Regulatory Reduction	Seaside Laguna Seca	Regulatory Reduction	
10978	-1033	3504	-1253	345		
-549	2010 rdn	-313	2009 rdn	-74	2009 rdn	
-121	2012 rdn	-104	2010 rdn	-25	2010 rdn	
-121	2013 rdn	-418	2012 rdn	-99	2012 rdn	
-121	2014 rdn	-418	2015 rdn	-99	2015 rdn	
-121	2015 rdn					
		2,251				
	Carry over					
9,945		2,251				
12,196				**48**		**12,244**

Table XV-1
Regulatory Water Production Targets
for All California American Water Systems from Sources
Within the Monterey Peninsula Water Resource System

(All Values in Acre-Feet)

Month	Monthly Target	Year-to-Date at Month-End Target
October	1,097	1,097
November	922	2,019
December	812	2,831
January	812	3,643
February	763	4,406
March	867	5,273
April	933	6,206
May	1,135	7,341
June	1,180	8,521
July	1,284	9,805
August	1,264	11,069
September	1,174	12,243
TOTAL	12,243	---

Notes:
Monthly and year-to-date at month-end production targets are based on the annual production limit specified for the California American Water (Cal-Am) systems for Water Year (WY) 2014 from Carmel River sources per State Water Resources Control Board Order WR 2009-0060 (10,066 acre-feet) and adjusted annual production limits specified for the Cal-Am satellite systems from its Coastal Subarea sources (2,669 acre-feet) and Laguna Seca Subarea sources (147 acre-feet) of the Seaside Groundwater Basin per the Seaside Basin adjudication decision. These values do not include consideration of any carryover credit in the Seaside Basin for WY 2014. This combined total (12,882 acre-feet) was distributed monthly based on Cal-Am's reported monthly average production for its main and satellite systems during the 2005 through 2012 period.

Table XV-2
Regulatory Water Production Targets
for California American Water Satellite Systems from Sources
Within the Monterey Peninsula Water Resource System

(All Values in Acre-Feet)

Month	Monthly Target	Year-to-Date at Month-End Target
October	5	5
November	3	8
December	3	11
January	3	14
February	2	16
March	3	19
April	3	22
May	5	27
June	5	32
July	6	38
August	5	43
September	5	48
TOTAL	48	---

Notes:
Monthly and year-to-date at month-end production targets are based on the adjusted annual production limit specified for the California American Water (Cal-Am) satellite systems for Water Year 2014 from its sources in the Laguna Seca Subarea of the Seaside Groundwater Basin per the Seaside Basin adjudication decision. This Laguna Seca Subarea total (147 acre-feet) was distributed monthly based on Cal-Am's reported monthly average production for its satellite systems during the 2005 through 2012 period.

Table XV-3
Regulatory Water Production Targets
for California American Water Systems from Carmel River Sources
Within the Monterey Peninsula Water Resource System

(All Values in Acre-Feet)

Month	Monthly Target	Year-to-Date at Month-End Target
October	891	891
November	749	1,639
December	660	2,300
January	661	2,961
February	620	3,581
March	704	4,285
April	758	5,043
May	922	5,965
June	958	6,923
July	1,043	7,965
August	1,027	8,992
September	953	9,945
TOTAL	9,945	---

Notes:
Monthly and year-to-date at month-end production targets are based on the annual production limit specified for California American Water (Cal-Am) for Water Year (WY) 2014 from its Carmel River system sources per State Water Resources Control Board Order WR 2009-0060 (9,945 acre-feet). This amount was distributed monthly based on Cal-Am's reported monthly average production for its Main system sources during the 2005 through 2012 period. These values incorporate consideration of thetriennial reductions specified for the Cal-Am systems in the Seaside Basin adjudication decision, in setting the monthly maximum production targets from each source as part of the MPWMD Quarterly Water Supply Budget Strategy.

	Main System		95-10			ASR		Total River	Seaside Coastal			Rule 162 MAIN	MAIN PROD ADJ	Sattelite Systems		Combine Systems	Water Resources Projects			Total Proposed Production	Rule 162 Total limits	Total Proposed Production
	Upper Valley Wells Water Diverted for Customer Use	Lower Valley Wells Water Diverted for Customer Use	Oct - Mar	Apr - Jun	Jul - Sep	Oct - Mar	Apr - Sep	Total Carmel River Diversions for Customer Service and ASR Injection	Oct - Mar	Apr - Jun	Jul - Sep	End of Month Production Limit Main System	COLUMN ONLY CORRECT TO CURRENT QUARTER	Allocation to Sattelite Systems	End of Month Total Production	End of Month Total Production for Customer use Main and Sattelite Systems	Cumulative End of Month Production for Customer Use	ASR Recovery Budget	Sand City Desal Budget	Oct - Mar agreed budgets	Takeen from rule 162 table tab	Oct - Current with actual Production and resluting Budgets
				Beg Total 9,945 Limit 9,430		1420				Adj 2,251 Enter Data				48		12,244		Recovery Goal 215	Annual Target 300	Limit 12,244 start WY	differences between these colums are due to rounding errors introduced by introducing whole numbers into seaside coastal	Limit 12,244
			start all colums with same values and then update with actual values																			
ate to new year																						
10/1/2014	0	667	667	614	614	0	0	614	400	279	279	1,092	1,092	5	5	1,097	1,097	0	25	1097	1097	923
11/1/2014	0	593	593	559	559	0	0	559	300	149	149	918	918	3	8	921	2,018	0	25	921	922	736
12/1/2014	35	649	684	470	470	145	145	615	100	159	159	809	809	3	11	812	2,830	0	25	812	812	657
1/1/2015	0	686	686	681	681	230	230	911	100	32	32	811	811	3	14	814	3,644	0	25	814	812	741
2/1/2015	0	635	635	541	541	320	320	861	100	100	100	760	760	2	16	762	4,406	0	25	762	763	668
3/1/2015	0	739	739	739	0	345	345	1,084	100	100	167	864	864	3	19	867	5,273	0	25	867	867	195
4/1/2015	0	918	905	918	0	100	100	1,018	0	100	0	930	1,043	3	22	933	6,206	0	25	1046	933	28
5/1/2015	0	1094	1106	1094	0	100	100	1,194	0	125	0	1,131	1,244	5	27	1,136	7,342	0	25	1249	1135	30
6/1/2015	0	1112	1149	1112	1112	0	0	1,112	0	150	0	1,174	1,287	5	32	1,179	8,521	0	25	1292	1180	1142
7/1/2015	0	944	738	944	831	0	0	944	301	208	358	1,279	1,214	6	38	1,285	9,806	215	25	1435	1284	1435
8/1/2015	0	947	834	947	834	0	0	947	400	400	400	1,259	1,259	5	43	1,264	11,070	0	25	1264	1264	1264
9/1/2015	0	807	694	807	694	0	0	807	450	450	450	1,169	1,169	5	48	1,174	12,244	0	25	1174	1174	1174
ated			**9,430**	**9,426**	**6,336**	**1,240**	**1,240**	**10,666**	**2,251**	**2,251**	**2,093**			**48**		**12,244**		**215**	**300**	**12,733**	**12,243**	
al Remaining			**0**	**4**	**3,094**				**0**	**0**	**158**							**0**				

EXHIBIT 23-C

California American Water Production by Source: Water Year 2015

	Carmel Valley Wells [1]						Seaside Wells [2]						Total Wells			Sand City Desal		
	Actual		Anticipated [3]		Under Target		Actual		Anticipated		Under Target		Actual	Anticipated	Acre-Feet Under Target	Actual	Anticipated	Under Target
	Upper	Lower	Upper	Lower	Upper	Lower	Coastal	LagunaSeca	Coastal	LagunaSeca	Coastal	LagunaSeca						
	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet
Oct-14	0	614	0	667	0	53	279	33	400	5	121	-28	926	1,072	146	17	25	8
Nov-14	0	559	0	593	0	34	149	23	300	3	151	-20	731	896	165	20	25	5
Dec-14	87	497	35	649	-52	152	159	20	100	3	-59	-17	762	787	25	8	25	17
Jan-15	136	546	0	686	-136	140	32	24	100	3	68	-21	737	789	52	26	25	-1
Feb-15	0	643	0	635	0	-8	167	20	100	2	-67	-18	830	737	-93	14	25	11
Mar-15																		
Apr-15																		
May-15																		
Jun-15																		
Jul-15																		
Aug-15																		
Sep-15																		
To Date	222	2858	35	3230	-187.28	372	785	120	1000	16	215	-104	3985	4281	296	86	125	39

Total Production: Water Year 2015

	Actual	Anticipated	Acre-Feet Under Target
Oct-14	943	1,097	154
Nov-14	751	921	170
Dec-14	770	812	42
Jan-15	763	814	51
Feb-15	843	762	-81
Mar-15			
Apr-15			
May-15			
Jun-15			
Jul-15			
Aug-15			
Sep-15			
To Date	4,071	4,406	335

1. Carmel Valley Wells include upper and lower valley wells. Anticipate production from this source includes monthly production volumes associated with SBO 2009-60, 20808A, and 20808C water rights. Under these water rights, water produced from the Carmel Valley wells is delivered to customers or injected into the Seaside Groundwater Basin for storage.

2. Seaside wells anticipated production is associated with pumping native Seaside Groundwater (which is regulated by the Seaside Groundwater Basin Ajudication Decision) and recovery of stored ASR water (which is prescribed in a MOA between MPWMD , Cal-Am, California Department of Fish and Game, National Marine Fisheries Service, and as regulated by 20808C water right.

3. Current "anticipated" water budget reflects "Normal" Carmel River inflow conditions and monthly distribution of production based on long-term averages for the Cal-Am system.

EXHIBIT 23-B

California American Water Production Distributed by Associated Water Rights: Water Year 2015

(All Values in Acre-Feet)

	Carmel River Water Diverted by Cal-Am for Customer Service Under 95-10 Rights[1] Limit: **9,859** acre-feet [2]	Seaside Groundwater Diverted by Cal-Am from Coastal Subareas for Customer Service Under Adjudicated Rights[4] Limit: **2,251** acre-feet	Seaside Groundwater Diverted by Cal-Am from Laguna Seca Subarea for Customer Service Under Adjudicated Rights[4] Limit: **48** acre-feet	Total Seaside Basin Adjudicated Diversions for Customer Service[4] Limit: **2,299** acre-feet	Total Production Under 95-10 Rights and Seaside Basin Adjudicated Rights[1,3] Limit: **12,158** acre-feet	Carmel River Water Diverted by Cal-Am for ASR Injection Under 20808A and C Rights[2] Limit: **5,326** acre-feet	Seaside Groundwater Recovered by Cal-Am for Customer Service Under ASR Rights[4] Target: **215** acre-feet	Desalinated Water from Sand City Plant Target: **300** acre-feet
Oct-14	614	279	33	312	926	0	0	17
Nov-14	559	149	23	172	731	0	0	20
Dec-14	470	159	20	179	649	113	0	8
Jan-15	681	32	24	56	737	0	0	26
Feb-15	541	167	20	187	728	102	0	14
Mar-15								
Apr-15								
May-15								
Jun-15								
Jul-15								
Aug-15								
Sep-15								
Total	**2,865**	**785**	**120**	**905**	**3,770**	**215**	**0**	**86**

California American Water Limit Adjustments to Comply with Associated Water Rights : Water Year 2015

(All Values in Acre-Feet)

	Carmel River Water Diverted by Cal-Am for Customer Service Under 95-10 Rights[1] acre-feet	Carmel River Water Diverted by Cal-Am for ASR Injection Under 20808 Rights[3] acre-feet	Total Water Diverted from Carmel River for Customer Service and Injection acre-feet	Seaside Groundwater Recovered by Cal-Am for Customer Service Under ASR Rights[5] acre-feet	Desalinated Water from Sand City Plant[2] acre-feet	Total Adjustment to 95-10 Water Right acre-feet	95-10 Water Right Adjusted Monthly acre-feet	Total Production for Customer Service from MPWRS acre-feet
Oct-14	614	0	614	0	17	17	9,928	943
Nov-14	559	0	559	0	20	20	9,907	751
Dec-14	470	113	583	0	8	8	9,899	657
Jan-15	681	0	681	0	26	26	9,873	763
Feb-15	541	102	643	0	14	14	9,859	741
Mar-15								
Apr-15								
May-15								
Jun-15								
Jul-15								
Aug-15								
Sep-15								
Total	**2,865**	**215**	**3,080**	**0**	**86**	**86**		**3,856**

Notes:

1. "95-10 Rights" refer to water rights that were recognized by the State Water Resources Control Board (SWRCB) in Order No. WR 95-10 in July 1995 and assigned to California American Water. The rights total 3,376 acre-feet annually (AFA).
2. "20808A Rights" refer to water rights that are held jointly by MPWMD and Cal-Am for the Phase 1 ASR project. "ASR" refers to Aquifer Storage and Recovery. "20808A" refers to Water Right Permit 20808A that was issued by the SWRCB in November 2007, for a maximum annual diversion of 2,426 AF. "20808C" refers to water rights permit 20808C, issued in November 2011 for a maximim annual diversion of 2,900AF.
3. "Adjudicated Rights" refer to groundwater rights determined by the Superior Court of Monterey County in March 2006 and amended in February 2007. These limits are subject to change by action of the Seaside Basin Watermaster and were updated by the Watermaster on November 30, 2011.

EXHIBIT 23-B

Quarterly Water Budget Targets vs. Rule 162: Water Year 2015

(All Values in Acre Feet)

		Quarterly Budget									Rule 162		Production
		95-10 Monthly Budget	ASR Diversion for Injection	Total Carmel River Diversions for Customer Service and ASR Injection	Seaside Adjudication Monthly Budget (Coastal)	Seaside Adjudication Monthly Budget (Laguna Seca)	Seaside Adjudication Monthly Budget Combined	ASR Recovery Budget	Sand City Desal Budget	Monthly Production for Customer Use Target[5]	End of Month Production Adopted MPWRS	End of Month Cumulative to date MPWRS	MPWRS to date
		acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet	acre-feet
1st Qtr	Oct-14	667	0	667	400	5	405	0	25	1,097	1,097	1,097	943
	Nov-14	593	0	593	300	3	303	0	25	921	921	2,019	751
	Dec-14	684	145	829	100	3	103	0	25	812	812	2,831	657
2nd Qtr	Jan-15	686	230	916	100	3	103	0	25	814	814	3,643	763
	Feb-15	635	320	955	100	2	102	0	25	762	762	4,406	741
	Mar-15											5,273	
3rd Qtr	Apr-15											6,206	
	May-15											7,341	
	Jun-15											8,521	
4th Qtr	Jul-15											9,805	
	Aug-15											11,069	
	Sep-15											12,243	

California American Water Production vs. Water Budget and Water Right Limits: Water Year 2015

(All Values in Acre Feet)

		Cal-Am Production vs. Quarterly Water Budget Targets										Cal-Am Production vs. EOM Totals	
		95 - 10 Production for Customer Use vs. Monthly Targets		Seaside Coastal		Laguna Seca		Seaside Combined		Sand City Desal		Cal-Am Production vs. Rule 162	
		Monthly Comparison		**Monthly Comparison**		**Monthly Comparison**		**Monthly Comparison**		**Monthly Comparison**		**Year to Date**	
		acre-feet under	% Under	acre-feet under	% under	acre-feet under	% under	acre-feet under	% under	acre-feet under	% under	acre-feet under	% under
1st Qtr	Oct-14	53	0	121	0	-28	-6	93	0	8	0	154	14.0%
	Nov-14	34	0	151	1	-20	-7	131	0	5	0	170	18.4%
	Dec-14	214	0	-59	0	-17	-6	-76	-1	17	1	155	19.1%
2nd Qtr	Jan-15	5	0	68	2	-21	-7	47	0	-1	0	51	6.3%
	Feb-15	94	0	-67	0	-18	-9	-85	-1	11	0	21	2.7%
	Mar-15												
3rd Qtr	Apr-15												
	May-15												
	Jun-15												
4th Qtr	Jul-15												
	Aug-15												
	Sep-15												
Annual Statistics		AF Remaining	% Remaining	AF Remaining	% Remaining	AF Remaining	% Remaining	AF Remaining	% Remaining	AF Remaining	% Remaining	**550**	**12.5%**
		6,994	**70.9%**	**1,466**	**65.1%**	**-72**	**-149.5%**	**1,394**	**60.6%**	**214**	**71.3%**		

4. "Target" refers to the maximum amount of water that Cal-Am will try to recover each year for customer service as part of the Phase 1 and 2 ASR Project. The actual amount of water that is recovered will depend on the amount injected during a particular water year and previous water years.
5. Monthly Budget Target numbers from Quarterly Budget Meetings.
6. Budget Target vs. Rule 162 used for the purpose of tracking compliance with MPWMD water rationing rules.
7. Water Production vs. Water Budget and Water Rights Limits are tracked for compliance with Order 2009-0060 and Seaside Adjudication.
8. Production from ASR and Sand City Desalination plant reduce 95-10 water right.

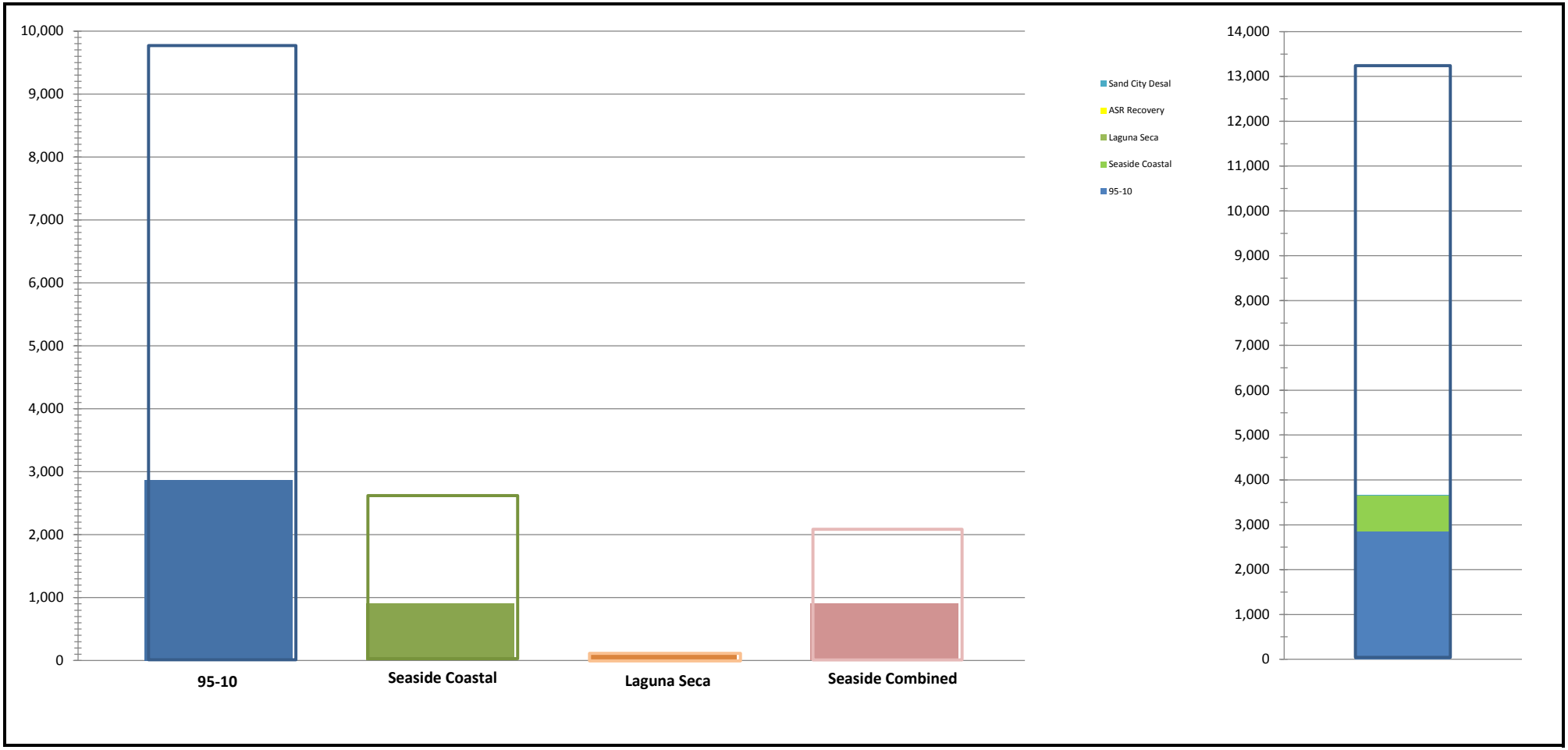
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
95-10
Seaside Coastal
Laguna Seca
Seaside Combined
Sand City Desal
ASR Recovery
Laguna Seca
Seaside Coastal
95-10
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0

EXHIBIT 17-A

California American Water Main Distribution System
Quarterly Water Supply Strategy and Budget: October - December 2014

Proposed Production Targets by Source and Projected Use in Acre-Feet

SOURCE/USE	MONTH			YEAR-TO-DATE		
	Oct-14	Nov-14	Dec-14	Oct-13 - Aug-14	% of YTD	% of Annual Budget
Source						
Carmel Valley Aquifer						
Upper Subunits	0	0	35	**83**	NA	NA
Lower Subunits (95-10)	667	593	649	**7,006**	84.9%	71.7%
Lower Subunits (ASR)	0	0	145	**0**	0.0%	0.0%
Total	**667**	**593**	**829**			
Seaside Groundwater Basin						
Coastal Subareas	400	300	100	**2,605**	104.2%	97.6%
ASR Recovery	0	0	0	**0**	NA	NA
Sand City Desalination	25	25	25	**173**	62.9%	57.7%
Total	**425**	**325**	**125**			
Use						
Customer Service	1,092	918	809			
Phase 1 ASR Injection	0	0	145			
Total	**1,092**	**918**	**954**			

Notes:
1. The budget reflects "Critically Dry" inflow conditions and assumes that the monthly unimpaired inflows at the San Clemente Dam site during the October-December 2014 period will equal 41, 227, and 596 AF, respectively. WY 2014 was the third consecutive dry or critically dry water year.
2. The annual budget period corresponds to the Water Year, which begins on October 1 and ends on September 30 of the following Calendar Year.
3. Total monthly production for "Customer Service" in CAW's main system was calculated by multiplying total annual production (12,196 AF) times the average percentage of annual production for October, November, and December (9.0%, 7.5%, and 6.6% , respectively). The annual production total was based on the assumption that production from the Coastal Subareas of the Seaside Groundwater Basin would not exceed 2,251 AF and production from Carmel River sources would not exceed 9,945 AF in WY 2015. The average production percentages were based on monthly data for customer service from WY 2006 to 2013.
4. Anticipated production for ASR injection is based on an average diversion rate of approximately 4,500 gallons per minute (gpm) or 19.9 AF per day from CAW's sources in the Carmel River Basin. "Total" monthly CAW "Use" includes water for customer service and water for injection into the Seaside Basin. This value is assumed in the event the WY becomes normal or wet through Dec 2014.
5. The production targets for CAW's wells in the Upper Subunits of the Carmel Valley Aquifer are set at 0 except as shown, based on CAW's goal to avoid use of these wells, during low flow periods. However, production could be higher under existing State water rights and interagency operating agreements.
6. The production target for CAW's wells in the Seaside Coastal Subareas in December is based on the assumption that sufficient flow will occur in the Carmel River at the targeted levels, to support ASR injection. It is planned that Coastal Subarea pumping will not occur, or will be proportionally reduced, if ASR injection does not occur at targeted levels.
7. The production targets for CAW's wells in the Seaside Coastal Subareas are based on the need for CAW to produce its full native water allocation during WY 2015 to be in compliance with SWRCB WRO No. 95-10.
8. It should be noted that monthly totals for Carmel Valley Aquifer sources may be different than those shown in MPWMD Rule 162, Table XV-3. These differences result from monthly target adjustments needed to be consistent with SWRCB WRO 98-04, which describes how the Cal-Am Seaside Wellfield is to be used to offset production in Carmel Valley during low-flow periods. Adjustments are also made to the Quarterly Budgets to ensure that compliance is achieved on an annual basis with MPWMD Rule 162 totals.

EXHIBIT 17-B

California American Water Laguna Seca Subarea Distribution Systems
Quarterly Water Supply Strategy and Budget: October 2014 - December 2014

Proposed Production Targets by Source and Projected Use in Acre-Feet

SOURCE/USE	MONTH			YEAR-TO-DATE		
	Oct-14	Nov-14	Dec-14	Oct-13 - Aug-14	% of YTD	% of Annual Budget
Source						
Seaside Groundwater Basin						
Laguna Seca Subarea	5	3	3	**330**	253.8%	224.5%
Other	0	0	0			
Use						
Customer Service	5	3	3			
				330		

Notes:
1. The annual budget period corresponds to the Water Year, which begins on October 1 and ends on September 30 of the following Calendar Year.
2. Total monthly production for "Customer Service" in CAW's Laguna Seca Subarea systems was calculated by multiplying total annual production (48 AF) times the average percentage of annual production October, November, and December (9.5%, 7.3%, and 5.7%, respectively). The annual production total was based on the assumption that production from the Laguna Seca Subarea of the Seaside Groundwater Basin would not exceed 48 AF. The average production percentages were based on monthly data for customer service from WY 2006 to 2013. The 48 AF annual production limit is specified in the Seaside Basin Adjudication Decision and is subject to change.
3. It should be noted that, based on recent historical use, actual monthly use will likely exceed the proposed monthly production target. In this context, the production targets represent the maximum monthly production that should occur so that CAW remains within its Standard Production Allocation for the Laguna Seca Subarea specified in the Seaside Decision. Accordingly, actual production beyond these production targets will be subject to replenishment assessment by the Seaside Basin Watermaster.
4. "Other" production sources refer to supplies transferred to Laguna Seca Subarea customers from CAW's Carmel River sources or water rights acquired from other producers in the Seaside Basin to produce additional water. For example, under emergency conditions, water can be transferred from sources that serve customers in CAW's main system, via an existing interconnection, to customers in CAW's Ryan Ranch system.

EXHIBIT X-A

California American Water Main Distribution System
Quarterly Water Supply Strategy and Budget: January - March 2015

Proposed Production Targets by Source in Acre-Feet

SOURCE/USE	MONTH			YEAR-TO-DATE		
	Jan-15	Feb-15	Mar-15	Oct-14 - Nov-14	% of YTD	% of Annual Budget
Source						
Carmel Valley Aquifer						
Upper Subunits (Service)	0	0	0	**87**	6%	1%
Lower Subunits (Service)	686	635	739	**1,086**	86%	12%
ASR Diversion	230	320	345	**0**		
Total	916	955	1,084			
Seaside Groundwater Basin						
Coastal Subareas	100	100	100	**428**	100%	3%
Phase 1 and 2 ASR Recovery	0	0	0	**0**	0%	0%
Sand City Desalination	25	25	25	**38**	76%	13%
Total	125	125	125	**466**		
Use						
Customer Service	811	760	864	**1,552**		
Phase 1 and 2 ASR Storage	230	320	345	**0**		
Total	**1,041**	**1,080**	**1,209**	**1,552**		

Notes:
1. The budget reflects "Dry" inflow conditions and assumes that the monthly unimpaired inflows at the San Clemente Dam site during the December 2014 - March 2015 period will equal the 75% exceedence flows , i.e., 1,015, 2,571, 3,908 and 4,216 AF, respectively. The exceedence values are based on simulated flows for the 1902 - 2013 period of record.
2. The annual budget period corresponds to the Water Year, which begins on October 1 and ends on September 30 of the following Calendar Year.
3. Total monthly production for "Customer Service" in CAW's main system was calculated by multiplying total annual production (12,196 AF) times the average percentage of annual production for January, February and March (6.6%, 6.2%, and 7.1%, respectively). According to District Rule 162, the annual production total was based on the assumption that production from the Coastal Subareas of the Seaside Groundwater Basin would not exceed 2,251 AF and production from Carmel River sources, without adjustments for water produced from water resources projects, would not exceed 9,945 AF in WY 2015. The average production percentages were based on monthly data for customer service from WY 2005 to 2013.
4. Anticipated production for ASR injection is based on an average diversion rate of approximately 4,500 gallons per minute (gpm) or 19.9 AF per day from CAW's sources in the Carmel River Basin. "Total" monthly CAW "Use" includes water for customer service and water for injection into the Seaside Basin. This value is assumed in the event the WY becomes normal or wet through Mar 2015.
5. The production targets for CAW's wells in the Upper Subunits of the Carmel Valley Aquifer are set at 0, based on CAW's goal to avoid use of these wells, year round. However, production could be higher under existing State water rights and interagency operating agreements.
6. The production targets for CAW's wells in the Seaside Coastal Subareas are based on the assumption that sufficient flow will occur in the Carmel River at the targeted levels, to support ASR injection. It is planned that Coastal Subarea pumping will not occur, or will be proportionally reduced, if ASR injection does not occur at targeted levels.
7. The production targets for CAW's wells in the Seaside Coastal Subareas are based on the need for CAW to produce its full Standard Allocation during WY 2015 to be in compliance with SWRCB WRO No. 95-10.
8. It should be noted that monthly totals for Carmel Valley Aquifer sources may be different than those shown in MPWMD Rule 162, Table XV-3. These differences result from monthly target adjustments needed to be consistent with SWRCB WRO 98-04, which describes how Cal-Am Seaside Wellfield is to be used to offset production in Carmel Valley during low-flow periods. Adjustments are also made to the Quarterly Budgets to ensure that compliance is achieved on an annual basis with MPWMD Rule 162 totals.

EXHIBIT X-B

California American Water Highway 68 Distribution Systems
Quarterly Water Supply Strategy and Budget: January - March 2015

Proposed Production Targets by Source and Projected Use in Acre-Feet

SOURCE/USE	MONTH			YEAR-TO-DATE		
	Jan-15	Feb-15	Mar-15	Oct-14 - Nov-14	% of YTD	% of Annual Budget
Source						
Seaside Groundwater Basin						
Laguna Seca Subarea	3	2	3	**56**	698.6%	116.4%
Other	0	0	0	**0**		
Use						
Customer Service	3	2	3			
Total	**3**	**2**	**3**	**56**		

Notes:
1. The annual budget period corresponds to the Water Year, which begins on October 1 and ends on September 30 of the following Calendar Year.
2. Total monthly production for "Customer Service" in CAW's Highway 68 systems was calculated by multiplying total annual production (147 AF) times the average percentage of annual production for January, February, and March (5.3%, 4.9%, and 5.9%, respectively). The annual production total was based on the assumption that production from the Laguna Seca Subarea of the Seaside Groundwater Basin would not exceed 48 AF. The average production percentages were based on monthly data for customer service from WY 2005 to 2013. The 48 AF annual production limit is based on procedures specified in the Seaside Basin Adjudication Decision.
3. It should be noted that, based on recent historical use, actual monthly use will likely exceed the proposed monthly production targets. In this context, the production targets represent the maximum monthly production that should occur so that CAW remains within its Standard Production Allocation for the Laguna Seca Subarea specified in the Seaside Decision. Accordingly, actual production beyond these production targets will be subject to replenishment assessment by the Seaside Basin Watermaster.
4. "Other" production sources refer to supplies transferred to Highway 68 customers from CAW's Carmel River sources, water rights acquired from other producers in the Seaside Basin, or supplies transferred from other systems outside of the Laguna Seca Subarea to produce additional water.
5. The production targets for CAW's wells in the Seaside Coastal Subareas are based on the need for CAW to produce its full Standard Allocation during WY 2014 to be in compliance with SWRCB WRO No. 95-10.
6. Year to date production numbers are estimated pending finilization of CAW production data.

EXHIBIT X-A

California American Water Main Distribution System
Quarterly Water Supply Strategy and Budget: April - June 2015

Proposed Production Targets by Source and Projected Use in Acre-Feet

SOURCE/USE	MONTH			YEAR-TO-DATE		
	Apr-15	May-15	Jun-15	Oct-14 to Feb-15	% of YTD	% of Annual Budget
Source						
Carmel Valley Aquifer						
Upper Subunits	0	0	0	**222**		
Lower Subunits	918	1,094	1,112	**2,643**	81%	28%
ASR Diversion	100	100	0	**215**		
Total	**1,018**	**1,194**	**1,112**	**3,080**		
Seaside Groundwater Basin						
Coastal Subareas	100	125	150	**785**	78%	35%
Phase 1 ASR Recovery	0	0	0	**0**		
Sand City Desalination	25	25	25	**86**	69%	29%
Total	**125**	**150**	**175**	**871**		
Use						
Customer Service	1,043	1,244	1,287	**3,736**	85%	31%
Phase 1 ASR Injection	100	100	0	**215**		
Total	**1,143**	**1,344**	**1,287**			

Notes:
1. The budget reflects "Below Normal" inflow conditions and assumes that the monthly unimpaired inflows at the San Clemente Dam site during the April 2015 - June 2015 period will be approximately 3,886, 1,993 and 756 AF, respectively. The exceedence values are based on the 1902-2014 period of record.
2. The annual budget period corresponds to the Water Year, which begins on October 1 and ends on September 30 of the following Calendar Year.
3. Total monthly production for "Customer Service" in CAW's main system was calculated by multiplying total annual production (12,196 AF) times the average percentage of annual production for April, May, and June (7.6%, 9.3%, and 9.6%, respectively). According to District Rule 162, the annual production total was based on the assumption that production from the Coastal Subareas of the Seaside Groundwater Basin would not exceed 2,251 AF and production from Carmel River sources, without adjustments for water produced from water resources projects, would not exceed 9,945 AF in WY 2015. The average production percentages were based on monthly data for customer service from WY 2005 to 2014.
4. Maximum daily production values for "Phase 1 and 2 ASR Storage" are based on an average diversion rate of approximately 3,000 gallons per minute (gpm) or 13.3 AF per day and 1,500 gpm or 6.6 AF per day, respectively, from CAW's sources in the Carmel River Basin. Maximum daily production for Phase 1 and 2 ASR sites is 19.9 AF per day. Total monthly production is estimated by multiplying the maximum daily production by operational days per month for "Below Normal" flow conditions at San Clemente Dam.
5. The production targets for CAW's wells in the Upper Subunits of the Carmel Valley Aquifer are set at 0, based on CAW's goal to avoid use of these wells, year round. However, production could be higher to support ASR injection under existing State water rights and interagency operating agreements.
6. The production targets for CAW's wells in the Seaside Coastal Subareas are based on the assumption that sufficient flow will occur in the Carmel River at the targeted levels, to support ASR injection. It is planned that Coastal Subarea pumping will not occur, or will be proportionally reduced, if ASR injection does not occur at targeted levels.
7. The production targets for CAW's wells in the Seaside Coastal Subareas are based on the need for CAW to produce its full Standard Allocation during WY 2015 to be in compliance with SWRCB WRO No. 95-10.
8. It should be noted that monthly totals for Carmel Valley Aquifer sources may be different than those shown in MPWMD Rule 162, Table XV-3. These differences result from monthly target adjustments needed to be consistent with SWRCB WRO 98-04, which describes how Cal-Am Seaside Wellfield is to be used to offset production in Carmel Valley during low-flow periods. Adjustments are also made to the Quarterly Budgets to ensure that compliance is achieved on an annual basis with MPWMD Rule 162 totals.

EXHIBIT X-B

California American Water Laguna Seca Subarea Distribution Systems
Quarterly Water Supply Strategy and Budget: April - June 2015

Proposed Production Targets by Source and Projected Use in Acre-Feet

SOURCE/USE	MONTH			YEAR-TO-DATE		
	Apr-15	May-15	Jun-15	Oct-14 to Feb-15	% of YTD	% of Annual
Source						
Seaside Groundwater Basin						
Laguna Seca Subarea	3	5	5	**120**	748.4%	249.5%
Other	0	0	0	**0**	0.0%	0.0%
Use						
Customer Service	3	5	5			
Total	**3**	**5**	**5**	**120**	748.4%	249.5%

Notes:
1. The annual budget period corresponds to the Water Year, which begins on October 1 and ends on September 30 of the following Calendar Year.
2. Total monthly production for "Customer Service" in CAW's Laguna Seca Subarea systems was calculated by multiplying total annual production (48 AF) times the average percentage of annual production for April, May, and June (7.1%, 9.7%, and 10.6%, respectively). The average production percentages were based on monthly data for customer service from WY 2005 to 2013. The 48 AF annual production limit is specified in the Seaside Basin Adjudication Decision and is subject to change.
3. It should be noted that, based on recent historical use, actual monthly use will likely exceed the proposed monthly production target. In this context, the production targets represent the maximum monthly production that should occur so that CAW remains within its Standard Production Allocation for the Laguna Seca Subarea specified in the Seaside Decision. Accordingly, actual production beyond these production targets will be subject to replenishment assessment by the Seaside Basin Watermaster.
4. "Other" production sources refer to supplies transferred to Laguna Seca Subarea customers from CAW's Carmel River sources or water rights acquired from other producers in the Seaside Basin to produce additional water. For example, under emergency conditions, water can be transferred from sources that serve customers in CAW's main system, via an existing interconnection , to customers in CAW's Ryan Ranch system.

EXHIBIT 22-A

California American Water Main Distribution System
Quarterly Water Supply Strategy and Budget: July - September 2014

Proposed Production Targets by Source and Projected Use in Acre-Feet

SOURCE/USE	MONTH			YEAR-TO-DATE		
	Jul-14	Aug-14	Sep-14	Oct-13 - May-14	% of YTD	% of Annual
Source						
Carmel Valley Aquifer						
Upper Subunits	0	0	0	**222**	N/A	N/A
Lower Subunits (95-10)	831	834	694	**2,643**	80.9%	28.0%
Total	**831**	**834**	**694**	**2,865**		
Seaside Groundwater Basin						
Coastal Subareas	358	400	450	**785**	78.5%	34.9%
ASR Recovery	215	0	0	**0**	0.0%	
Sand City Desalination	25	25	25	**86**	68.9%	28.7%
Total	**1,429**	**1,259**	**1,169**	**871**		
Use						
Customer Service	1,429	1,259	1,169	**3,736**	85.1%	29.5%
Phase 1 ASR Injection	0	0	0	**215**	0.0%	0.0%
Total	**1,429**	**1,259**	**1,169**	**3,952**		

Notes:
1. The budget reflects "Critically Dry" inflow conditions and assumes that the monthly unimpaired inflows at the San Clemente Dam site during the July 2014 - September 2014 period will be approximately 30, 38, and 56 AF, respectively. The exceedence values are based on the 1902-2013 period of record. Estimates assume a similar precipitation pattern to that experienced in WY 1989.
2. The annual budget period corresponds to the Water Year, which begins on October 1 and ends on September 30 of the following Calendar Year.
3. Total monthly production for "Customer Service" in CAW's main system was calculated by multiplying total annual production (12,735 AF) times the average percentage of annual production for Julyl, August, and September (10.6%, 10.4%, and 9.8%, respectively). According to District Rule 162, the annual production total was based on the assumption that production from the Coastal Subareas of the Seaside Groundwater Basin would not exceed 2,669 AF and production from Carmel River sources, without adjustments for water produced from water resources projects, would not exceed 10,066 AF in WY 2014. The average production percentages were based on monthly data for customer service from WY 2005 to 2012.
4. The production targets for CAW's wells in the Upper Subunits of the Carmel Valley Aquifer are set at 0, based on CAW's goal to avoid use of these wells, year round. However, production could be higher under existing State water rights and interagency operating agreements.
5. The production targets for CAW's wells in the Seaside Coastal Subareas are based on the need for CAW to produce its full Standard Allocation during WY 2014 to be in compliance with SWRCB WRO No. 95-10.
6. Year to date production numbers are estimated pending finalization of CAW production data.
7. The production targets for CAW's wells in the Seaside Coastal Subareas are based on the need for CAW to produce its full Standard Allocation during WY 2014 to be in compliance with SWRCB WRO No. 95-10.
8. It should be noted that monthly totals for Carmel Valley Aquifer sources may be different than those shown in MPWMD Rule 162, Table XV-3. These differences result from monthly target adjustments needed to be consistent with SWRCB WRO 98-04, which describes how Cal-Am Seaside Wellfield is to be used to offset production in Carmel Valley during low-flow periods. Adjustments are also made to the Quarterly Budgets to ensure that compliance is achieved on an annual basis with MPWMD Rule 162 totals.

California American Water Laguna Seca Subarea Distribution Systems
Quarterly Water Supply Strategy and Budget: July - September 2014

Proposed Production Targets by Source and Projected Use in Acre-Feet

SOURCE/USE	MONTH			YEAR-TO-DATE		
	Jul-14	Aug-14	Sep-14	Oct-13 - May-14	% YTD	% of Annual Budget
Source						
Seaside Groundwater Basin						
Laguna Seca Subarea	6	5	5	**120**	748.4%	249.5%
Other	0	0	0	**0**	0.0%	0.0%
Use						
Customer Service	6	5	5			
Total	**6**	**5**	**5**	**120**		

Notes:
1. The annual budget period corresponds to the Water Year, which begins on October 1 and ends on September 30 of the following Calendar Year.
2. Total monthly production for "Customer Service" in CAW's Laguna Seca Subarea systems was calculated by multiplying total annual production (147AF) times the average percentage of annual production for July, August, and September (11.9%, 11.8%, and 11.2%, respectively). The annual production total was based on the assumption that production from the Laguna Seca Subarea of the Seaside Groundwater Basin would not exceed 147 AF. The 147 AF annual production limit is specified in the Seaside Basin Adjudication Decision and is subject to change.
3. It should be noted that, based on recent historical use, actual monthly use will likely exceed the proposed monthly production target. In this context, the production targets represent the maximum monthly production that should occur so that CAW remains within its Standard Production Allocation for the Laguna Seca Subarea specified in the Seaside Decision. Accordingly, actual production beyond these production targets will be subject to replenishment assessment by the Seaside Basin Watermaster.
4. "Other" production sources refer to supplies transferred to Laguna Seca Subarea customers from CAW's Carmel River sources or water rights acquired from other producers in the Seaside Basin to produce additional water. For example, under emergency conditions, water can be transferred from sources that serve customers in CAW's main system, via an existing interconnection, to customers in CAW's Ryan Ranch system.