**November 2016**

# Request for Proposals
# Los Padres Dam and Reservoir Alternatives and Sediment Management Study

**Los Padres Reservoir – 1981**

Prepared by:

California American Water Company

Monterey Peninsula Water Management District

In cooperation with:

National Marine Fisheries Service

California Department of Fish and Wildlife

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

CALIFORNIA AMERICAN WATER

# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AF | acre-feet |
| AFA | acre-feet per annum |
| AFY | acre-feet per year |
| BGS | behavior guidance system |
| BO | Biological Opinion |
| Cal-Am | California American Water |
| CDFW | California Department of Fish and Wildlife |
| CRBHM | Carmel River Basin Hydrologic Model |
| CDO | Cease and Desist Order |
| DSOD | Division of Safety of Dams |
| DPS | Distinct Population Segment |
| ESA | Endangered Species Act |
| IFIM | Instream Flow Incremental Method |
| LPD | Los Padres Dam |
| MPWMD | Monterey Peninsula Water Management District |
| MPWSP | Monterey Peninsula Water Supply Project |
| NGVD | National Geodetic Vertical Datum of 1929 |
| NMFS | National Marine Fisheries Service (part of National Oceanic and Atmospheric Administration) |
| PIT | passive integrated transponder |
| Project | Los Padres Dam and Reservoir Alternatives Analysis and Sediment Management Study |
| PMF | probable maximum flood |
| RM | River Mile, from the ocean |
| S-CCC | South-Central California Coast |
| SWRCB | State Water Resources Control Board |
| TRC | Technical Review Committee, composed of technical experts from Cal-Am, MPWMD, NMFS, and CDFW |
| USFS | U.S. Forest Service |
| USFWS | U. S. Fish and Wildlife Service |

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| USGS | U.S. Geological Survey |

## 1.0 CALENDAR OF EVENTS

| | |
|---|---|
| 1.1 Issue RFP | November 2016 |
| 1.2 Pre-Bid Conference Call | Monday, December 5, 2016 at 3:00 p.m. |

*Note: RFP and Answers to Questions will be posted on the web at:*
*http://www.mpwmd.net/asd/rfpbids/*

| | |
|---|---|
| 1.3 Pre-Bid Site Visit | Call or e-mail Larry Hampson to arrange meeting place and time |
| 1.4 Proposals Due | December 28, 2016 |
| 1.5 Proposal Review (tentative date) | week of January 2 or 9, 2017 |
| 1.6 MPWMD Board Consideration | January 25, 2017 |
| 1.7 Estimated Notification of Selection | January 27, 2017 |
| 1.8 Notice to Proceed | February 2016 |

It is desirable to solicit several proposals for this project; if necessary, MPWMD may extend the proposal due date to allow the maximum number of firms with interest in performing the described work an opportunity to submit a proposal.

## 2.0 INTENT

2.1 The Monterey Peninsula Water Management District, hereinafter referred to as "District" or "MPWMD", is soliciting proposals from qualified organizations, hereinafter referred to as "Consultant", to assist in preparing the "Los Padres Dam and Reservoir Alternatives and Sediment Management Study," hereinafter referred to as "Project."

2.2 This solicitation is intended for a single, exclusive AGREEMENT.

2.3 The project is to be co-funded and co-managed by MPWMD and California American Water (Cal-Am).

## 3.0 SUMMARY

### 3.1 Los Padres Dam (LPD)

LPD is located at River Mile (RM, measured from the ocean) 24.8 on the Carmel River, which is a California Central coastal stream that flows into the Monterey Bay National Marine Sanctuary about five miles south of Monterey. LPD, built in 1948 at a cost of over $1.5 million, is currently owned by the California American Water (Cal-Am) Company, forms a 148-foot high earth fill barrier along the river and includes a 600-foot long concrete spillway with an apron before dropping into the river. It has been a known fish passage impediment for both upstream and downstream migrating South-Central California Coast (S-CCC) steelhead, and impacts downstream habitat for steelhead by blocking the natural sediment supply.

Due to episodic flows and the highly erosive nature of the contributing watershed, reservoir storage has shrunk about 40% from 3,030 acre-feet (AF) to about 1,775 AF at the spillway level. Usable storage is estimated at about 1,450 AF or about 48% of original storage capacity. In 1995, the State Water Resources Control Board (SWRCB) reduced Cal-Am's water right associated with the dam to 2,179 AF, due to siltation. The long-term siltation rate at the reservoir is estimated at 10 to 20 AFY (the range in the estimate is heavily influenced by a single year's worth of siltation in 1978). The reservoir has not been dredged since it was built. Downstream of the dam, there is significant armoring of the streambed and incision into floodplain deposits along the lower 16-mile alluvial portion of Carmel Valley as a result of sediment retention at both LPD and at the former site of the San Clemente Dam at RM 18.6, which began construction in the winter of 1920 and was completed in the spring of 1921. San

Clemente Dam was removed in 2015, which has improved steelhead passage and allows sediment from the 80 square-mile watershed between the dams to flow downstream.

During dry periods (normally from May through October), releases from Los Padres Reservoir can be the majority of flow in the river downstream of LPD, where significant numbers of threatened steelhead can be found in some years. While LPD and the associated reservoir currently has value as a water supply facility to meet municipal demand and enhance summer flow in the river, the reservoir is small relative to annual flow and does not provide flood protection to downstream reaches. The dam is routinely inspected by the California Division of Safety of Dams and is in satisfactory condition (i.e., it is safe in a maximum credible earthquake and can pass a probable maximum flood estimated at 36,000 cfs).

The National Marine Fisheries Service (NMFS) has strongly encouraged Cal-Am to resolve the steelhead passage issues and other potential take issues involved with LPD. NMFS has also suggested that removal of LPD should be considered; however, NMFS recognized in the South-Central California Steelhead Recovery Plan that LPD is part of the regional water supply and studies are required in order to come to a conclusion about the future of the dam. In 2013, a Cal-Am consultant evaluated dredging of reservoir sediments to recover storage; however, due to the high projected cost (up to $90 million), this alternative has not been pursued.[1]

### 3.2 Alternatives

Alternatives to be evaluated in this study include:

**1) No Action Alternative –** no action would be taken at the reservoir.

**2) Dam removal –** remove the dam and appurtenances, restore the reservoir and its environs to a natural condition. Removal analysis should consider: 1) whether a phased removal is feasible; and 2) whether some or all of the sediment in the reservoir could be left behind to erode naturally

[1] See Los Padres Dam Sediment Removal Feasibility Study, prepared for California American Water, MWH, April 2013.

or can be stabilized. All dams in California higher than 25 feet above the natural bed of a stream are under the Division of Safety of Dams jurisdiction. The LPD safely passes a probable maximum flood (PMF) of 36,000 cfs through the concrete spillway without overtopping the dam. A phased dam removal should take into consideration passage of the PMF. It is intended that a dam removal alternative be carried through to the end of the study and presented as an alternative for consideration.

**3) Dredging –** A 2013 study by Cal-Am proposed to dredge reservoir sediments and haul the material to areas within Cal-Am property that drain directly to the main stem. These areas are characterized by steep terrain and the benefit-cost analysis of the alternatives was considered to be high. Two of the alternatives would require building up to about 4,000 feet of new road through the Carmel River upstream of the reservoir. A third alternative would dredge about 40% of the existing sediment and place the material downstream of LPD.

For this study, the Consultant will determine if there are locations off the Cal-Am property to move sediment that would not involve building a road through the Carmel River and that would allow 100% of the existing reservoir material to be moved.

**4) Reservoir storage expansion** – expand surface storage with a rubber dam, small dam raise at the existing dam, or build a new dam downstream that would inundate the existing dam at a new level to be determined, or expand surface storage with a combination of methods.

**5) Sediment management –** For alternatives involving retention or expansion of LPD, a sediment management program needs to be evaluated. The focus of this task will be an evaluation of alternatives that would result in a sustaining long-term surface storage while minimizing downstream impacts on aquatic habitat. Alternatives could include storage maintenance dredging (i.e., passing the natural incoming sediment flow) and dredging and passing more than natural sediment flow (e.g., natural flow plus an increment) with the goal of creating additional storage within the existing reservoir area.

### 3.3 Existing Funding Agreement

MPWMD has entered into an agreement with Cal-Am for reimbursement of a portion of the expenses associated with this Project. Cal-Am and MPWMD have agreed to co-manage the Project. Contracting would be through MPWMD.

### 3.4 Other related studies and projects

Cal-Am built a downstream passage facility in 2015 and placed it into service in 2016. Results of tests involving sending juvenile trout through the facility may become available for use with this study. MPWMD is currently administering an upstream volitional fish passage study with Cal-Am that is planned to be completed 2017. Cal-Am also plans to evaluate the existing trap and truck operation in 2017. NMFS is planning to conduct a through-reservoir study of steelhead behavior starting in 2017 and continuing through 2020.

MPWMD is currently developing an Instream Flow Incremental Method Study with 1-D and 2-D modeling capability to evaluate changes in steelhead habitat resulting from alternative water supply assumptions. MPWMD completed habitat mapping from the ocean to LPD in 2014 and 2015 and established transects for flow measurements, which were completed in 2016. The 2-D hydraulic model is complete and the 1-D model should be complete at the end of 2016.

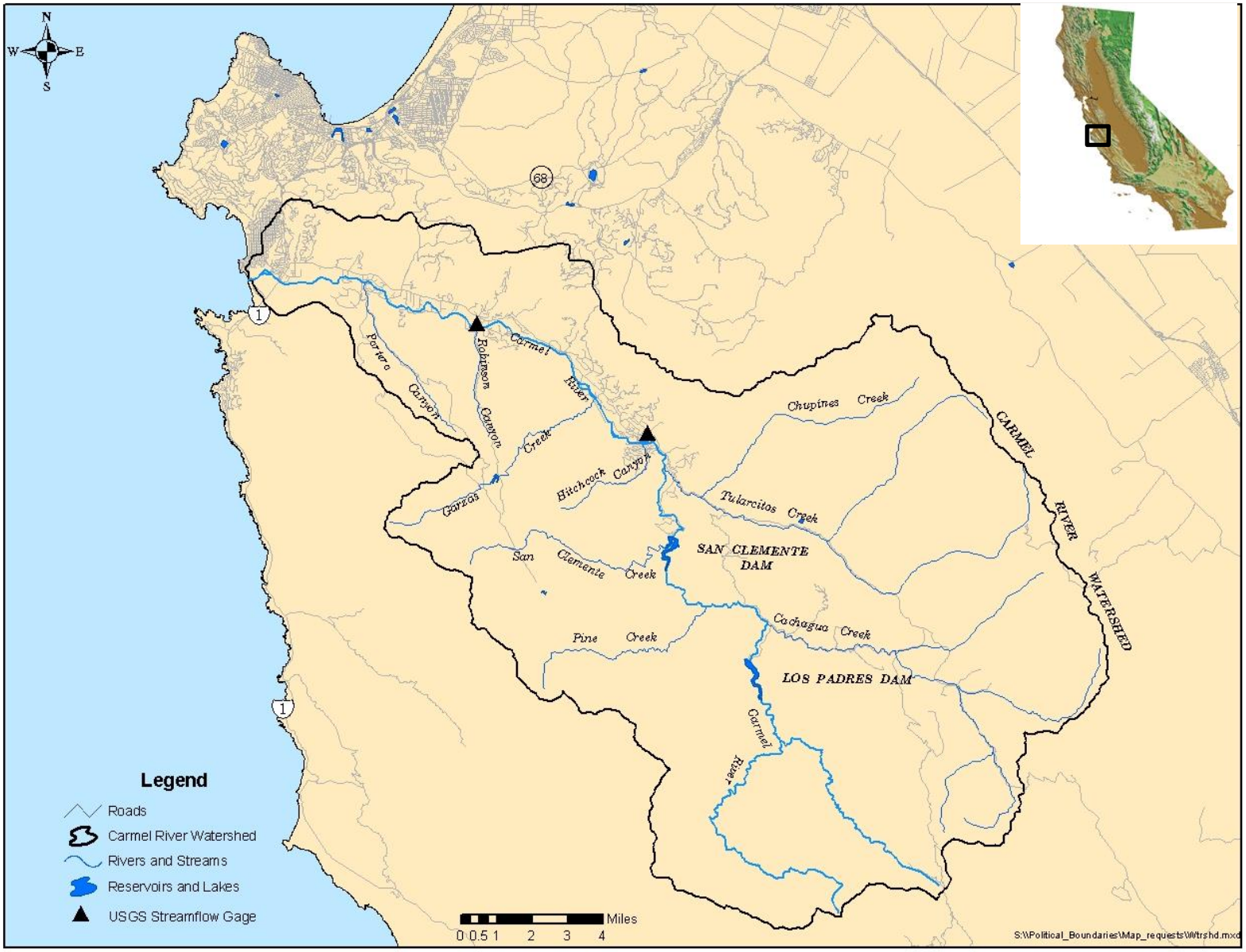
In addition, MPWMD is also developing a linked surface and groundwater model using GSFLOW coupled to MODFLOW to simulate water availability from alternative water supply assumptions (the Carmel River Basin Hydrologic Model or CRBHM). Both modules are expected to be fully operational in early 2017.

MPWMD is working with the U.S Bureau of Reclamation (Reclamation) on developing a Basin Study under the Reclamation Water Smart grant program. Work is anticipated to begin in early 2017 with climate change analysis expected to be completed within about nine months from initiation.

It is expected that results from these related studies will help inform the alternatives analysis for LPD and to the extent possible, the Consultant will include results of other studies in an

evaluation matrix for alternatives. However, it is recognized that neither MPWMD nor the Consultant can depend on receiving timely information from studies not directly being managed by either party.

**Figure 1- Location Map**



## 4.0 POINTS OF CONTACT

4.1 Questions and correspondence regarding this solicitation shall be directed to:

Primary Contact: **LARRY HAMPSON,**
**DISTRICT ENGINEER**
5 Harris Court, Bldg. G
Monterey, CA 93940
PHONE: (831) 658-5620 (office) or (831) 238-2543 (cell)
FAX: (831) 644-9560
Email: larry@mpwmd.net

4.2 All questions regarding this solicitation shall be submitted in writing (E-mail or FAX is acceptable). The questions will be researched and the answers will be communicated to all known interested Consultants after the deadline for receipt of questions.

4.3 The deadline for submitting written questions regarding this solicitation is indicated in the **CALENDAR OF EVENTS herein**. Questions submitted after the deadline will not be answered.

4.4 Only answers to questions communicated by formal written addenda will be binding.

4.5 Prospective Consultant shall not contact MPWMD officers or employees with questions or suggestions regarding this solicitation except through the primary contact person listed above. **Any unauthorized contact may be considered undue pressure and cause for disqualification of the Consultant.**

## 5.0 SCOPE OF WORK

### 5.1. Background

In an April 23, 2013 letter to California American Water (Butler to Svindland), or Cal-Am, the National Marine Fisheries Service (NMFS) stated the following:

> "The Los Padres Dam has been a known fish passage impediment for both upstream and downstream migrating S-CCC steelhead as well as impacting the downstream habitat by blocking the natural sediment supply…As a first step towards protecting S-CCC steelhead, NMFS strongly encourages Cal-Am to resolve the fish passage and other potential take issues at LPD by completing a thorough feasibility study on the merits of either: 1) entirely removing the dam and restoring the reservoir area to its original environs; or 2) improving the dam with appropriate permanent fish passage modifications that allow for unimpeded, safe and effective, upstream and downstream migration of all life stages of S-CCC steelhead."

In its December 2013 "South-Central California [Coast] Steelhead Recovery Plan," NMFS stated:

> "Prior to the removal or modification of …[Los Padres Dam] appropriate investigations and environmental review should be completed to address regional water supply and environmental issues, including, but not limited to any effects on the existing steelhead resources of the Carmel River watershed."

Subsequently, Cal-Am submitted project I15-400101 "Los Padres Dam Long-Term Plan" in its 2015-17 General Rate Case Application to the California Public Utilities Commission. The project description stated:

> It is anticipated that if the dam were to remain "in place", then the feasibility study would need to answer critical questions such as: 1) improved upstream fish passage; 2) addressing the present sediment in the reservoir (i.e., what to do with what is presently there, and/or a continuing management/maintenance program); 3) installing appropriate screening on the intake/outlet structures; 4) insuring adequate fish passage through any accumulated sediment in the reservoir; 5) addressing water quality and temperature issues in the reservoir; and 6) replenishment of gravel in key downstream areas to facilitate fish spawning areas.

This study (the Project) is one of several being conducted by Cal-Am and the District to answer a number of questions about the future of LPD, including the question of "Is the Carmel River and

the steelhead fishery better off with or without Los Padres Dam and Reservoir?" In particular, of the topics described above, this study is to investigate:

1) Alternatives and methods to manage existing and future sediment deposits in the reservoir in order to maintain or augment surface storage capacity;
2) Benefits and impacts of management alternatives to steelhead passage, water quality, water supply, and steelhead spawning habitat;
3) Benefits and impacts from dam removal; and
4) Benefits and impacts of a dam raise and or/reservoir expansion.

Current impacts associated with LPD and reservoir sediment accumulation include:

- a disconnect in habitat and natural river functions between the upper and lower portions of the watershed
- impaired steelhead passage through the reservoir and habitat degradation downstream of the dam due to sediment starvation and armoring of the channel bed
- reduced storage capacity resulting in reduced dry season releases, loss of water rights, inability to meet release requirements associated with the water right license for the dam
- degradation in the water quality of dry season releases (i.e., increased temperature, decrease in dissolved oxygen, increase in anoxic releases, increase in hydrogen sulfide)

Current benefits associated with the dam and reservoir include:

- maintains a water right to supply the Monterey Peninsula
- augment natural flow downstream of LPD to improve the quantity and quality of steelhead habitat downstream of LPD
- capture debris flows from the upper watershed that could affect downstream properties
- only significant source of flow to river downstream of LPD during dry periods

**Physical Aspects of Los Padres Dam and Reservoir and Contributing Watershed**

Los Padres Dam, located at River Mile (RM, from the ocean) 24.8 was built in 1949, is an embankment dam (earth fill) of 148 feet high and more than 600 feet in length. The concrete spillway is 18 feet high, 110 feet wide and 600 feet long, with a capacity rated to pass the probable maximum flood of 36,000 cfs. The capacity to pass flow through the dam outlets is 30 cfs. Additional capacity to pass up to about 15 cfs of flow (for a total of about 45 cfs) has been added recently with the installation of downstream passage facilities.

The design plans for the dam show that the reservoir originally held 3,030 AF, whereas the

dedication plaque on the east abutment states 3,100 AF. The former number is usually cited, which coincides with the water right license for the dam. The contributing watershed drains a 44.8 square mile area that is partly National Forest and partly Ventana Wilderness. The upper watershed is steep and prone to episodes of erosion; periodic large wildfires can be followed by very wet periods with high rates of erosion. The U.S. Forest Service (USFS) manages virtually the entire contributing watershed. USFS land management policies – particularly for fire management – can have a direct effect on the volume of sediment and large wood that enters the reservoir. USFS is currently preparing a plan to maintain fuel breaks in the Wilderness area. The proposal is to maintain historical fuel breaks used to contain fires in the Wilderness area above Los Padres Dam and outside the Wilderness area. It is uncertain what affect the plan may have on fire recurrence interval and future erosion rates. A Notice of Initiation was issued 12/28/2012 and the comment period ended June 2016.

Most of the upper Carmel River watershed contributing to LP Reservoir has been burned several times in the past few decades. The watershed above LPD was burned severely in the 1977 Marble-Cone (M-C) fire. Subsequent fires that have occupied the footprint of the M-C fire include the 1999 Kirk Complex fire, 2008 Basin Complex fire, and 2016 Soberanes fire. An initial assessment of the 2016 fire impacts was completed in late September 2016. Portions of the Carmel River watershed south of the river and outside of the LPD sub-watershed burned in the 2016 fire had no recent fire activity and had the highest proportions of moderate and high soil burn severity. In the LPD sub-watershed, the Basin Area Emergency Response team has estimated that up to 80 AF of debris could flow to Los Padres Reservoir as a result of a 10-year magnitude storm. As of mid-October, 49% of the contributing watershed was burned to a moderate/high soil burn severity; however, it appears that most of the burned areas that are considered high risk for debris and increased runoff are outside of the watershed contributing to LPD (CALFIRE 2016). As of the end of October 2016, the fire was at 100% containment and several early season storm events had passed through the burned areas with moderate to heavy rain.

The reservoir surface area at the spillway elevation is about 55 acres with the maximum extent of reservoir inundation extending upstream to approximately the confluence with Danish Creek. It is estimated that the Ventana Wilderness boundary is encountered in Danish Creek at an elevation of 1,054 feet (National Geodetic Vertical Datum of 1929 or NGVD). Since the dam was built, approximately 40% of the original capacity has been lost to sedimentation with the current capacity estimated at 1,775 AF at spillway elevation 1,040 feet (NGVD). The usable capacity is about 1,450 AF, as water at the lower level of the reservoir has either unacceptable

quality for release or is not recoverable through the lower outlets through the dam. In addition, head cutting and slumping of silt deposits below this level can contribute material that clogs the outlet. A graph showing the rate of reservoir siltation is shown below in Figure 2.

Current reservoir storage is small relative to median annual inflow (estimated at about 28,000 acre-feet per year), and the reservoir normally fills and spills each winter resulting in the watershed being in an uncontrolled state with river flow responding directly to rainfall and runoff. The only recorded exceptions to this since 1949 were during the 1976-77 drought and one year during the 1987-91 drought. During the most recent drought (2011-2014) and in WY2015 and WY 2016, the reservoir filled each winter. The reservoir provides virtually no flood storage or attenuation.

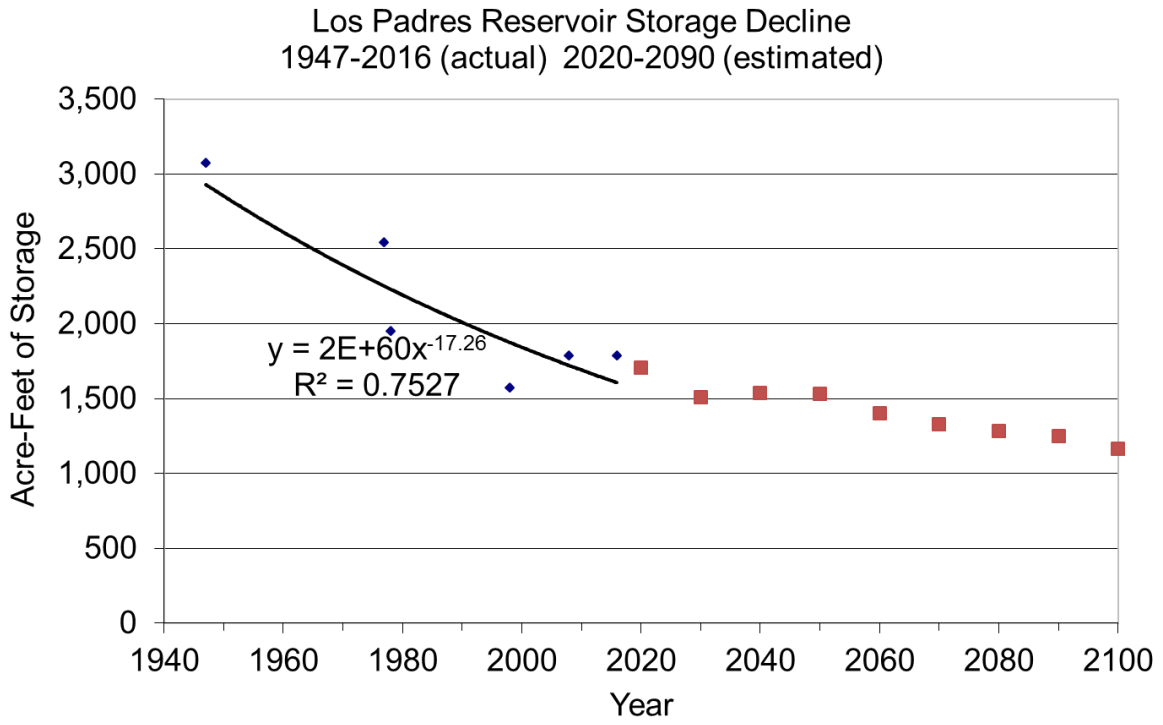



**Figure 2 – Los Padres Reservoir Storage Decline**

The long-term estimated annual storage volume loss (18.5 AFY) is significantly affected by the loss of 555 AF in a single season immediately after the 1977 Marble-Cone fire, which burned up to 90% of the vegetative cover over a large part of the upper Carmel basin (Hecht 1981). Absent that extreme event, an annual loss rate would be about 10 AFY.

**Los Padres Dam Operations**

When it was built, LPD had no fish passage facilities, except for a small ladder and trap located

at the base of the dam. Investigations into the steelhead resource recount that the trap was not functional for several years, resulting in the original trapping station below LPD being replaced in 1981. The replacement was operated for the next 18 years, until 2000, when a new Denil ladder and trap was constructed along the left bank of the plunge pool below the dam. Between 2000 and 2006, Cal-Am tried operating both traps below the dam. But, with the steady deterioration of pipeline to the old trap, use of the old trap was abandoned and only the new trap remains functional. Daily trapping records are available at MPWMD, but not for all years.

Between 1948 and 2015, downstream passage was over the spillway; however, a downstream passage facility for outmigrant juveniles and adults was constructed at the dam and spillway in 2015 and put into service in 2016. Performance testing of the facility has not been completed as no hatchery fish have been available due to the extended statewide drought. The facility includes a behavior guidance system (BGS) at the upstream face of the ogee spillway coupled with a 900-foot long pipeline that takes fish through the spillway and places them just downstream of the existing trap near the downstream end of the "plunge pool" below the spillway. The facility provides downstream migration opportunities when river flows are at a low level and reservoir levels are below the spillway level – a capability that has not been available to previous generations of fish since the dam was built.

At levels below the spillway elevation, fish in the upper two-thirds of the reservoir area (where most of the sediment deposition has occurred) are in open water with no vegetative cover. A limited through-reservoir study is proposed to be conducted as part of the fish passage study. A PIT tag program of fish swimming through the reservoir is proposed to be conducted by NMFS beginning in late 2016.

Once the reservoir level drops below the spillway, releases from storage to the Carmel River main stem are allocated in dry periods solely to augment flow downstream of the dam and generally range from 5 to 15 cfs depending on water year type. There is no direct connection to a municipal supply system and rediversion of flow occurs at Cal-Am owned municipal production wells downstream of Carmel Valley Village, primarily between River Mile 3 and 8. Releases are governed under a quarterly budget process set up by a Memorandum of Agreement between CDFG (now CDFW), Cal-Am, and MPWMD. NMFS also participates in water budget decisions.

During dry periods, releases from storage typically constitute more than 50% and up to 90% of the flow in the river downstream of LPD. In the 1990s, the SWRCB determined that flow

downstream of RM 17.2 in the alluvial aquifer underlying the river is water flowing in a subterranean stream and subject to the jurisdiction of the SWRCB.[2] In addition to Cal-Am diversions, there are a few surface diversions upstream of the Carmel River Reroute and about 300 hundred private wells in the Carmel Valley Alluvial Aquifer. Most of the non-Cal-Am pumping is not subject to SWRCB jurisdiction at this time. MPMWD requires all non-Cal-Am pumpers to file annual production reports and collectively, these non-Cal-Am diversions total between 2,000 and 2,400 AFY, with about 60% of diversions occurring in the dry season (June 1 through November 30). It should be noted that average annual outflow from the Carmel River watershed is about 72,000 AFY.[3] Median flow measured at Don Juan Bridge in Garland Park at RM 10.8 during the dry season is less than 3,700 AF,[4] whereas well production during the dry season has ranged from at least 6,000 AF to up to 12,000 AF since the early 1960s. A portion of the lower river downstream of RM 8 has dried up in most years, which results in a cone of depression forming downstream of RM 8.

The effect of the reservoir on water temperature in the river can be variable and result in raising or lowering the water temperature in the river by several degrees. Releases during periods of very low storage can be both warmer than incoming river flow and anoxic (low or no dissolved oxygen).

Currently, Cal-Am is under a Cease and Desist Order (CDO) from SWRCB to reduce unauthorized diversions. These diversions result in a seasonal dewatering of between four and eight miles of the lower river each year, except in very wet and extremely wet years. Although dewatering historically reached up to 50% of usable aquifer storage in extreme droughts, recent data show that Cal-Am annual production is less than at any time since the late 1950s. Even so, aquifer depletion due to Cal-Am and non-Cal-Am pumping results in an extended period when the river is disconnected from the lagoon. This prevents steelhead from moving upstream away from poorer quality water as the lagoon shrinks in the summer and late fall. Dewatering of the aquifer also delays conditions when juveniles can move downstream into the lagoon after the rainy season begins.

However, when replacement water supplies are available (proposed completion dates between 2018 and 2021), Cal-Am proposes to reduce dry season diversions in the lower river to

[2] See SWRCB Orders 95-10 and 98-04.

[3] Measured at the USGS Near Carmel gage for WY1962 to WY2015.

[4] MPWMD gage data for WY1993 to WY2016.

approximately one cfs – or about 600 AF between June 1 and November 30. This proposed change in operations will significantly reduce dry season diversions and is one of the alternative production scenarios that will be modeled using the Carmel River Basin Hydrologic Model (CRBHM). [5]

**Cal-Am and MPWMD Carmel River Water Rights Permits**

SWRCB issued permit 7130A to Cal-Am for Los Padres Dam in 1948; Cal-Am was licensed in 1985 (License 11866) to divert up to 3,030 acre-feet per annum (AFA) between October 1 of each year through May 31 of the following year; the right to divert was subsequently reduced by SWRCB Order 95-10 to 2,179 AFA, which was the estimated storage capacity of the reservoir from a 1984 Cal-Am study.

Permit 20808 for the New Los Padres Dam, which was proposed to be located about 1,800 feet downstream of the existing LPD, was issued to MPWMD in 1995. A public vote failed in 1995 on a bond issue to finance the dam and it was never built. This right was subsequently split into three water rights permits – 20808A, 20808B, and 20808C (see Figure 3). Permits 20808A and 20808C are jointly held between MPWMD and Cal-Am for diversion of excess winter season flows to storage in the Seaside Groundwater Basin (Aquifer Storage and Recovery). Permit 20808B is held by MPWMD for up to 18,674 AFA. Diversion rights associated with Permit 20808 are junior to all other rights along the Carmel River. All three permits are due for licensing by the SWRCB by 2020.

Cal-Am also has other riparian, pre-1914, and appropriative rights that allow diversions in the lower 17 miles of the river. The riparian right (60 AFY) and pre-1914 right (1,137 AFY) are not subject to meeting instream flow requirements, whereas appropriative Permit 30215 for 1,488 AFY is. MPWMD estimates that the actual long-term average diversion under permits with current instream flow requirements is about 40-50% of the nominal annual diversion limit set by the SWRCB.

[5] In addition to reduced Cal-Am diversions, recent agreements to forebear some Carmel River diversions will likely reduce non Cal-Am pumping during the dry season to a range of 1,000 to 1,200 AF. After completion of proposed water supply projects for the Monterey Peninsula, total dry season diversions may drop to 1,600 AF to 1,800 AF. Median dry season flow measured at the Don Juan Bridge in Garland Park at RM 10.8 is about 3,700 AF for the 1991 to 2016 period.

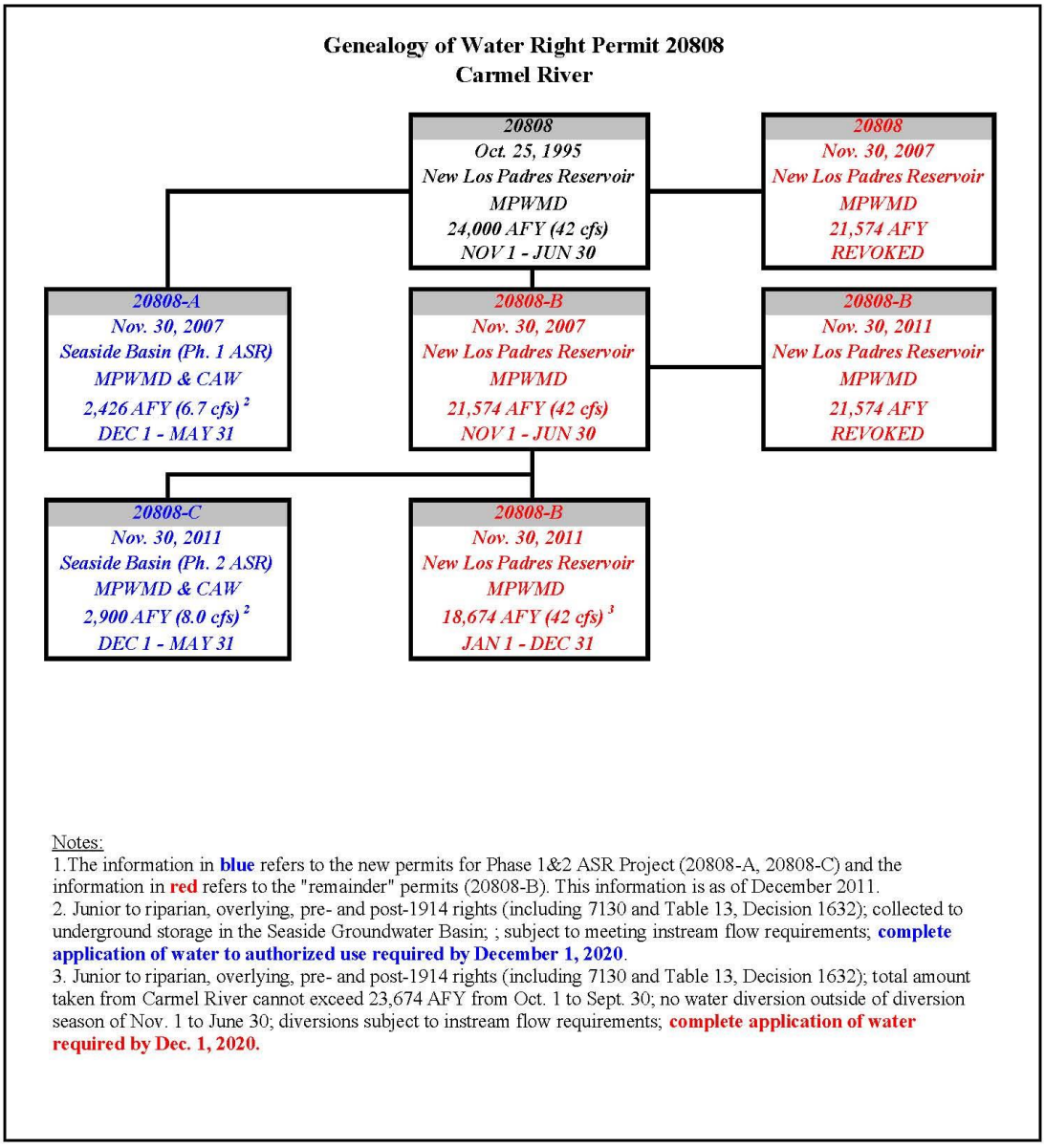



**Figure 3 – Carmel River Water Right 20808**

**Sediment Transport Discussion:** The river downstream of LPD can be divided into two distinct reaches:

Canyon or upper reach from LPD at RM 25 to Tularcitos Creek at RM 16. This reach is predominantly steep, confined in canyon and bedrock outcrop control, and has more capacity to transport sediment than there is supply. Tributary inputs of sediment are highly episodic. In this reach, active channel alluvial deposits are typically shallow, frequently scoured and re-deposited, and generally much coarser than in the downstream alluvial reach. With the removal of San Clemente Dam in 2015, the river is able to capture some of the sediment that was stored in the upper portion of the reservoir and transport it downstream. This occurred in the winter of 2016, with the effect being formation of several gravel bars in the reroute reach and sand deposition further downstream (CSUMB 2016). It is uncertain how fluvial processes will change downstream of the former dam site. Early indications after an average winter in 2015-16 are that with the increase of sediment supply, fine material winnows quickly out of steeper runs leaving gravel behind, but the fine material collects in deeper pools.

Alluvium begins to deepen near the Sleepy Hollow Bridge at RM 17.3 (the only bridge across the river in this reach) and reaches a depth of about 50 feet near the Cal-Am Russell wells located at RM 16.2. There is some low-lying housing in the proximity of the river near the confluence with Cachagua Creek. There are data to characterize channel conditions in portions of the canyon reach and its transport capabilities – especially associated with the studies for the San Clemente Dam Removal and Carmel River Reroute Project (see References and District web site).

Estimates of available sediment supply in this reach are associated with estimates of reservoir sedimentation rates based on periodic bathymetric surveys at San Clemente Reservoir and direct measurement of sediment transport (Hampson 1995, Mathews 1989). The annual sediment load at the former San Clemente Dam site is estimated at about 16 AFY – see Appendix M to the January 2008 Final EIR/EIS for the San Clemente Dam Seismic Safety Project. As is the case with the long-term sedimentation rate of LP Reservoir, the long-term rate of sediment inflow in

the main stem at San Clemente Reservoir was heavily influenced by two discrete events – the Miller Canyon fire in 1924 and the Dormody slide in the late 1970s and early 1980s.

In between episodes of erosion, the main stem develops into an armored gravel-cobble bed stream with complex stretches of riffles, runs, and deep pools. This is the present state of the stream (2016), except in the reach immediately downstream of the former San Clemente Dam site, where sand from the Carmel River Reroute project has deposited in many of the pools (CSUMB 2016).

Alluvial or lower reach from RM 16 to the mouth of the river. The river exits from the highly confined canyon and bedrock controlled reach after the confluence with Tularcitos Creek at RM 16. It is important to recognize that between the 1920s and 1960s, the river and adjacent floodplain were converted from a wide, shallow, meandering system that was braided in sections to a moderately incised, less sinuous, single-thread channel. Dam building, gravel mining, road building, floodplain development, and channel maintenance activities (bulldozing to remove vegetation) combined to constrain the active channel alignment. Sinuosity in the lower 16 miles is estimated to have dropped from about 1.3 at the beginning of the 20$^{th}$ century to about 1.15 currently. Degradation in the active channel of up to 15 feet has been documented (Kondolf 1982). Many of the previously allowed development activities in the channel and floodplain are now either prohibited or severely restricted.

Although no episodic or chronic erosion has occurred since 1998, the lower 16 miles of the river are likely not in a state of equilibrium. What is more likely is that vegetation introduced into the streamside environment over the past several decades has raised the threshold flow at which chronic erosion occurs and hardscape prevents episodic erosion that would cause a shift away from the present-day meandering single-thread system. Tributary sediment inputs have been shown to be a minor component of the sediment load, so most of the main stem load (when it is present) is attributable to bed and bank erosion.

The following is a summary gleaned from several papers listed in the Reference section as well as from field observations.

The alluvium progressively deepens from less than 50 feet at the confluence with Tularcitos Creek to more than 200 feet near the mouth of the river. After flowing past the Tularcitos Creek confluence at RM 16, the valley progressively widens, the river's transport ability diminishes and the alluvial aquifer reaches a maximum width of about ½ mile. This lower reach can be placed in the transition zone between being a single-thread or braided channel (Kondolf and Curry 1986). In this reach, there are few bedrock outcrops and changes in sediment supply, diversions for municipal supply, health of streambank vegetation, floodplain development, and the presence of hardscape on the streambanks combine to influence the form of the active channel. Since the late 1960s, about 40% of the left streambank and 47% of the right streambank along the lower 16 miles of the river have had at least one form of hardscape protection introduced and are somewhat to highly resistant to erosion[6]. Degradation in the lower 10 miles was estimated at 0.25 feet per year in the mid-1960s to mid-1970s (USGS 1983) and more recently the long-term rate appears to be a little less than 0.2 feet per year (Matthews 2008).

Due to sediment retention at the two main stem reservoirs[7], long-term sediment transport capacity in the lower reach remains greater than supply and the lower reach is considered sediment starved. This has resulted in armoring in the active channel, formation of a meandering single-thread channel in the alluvial reach, and historical degradation of the thalweg as evidenced by periodic field surveys[8]. However, as described below periods of episodic erosion have occurred in which the lower reach was transport-limited and long reaches of the river became braided and were destabilized.

Most of the streambanks in the lower 16 miles are formed of unconsolidated sands and gravels

[6] Looking downstream, based on unpublished estimate by MPWMD using River Work Permits issued, restoration project plan sets, and field inspections.

[7] Between 1921 and 2015, San Clemente Dam and Reservoir retained about 1,500 AF (or about 2.4 million cubic yards) of sediment from the upper watershed. Between 1948 and 2016, Los Padres Reservoir retained about 1,255 AF (or just over 2 million cubic yards).

[8] A complete set is on file at the District office. A partial set is on the RFP web site.

that are easily eroded in the absence of vigorous vegetation or other stabilizing component such as hardscape. This reach is flanked by housing and other property development and currently crossed by 18 bridges. Gravel mining operations between the 1920s and the 1970s removed an unknown, but significant, quantity of material from the active channel[9]. Operations to clear the active channel of riparian vegetation were routine up until the early 1980s. Diversions for municipal use annually dewater several miles of the river and cause stress and mortality of streamside vegetation.

In the lower 16-miles of the river, there have been two notable periods with episodic erosion during which the stream had an excess supply of sediment (e.g., 1978-83 and 1993-1998). The first episode occurred after a severe drought and increased well production in 1976-77 in the middle reach between RM 5 and RM 15 brought aquifer levels to as much as 50 feet below the riverbed. Most streamside vegetation in this reach died by the end of 1977 and several areas were subsequently cleared of dead vegetation by bulldozer. In the ensuing wet period, about eight miles of the river's streambanks were destabilized (Kondolf and Curry 1983). Testimony given before the SWRCB in 1992 and 1994 established a clear link between Cal-Am's pumping and the loss of vegetation along the streamside corridor. After most of Cal-Am's well pumping was transferred downstream in the mid-1980s to between RM 3 and RM 8, the lower portion of that reach became destabilized during high flows in 1993, 1995, and 1998 and required intensive restoration efforts, including use of RSP that incorporated native riparian vegetation.

During these periods of episodic erosion, the river generally responded by widening through streambank avulsion and forming depositional areas in the active channel downstream of eroded sections. The erosion and depositional process continued in a feedback loop that moved

[9] A 1966 California Division of Mines and Geology report described several gravel mining operations in the Carmel River and listed estimates of production capability in tons/day. In addition, in a personal communication to Larry Hampson in 1991, John and Bruno Odello described that "the Granite Rock Company mined several hundred thousand cubic yards of sand" near Highway 1 on two occasions in the 1970s – once for material to build the Crossroads Shopping Center and another for building materials. It is conceivable that up to about 100,000 cubic yards may have been removed. It can be inferred that perhaps ½ to one million cubic yards of material may have been mined before prohibition in the late-1970s.

downstream over a period of years. This process tends to shift the active channel toward a sand-bed stream. In some reaches, a stable single-thread channel with an active width of 70 to 100 feet and fringed with dense vegetation was transformed into wide braided reaches of up to 800 feet wide, with little or no vegetation remaining (see for example the widening of area upstream of Schulte Bridge at RM 6.7 between 1977 and 1980 and the erosion and widening that occurred at Rancho Cañada golf course in 1998 at RM 3).

Subsequent to these periods, the stream returned to being supply limited. As such, the "frequent flows" of up to the 10-year magnitude served to winnow out material smaller than gravel-sized and create vertical complexity in the lower 16 miles; however, in general the limits of the active channel are shaped by infrequent large magnitude floods coupled with installation of hardscape to restrain the river after high flows. The typical reaction to episodic erosion has been to fortify unstable streambanks with hardscape, including reinforcing streambanks by placing rip rap, gabions, concrete rubble, post and wire, car bodies, and even car tires. Since 1983, many of these practices have been prohibited and MPWMD and other regulatory agencies have encouraged biotechnical stabilization with rock riprap and gabions allowed under limited circumstances.

Many of these treatments have occurred on the outside of meanders. Due to requirements since the early 1980s to mitigate for some of the impacts from installing hardscape, riparian vegetation is incorporated into the hardscape. Areas that are dewatered during dry periods are irrigated to reduce stress on riparian vegetation. The result is that most of the lower 16 miles of the river are fringed with riparian vegetation and encroachment into the center of the active channel is common. MPWMD conducts an annual program to selectively remove vegetation in areas where debris dams could form; however, few trees are wholly removed and the vegetation quickly grows back.

Most of the lower 16 miles of river is currently a single-thread channel due to supply limitations ("sediment starvation"). In some reaches, degradation since the late 1990s has reached up to six feet and the stream has been transformed from a sand bed to gravel-cobble bed. With one exception between RM 3 and RM 4, the lower 16 miles of the alluvial reach have not undergone

significant erosion since 1998. This relatively stable period has occurred despite several peak flows that previously would have caused widespread erosion and streambank collapse. Some reaches in the lower 16 miles in the alluvial portion of the river are notable for their bedrock outcrops along the channel that impose lateral and vertical controls to channel migration.

Tributary input of sediment in the lower reach appears to coincide with episodes of erosion in the main stem. It is likely that low flow years with chronic erosion in the tributaries result in deposits of material that are stored in the active channels and moved down to the main stem only during relatively high flow years.

**Previous Studies**

Between 2001 and 2007, MEI, Inc. evaluated release of up to 1,500 acre-feet of sediment stored behind the former San Clemente Dam and generally found that releases above the historic input would likely result in aggradation and potentially raise 100-year flood elevations in some locations along the alluvial reach; however, one of the constraints in the HEC-6T sediment transport model placed a scour limit of one foot. Essentially, the model allowed significant aggradation, but little degradation during periods when the system is supply limited. While this was a conservative approach to estimating potential impacts, it is clear that periods of degradation result in a deeper channel that can store a significant volume of sediment without significantly raising flood elevations.

Previous studies by MEI indicate that additional sediment delivered to the upper reach should be transported through that reach relatively quickly. Recent experience at the Carmel River Reroute project appears to confirm this and shows that there are beneficial effects (e.g., establishment of excellent spawning habitat) as well as some negative effects (pools filled in with sand). In the upper reach, an increase in flood elevations due to channel aggradation is likely not a significant issue due to the lack of human infrastructure.

However, conditions in the lower reach are more complex. In some areas with extensive urban development in the 100-year floodplain, any increase in flood elevations due to an increase in sediment supply could be considered a significant impact. Whereas in other areas where long-

term degradation has caused incision into floodplain deposits and infrastructure is exposed, an increase of sediment could have a beneficial effect. What is unclear is how much material can be transported through the channel without a significant adverse effect on 100-year flood elevations.

**MWH Los Padres Dam Sediment Removal Feasibility Study Report**

MWH completed a report for Cal-Am in 2013 that proposed three dredging alternatives. Two of the alternatives involve moving up to 90% of the existing reservoir sediment upstream over a new access road of about 4,000 lineal feet in the Carmel River and one alternative was proposed using the area downstream of the dam to store about 40% of the existing reservoir sediment. A significant amount of information is contained in the report on dredging methods, costs, constraints and timelines.

The alternatives contained in that report have not been discussed or visited in a forum such as the policy and technical advisory committees set up between 2000 and 2012 to evaluate alternatives and designs for the removal of San Clemente Dam and construction of the rerouted Carmel River. While dredging and placing material upstream of Los Padres Reservoir in one of the upper watershed side or box canyons may be physically possible, similar alternatives at the San Clemente Dam site were investigated in the field and through other studies and were determined not to be suitable for off-channel storage or too expensive.[10]

The Consultant should provide a summary of the 2013 study for the TRC and the sediment storage sites proposed in that study should be visited by the TRC and evaluated. Field reconnaissance should include a team that can assess the impacts of creating an access route and sediment disposal site in undisturbed or relatively undisturbed habitats.

**Water Availability Analysis**

MPWMD has developed the Carmel River Basin Hydrologic Model, which is a linked surface flow and groundwater model using GSFLOW coupled to MODFLOW. The model covers the entire watershed and includes historic precipitation, well, reservoir, and runoff data. Flow and aquifer levels are simulated on a daily time step at nodes throughout the watershed and routed through the main stem and/or through the aquifer. The USGS is currently calibrating the model, which is expected to be ready for use in simulations by early 2017. MPWMD will provide results to the Consultant for the following scenarios:

[10] See Chapter 3 in the April 2006 DEIR/EIS for the San Clemente Dam Seismic Safety Project.

1) existing conditions: existing LP reservoir storage (estimate as of August 2016), existing Cal-Am diversions/operation in Carmel Valley; MPWMD will cooperate with CAW to develop assumptions for Carmel Valley operations for the short-term (i.e., 2016-2021); presume operations don't change starting in 2022 (this is to compare with and without completion of the Monterey Peninsula Water Supply Project or MPWSP); model the Pure Water Monterey Project coming on line in 2018; model ASR operations presuming the Monterey Pipeline is completed prior to the 2018 Water Year.

2) existing LP reservoir storage, proposed Cal-Am diversions/operating protocol in Carmel Valley with MPWSP completed (i.e., operations from Jan. 1, 2022 forward); MPWMD will cooperate with Cal-Am to develop assumptions for proposed Cal-Am operations; use annual depletion of reservoir storage of 10 to 20 AFY.[11]

3) existing LP reservoir storage to start; change in 2022 to new operating protocol; maintain reservoir storage at 2016 level.

4) dam removal *aka* no LP Reservoir storage; start run in 2026 (presume it takes at least 10 years to complete project); proposed Cal-Am diversions/operation w/ MPWSP;

5) recover LP reservoir storage (3,030 AF); start run in 2026 (presume it takes at least 10 years to complete project); proposed Cal-Am diversions/operation w/ MPWSP; periodic reservoir maintenance to maintain capacity.

6) expand reservoir storage to up to 9,000 AF; start run in 2026 (presume it takes at least 10 years to complete project); proposed Cal-Am diversions/operation w/ MPWSP; presume this alternative will have instream flow requirements included in existing SWRCB Permit 20808B or a modified set of instream flows.

MPWMD will provide flow duration analysis for the different alternatives. MPWMD will also

[11] Sedimentation after the 1977 Marble-Cone fire significantly influences the long-term sedimentation rate, which is 10 AFY without that event and 20 AFY with that event. A worst case analysis would be a repeat of the M-C fire within the remaining expected project life of alternatives associated with surface storage at LPD. A best case analysis would be fire behavior that does not result in increased sedimentation. A 2016 bathymetric study confirms that there was virtually no increase in sediment runoff after the 2008 Basin Complex fire in the watershed.

provide an assessment of how each alternative affects steelhead habitat availability by using an Instream Flow Incremental Method (IFIM) hydraulic model developed for the Carmel River. The IFIM model is being developed to evaluate steelhead habitat at various flows from Highway 1 to LPD. Output from these two models will be used in assessing potential benefits and impacts from the alternatives to be studied.

### 5.2. Study Overview

The project includes the following tasks:

- Task 1: Study Preparation (Consultant)
    - Task: Compile, collect, and review background information necessary for development of alternatives. This includes a literature survey of dam removal, sediment management alternatives and reservoir operations used for similar-sized reservoirs. The Consultant will also collect and analyze sediment samples from the reservoir.
    - Outcome: The deliverables will be base drawings, maps, hydrology, reservoir operations, site geology, core sample data, particle size distribution and sediment characterization.

- Task 2: Sediment Removal and Management Options (Consultant, TRC)
    - Task: Review previous studies and proposals at LPD. Determine if there are opportunities to refine previous studies or combine with other feasible alternatives for removing material from the reservoir. Additional alternatives might include conveyance to an offsite property and periodic dredging and placement of material downstream of LPD within the active channel with the intent of entraining the material into the river at high flow. This task includes a description of potential sediment bypass alternatives to manage incoming sediment load. The Consultant will meet with the TRC to discuss the initial list of alternatives.
    - Outcome: The deliverables for this task are a set of alternatives for managing existing and future sediment deposits.

- Task 3: Describe Changes to the Carmel River Due to Management Alternatives (Consultant)
    - Task: Describe changes in the quantity and quality of steelhead habitat, effects to water supply, effects to water rights, geomorphic effects to downstream reaches.
    - Outcome: The deliverables will include a mix of quantitative analysis (e.g., changes to water supply) and qualitative analysis (e.g., range of geomorphic changes).

- Task 4: Develop Preliminary Costs of Alternatives (Consultant)
    - Task: Develop an initial cost for alternatives. These costs will be used to determine initial economic feasibility of alternatives.

- Outcome: The deliverables for this task are a planning level estimate of alternative costs

- Task 5: Evaluate Alternatives (Consultant, TRC)
  - Task: The TRC and Consultant will meet to review the information from previous Tasks and develop alternatives applicable at LPD. Performance of the alternatives will be identified using a matrix approach that includes water supply, technical, fluvial, biological, and economic feasibility. Alternatives will be evaluated for overall feasibility and modified if possible.
  - Outcome: Deliverables include descriptions and drawings, evaluation of alternatives.

- Task 6: Alternatives Refinement (Consultant, TRC)
  - Task: The TRC and Consultant will meet with the goal of completing a final evaluation of the alternatives.
    - The final evaluation will summarize alternatives receiving detailed evaluation, including descriptive text and drawings for each, opinions of probable construction and operating costs, an implementation schedule, and listing of pros and cons for each and a summary of evaluation details.
    - A cost effectiveness analysis will be conducted. The preferred alternative(s) will be projects that meet objectives and are considered economically feasible.
    - Recommendations will be developed as part of this task, with consideration of the relative certainty of the capability of alternatives to address long-term sedimentation and other effects due to LPD. If feasible, relative risk and uncertainties will be described. Recommendations might include identification of alternative(s) to be pursued, and further studies needed to reduce uncertainties.
  - Outcome: Deliverables include updated descriptions, drawings and the results of the evaluation process.

- Task 7: Reporting and Recommendations (Consultant and TRC)
  - Task: This will consist of four components:
    - The Consultant will document progress and decisions made by the TRC and prepare a final report to document:
      - the process followed to prepare the report,

- development of feasible alternatives,
- evaluation criteria,
- summary of alternatives including those that were eliminated and reasons why they were eliminated, and
- results of the final evaluation and recommendations for alternatives at LPD.

▪ A draft Sediment Management Feasibility Report will be issued for review by the TRC.

o Outcome: Deliverables include a Final Sediment Management Feasibility Study report with recommendations for a preferred alternatives, or if no alternatives can be recommended, a conclusion about additional effort to develop a long-term plan for the dam.

**Carmel River Basin Hydrologic Model (CRBHM)**

Several scenarios associated with this sediment management study will require modeling of water availability using the CRBHM. The model simulates mean daily flow and aquifer levels at several points along the main stem using GSFLOW coupled to MODFLOW. Scenarios would include:

1) Baseline condition[12]:

- existing LP Reservoir storage (estimate as of August 2016) with no future sediment management (note: this may require development of two "baseline" conditions – one with a long-term siltation rate of 10 AFY loss and one with 18.5 AFY average loss);
- Cal-Am diversions/operation in Carmel Valley as described in SWRCB CDO 2016-0016; MPWMD to cooperate with Cal-Am to develop operations assumptions for Carmel River diversions for the short-term (i.e., 2016-2021);
- model ASR operations presuming the Monterey Pipeline is built and operational by WY2018, Pure Water Monterey Project delivers water by WY2019;
- presume Cal-Am operations don't change starting in 2022 – this allows a comparison with and without completion of the desalination component of the Monterey Peninsula Water Supply Project (MPWSP);

[12] Some of the baseline conditions may be altered as new information becomes available during the study.

2) Short-term projects completed, with no sediment management:

- existing LP Reservoir storage (estimate as of August 2016) with no future sediment management (note: need to re-evaluate long-term siltation rate using 2016 bathymetric study results);
- Cal-Am diversions/operation in Carmel Valley as described in SWRCB CDO 2016-0016; MPWMD to cooperate with Cal-Am to develop operations assumptions for Carmel River diversions for the short-term (i.e., 2016-2021);
- Monterey Pipeline is built by WY2018, the Pure Water Monterey Project is completed by WY2019 and the MPWSP is completed by WY2022.

3) Short-term projects completed, with management of incoming sediment:

- existing LP Reservoir storage (estimate as of August 2016) with future sediment management of incoming sediment load (at either the 10 or 18.5 AFY rate);
- Cal-Am diversions/operation in Carmel Valley as described in SWRCB CDO 2016-0016; MPWMD to cooperate with Cal-Am to develop operations assumptions for Carmel River diversions for the short-term (i.e., 2016-2021);
- Monterey Pipeline is built by WY2019, the Pure Water Monterey Project is completed by WY2019 and the MPWSP is completed by WY2022.

4) Dam removal:

- existing LP reservoir storage (estimate as of August 2016) with no future sediment management (use 10 AFY storage loss);
- Cal-Am diversions/operation in Carmel Valley as described in SWRCB CDO 2016-0016; MPWMD to cooperate with Cal-Am to develop operations assumptions for Carmel River diversions for the short-term (i.e., 2016-2021);
- Monterey Pipeline is built by WY2018, the Pure Water Monterey Project is completed by WY2019 and the MPWSP is completed by WY2022.
- dam removal in 2026.

5) Recover LP Reservoir storage to original capacity (3,030 AF):

- existing LP Reservoir storage (estimate as of August 2016);

- Cal-Am diversions/operation in Carmel Valley as described in SWRCB CDO 2016-0016; MPWMD to cooperate with Cal-Am to develop operations assumptions for Carmel River diversions for the short-term (i.e., 2016-2021);
- Monterey Pipeline is built by WY2018, the Pure Water Monterey Project is completed by WY2019 and the MPWSP is completed by WY2022.
- recover storage by 2026;
- Use long-term siltation rate, but recover to original storage every 10 years.

6) Expand reservoir storage to up to 9,000 AF:

- existing LP Reservoir storage estimate as of August 2016;
- Cal-Am diversions/operation in Carmel Valley as described in SWRCB CDO 2016-0016; MPWMD to cooperate with Cal-Am to develop operations assumptions for Carmel River diversions for the short-term (i.e., 2016-2021);
- Monterey Pipeline is built by WY2018, the Pure Water Monterey Project is completed by WY2019 and the MPWSP is completed by WY2022.
- Expand storage by 2026;
- Use long-term siltation rate, but recover to original storage every 10 years.

7) Future water availability under projected climate change scenarios:

The US Geological Survey and US Bureau of Reclamation (BuRec) are proposing to partner with MPWMD on a Carmel River Basin Study (Basin Study) that would include development of a downscaled climate change model for the basin. Five future climate scenarios are under consideration including:

- Hot-Wet ($90^{th}$ percentile temperature, $90^{th}$ percentile precipitation)
- Hot-Dry ($90^{th}$ percentile temperature, $10^{th}$ percentile precipitation)
- Central Tendency ($50^{th}$ percentile temperature, $50^{th}$ percentile precipitation)
- Warm-Dry ($10^{th}$ percentile temperature, $10^{th}$ percentile precipitation)
- Warm-Wet ($10^{th}$ percentile temperature, $90^{th}$ percentile precipitation)

A Plan of Study and an agreement to fund the study are tentatively scheduled to be completed in Q1, 2017. If this work goes forward, MPWMD will work with BuRec to develop water

availability analysis for these climate scenarios and adaptation strategies that include balancing water needs for the environment, municipal and industrial needs. One or more feasible alternatives from this sediment management study may undergo additional analysis using data from the climate change model to see how the alternative would function with a different climate.

If data are available from the Basin Study, MPWMD would provide a flow duration analysis for each scenario. The Consultant would use the results as one of the criteria to compare sediment management alternatives.

**Carmel River Instream Flow Incremental Method (IFIM) Hydraulic Study[13]**

Using an IFIM hydraulic model developed for the Carmel River, MPWMD would use the results of the CRBHM to evaluate the effects to steelhead habitat from sediment management alternatives. Data output from the IFIM would be similar to output from the CRBHM – i.e., a time series analysis indicating the presence and quality of steelhead habitat under different water availability alternatives. The Consultant would use the results as one of the criteria to compare sediment management alternatives.

### 5.3. Study Management Structure

**Technical Review Committee (TRC)**

A technical review committee (TRC) is to be formed from staff at California American Water Company, Monterey Peninsula Water Management District, National Marine Fisheries Service, and California Department of Fish and Wildlife. The TRC will guide the development and review of the Study Plan. It is anticipated that the TRC would be involved in reviewing proposals for conducting the study and recommend a consultant after review of proposals. Cal-Am and MPWMD will make a final determination before MPWMD will authorize work by the consultant on the Project.

[13] MPWMD worked with CDFW and SWRCB to gather habitat type data, select river transects, gather flow measurements, perform substrate analysis, and test Habitat Suitability Curves from the Big Sur River. The hydraulic portion of the model (1-D and 2-D) is scheduled for completion in Q4, 2016. The full model will be sent to CDFW and NMFS for review after completion of the hydraulic elements.

- **Technical Review Committee Composition** – The TRC is to have experience in the fields of engineering, geomorphology, and steelhead biology and include representatives of regulatory agencies, including NMFS, and CDFW. The consultant will advise the TRC and prepare technical documents for review. Additional agency disciplines may be added to the TRC if considered necessary.[14]

- **Responsibility** – Cal-Am and MPWMD are ultimately responsible for implementation of the Study Plan and an evaluation report. MPWMD and Cal-Am will act as facilitators and as lead when necessary during workshops with the TRC and the Advisory Group. The Consultant for the project will complete all work that is not explicitly directed to the TRC.

  MPWMD is subject to the Public Records Act and intends to implement the Study Plan in an independent, transparent, open, and objective manner. With the exception of information designated as confidential by Cal-Am, consultant work products, TRC meeting notes and associated work products will be available upon request.

  Cal-Am shall not be required to provide MPWMD or the TRC with any confidential, proprietary, or otherwise sensitive information or records as determined by Cal-Am in its sole discretion (Confidential Information). If Cal-Am provides Confidential Information for the purposes of the Project, the Confidential Information shall be treated in the same manner as "Confidential Information" is treated under the California American Water-MPWMD Non-Disclosure Agreement dated June 22, 2009, with the exception that Cal-Am shall not charge MPWMD for the costs of providing Confidential Information.

  MPWMD and Cal-Am will be responsible for jointly managing the Project, including providing a meeting place and setting meetings, circulating materials, and providing other support as necessary.

  The TRC's responsibility is to assure that the Study Plan is supported by the best available technical and biological information and will consider input from the Advisory Group. A TRC goal is to develop an objective, useful evaluation and conclusion

[14] The Division of Safety of Dams (DSOD) is also a regulating agency that would have to approve any alternative that could affect the safety of LPD. Previous direction about Los Padres Dam from DSOD is that they would become involved if there is an alternative that could affect LPD safety directly.

regarding sediment management and dam removal at LPD. The TRC will be responsible for decision-making involving evaluation criteria, fatal flaw analysis, and prioritizing alternatives.

It should be noted that this Project will provide information about potential alternatives; however, the dam owner, in consultation with the regulatory community will decide what steps to take after the Project is completed.

**Study Plan Audience**

The intended audience for the Study Plan includes:

a) The TRC, as a guidance document which will be utilized to develop a scope of work, budget, and schedule to implement the Study Plan;
b) Cal-Am, for scope comment and approval, for consultation needs to communicate the approach to address NMFS' requirements;
c) NMFS and CDFW for effective collaboration with the TRC and to monitor how the study is conducted;
d) DSOD, for its assessment of compliance with dam safety and maintenance requirements; and
e) Other decision makers that may become involved; and
e) Riverfront Property Owners and Stakeholders interested in the topic.

**Principles of the Study Plan**

- Evaluation criteria for alternatives shall include evaluation of both injuries and benefits. The broad areas of study include water supply, steelhead passage and habitat in the river, and potential fluvial effects of alternatives. It is intended that this study address long-term effects, including climate change[15]. To the extent feasible, evaluation and selection criteria should consider whether an alternative is sustainable in the long term.
- Economic feasibility will be addressed in the technical feasibility evaluation focused on relative cost of alternatives. After the feasibility analysis of alternatives is completed, a planning level cost estimate will be completed for use in a comprehensive feasibility analysis of alternatives.

[15] Study of climate change effects on any feasible alternatives is contingent on entering into an agreement with the US Bureau of Reclamation to carry out a Basin Study for the Carmel River.

**Approach**

This process will document plan development and the resulting conceptual design configurations for the alternatives, the evaluation criteria, the evaluation process and results, and recommended alternative(s).

The decision criteria for determining feasibility include a combination of technical and biological evaluations which will provide information on the applicability of alternatives to the issues to be studied (i.e., reservoir passage, habitat modification, water supply, geomorphic effects, economic feasibility). Technical feasibility is governed by engineering aspects including the physical dam and reservoir characteristics, hydrology, water storage and release operations, and fluvial processes in the river. Steelhead behavioral responses to alternatives are influenced by flows and water quality, availability and characteristics of habitat, and migratory pathways. Economic aspects include project construction costs and operation and maintenance costs. These factors will be integrated and the process conducted iteratively such that intermediate results from each analysis will be used to refine and optimize alternatives throughout this process.

Following an objective evaluation, the TRC will provide a recommendation regarding alternatives and will rank alternatives in order of feasibility.

**Definitions and Applications of Feasibility**

Feasibility in this Study Plan means the technical, biological, economic feasibility, and other factors of either maintaining LPD and addressing the issues brought forward by NMFS or removing LPD. This study is intended to identify the feasibility and effects of:
1) managing existing and future sediment deposits at the site;
2) enlarging reservoir storage;
3) removing LPD.

***Technical Feasibility***

Technical feasibility includes an engineering evaluation of sediment management alternatives, changes to the dam, and geomorphic effects downstream. Engineering feasibility is governed by physical dam and reservoir characteristics, sediment transport, hydrology, and water storage and release operations. Technical feasibility will include whether alternatives could affect dam safety.

Technical feasibility will be judged using criteria that are “yes” or “no” (feasible or not) or scalar

(presenting relative feasibility among alternatives). The TRC will use thresholds in the scoring of evaluation criteria, such as constructability, safety, water supply yield, and geomorphic changes downstream of LPD to assess feasibility. For example, dam safety might have a threshold such that an alternative must score high to be considered feasible; alternatives that do not score at least the minimum value will be considered fatally flawed. Thresholds, or minimum values and scores are subjective; consistent definitions will be necessary to establish these values.

***Water Rights***

A significant portion of MPWMD and Cal-Am rights along the Carmel River are assigned at or near the LPD site. Recovery to original capacity could involve a Change Petition to the SWRCB. A reservoir expansion alternative could involve mixing water rights with different instream flow requirements (i.e., License 11866, Permit 20808B). For a dam removal alternative, the loss of existing water rights and potential need for replacement supply needs to be considered. The feasibility of changing the location of diversions needs to be considered and the conditions under which future diversions could be allowed. It should be noted that a submittal of a Petition for Change to the SWRCB could trigger a re-examination of Public Trust and ESA issues involved with impacts to S-CCC steelhead from diversions.

Because existing riparian properties with rights to divert Carmel River surface flow and underflow do not have a right to divert stored water released to the river, it is not anticipated that increases in surface storage at LPD would have an effect on downstream rights; however, for the dam removal alternative, the Consultant should explore the effect that dam removal has on the availability of flow during dry periods.[16]

***Biological Feasibility***

Biological feasibility will focus on effects alternatives may have on the overall population of S-CCC steelhead, including (but not limited to) habitat and passage from the ocean through the reservoir area, water quality in the reservoir and of water and/or sediment releases from the reservoir.[17] It is recognized that alternatives may also have effects on other sensitive species in the river such as Western pond turtles and California red-legged frogs; however, study of effects to these species is beyond the scope of this study.

[16] A water availability analysis for the "no dam" alternative using a linked surface water-groundwater model should provide estimates of available aquifer storage. Results will be provided to the Consultant.

[17]The effect to steelhead habitat from changes in flow releases will be evaluated using an IFIM simulation hydraulic model. Results will be provided to the Consultant.

***Economic Feasibility***

The TRC's objective is to recommend a feasible alternative(s) for LPD. However, the evaluation may result in alternatives that meet the tests of technical or biological feasibility or satisfy water rights concerns, but have inherent risks or uncertainties, and may also significantly vary in cost. As applied here, economic feasibility has two components:

**1. Financial feasibility** – Can the project proponent afford to implement the recommended alternative(s)? This will likely require a cost examination, including impacts assessment on operations and customers. The cost evaluation is an important factor for an evaluation and decision.

**2. Cost effectiveness analysis –** Alternatives will result in varying levels of change in surface storage and could have significantly different timelines for implementation. For example, dredging over a short period for additional capacity could be financed in several ways that affect the cost to the ratepayers; whereas, periodic dredging of smaller amounts could be accomplished on a pay-as-you-go basis. A method will need to be devised to develop one or more standard metrics for comparison between alternatives with differing funding requirements.

**Study Methods**

This section provides additional study detail pertaining to a work plan that is intended to guide the conduct of the feasibility analysis. A work breakdown structure with major task headings is provided with defined tasks that can be used as the basis of a scope of work. A schedule, showing each task and its relationship to other tasks along with a start date, duration, and planned completion date per the descriptions below is provided at the end of the Tasks Section.

An important component of the study will be communication among and between TRC members. In addition, Cal-Am and MPWMD may provide periodic public updates through web sites, public meetings, and group presentations. The former will be accomplished through meetings and review of technical information. In terms of direct communication, the TRC will have a series of meetings and web calls that will serve to discuss the TRC's progress on activities that will be used to present and discuss the concepts under consideration. Several meetings are proposed to provide information, receive feedback and discuss the Project. The meetings will be scheduled to take place at specific milestones in the Project, when results are available and input is required.

The following Meeting Protocols are recommended for the Study implementation and have been incorporated into the Study Plan schedule presented in Section 4.9.

- TRC meetings are intended to be facilitated by the Consultant with assistance from Cal-Am and MPWMD. TRC members should physically attend; however, web meetings may be held due to distance and time constraints. Technical experts will be invited from regulatory agencies to assure that the TRC has proper and accurate information so that technical questions can be answered in a timely manner.

- Reasonable meeting schedule dates and distribution of information prior to the meetings will be managed by the Consultant with assistance from Cal-Am and MPWMD. Meetings will be scheduled at least six weeks in advance, and will be announced with a time, place, expected attendee list, and a preliminary agenda. Preliminary meeting dates are identified in the schedule, which will be updated once an agreement for services is executed.

- Meeting notes will be taken by the Consultant and a draft meeting record will be distributed within two weeks of each meeting for review and approval. All meeting agendas and notes are intended to be part of the record regarding this study. Comments by the TRC should be submitted within a week after receipt.

### 5.4. Tasks

#### Task 1 Feasibility Study Preparation

Task 1 is focused on the technical preparation for concept development. The Consultant will compile and review salient background information needed to prepare for a concept development workshop with the TRC, and will prepare workshop materials including alternative concepts, evaluation criteria and an evaluation process. The review will allow TRC members to become familiar with the operational, physical, hydrologic, and biological setting of the LPD and potential effects to the Carmel River, the range of alternatives that could be considered, and draft criteria to evaluate concepts. This information will be important for identifying concepts and alternatives that are compatible with hydrological and physical constraints and that meet study objectives.

This background information will be utilized and added to as necessary throughout all tasks of the Study, and will be documented in the Final Report.

### Task 1-1 Compile Background Information (Consultant)

Information to be compiled and reviewed will include:

- Existing inflow/outflow and reservoir operations summary, with a brief narrative on operations in a:
    - Average water year
    - Wet water year
    - Single-critically dry water year, and
    - Multiple-dry water year scenarios (up to 4 years with dry or critically dry conditions)
- Biological design criteria and data summary that includes:
    - Water quality data in the reservoir and downstream of LPD – this includes temperature, turbidity, dissolved oxygen and other constituents affecting steelhead
    - Water quality goals
- Geomorphic data
    - Past geomorphic analyses of the Carmel River
    - Active channel data including particle size distributions, thalweg and cross-section surveys, bedload and suspended load data, sediment transport and stream power relationships
    - Flood maps, including identification of frequently flooded areas
    - Aerial photographs – including assessments of streamside vegetation
    - Structural protection along river
- Reservoir data
    - Historic and existing reservoir bathymetric data
    - Studies of fire effects
    - Sedimentation rates and reservoir trap efficiency
    - Previous dredging studies
    - Steelhead studies on behavior through the reservoirs
- Costs
    - Costs (e.g., on a per acre-foot or other basis of comparison) from other relevant dam decommissioning, dredging, expansion projects, and sediment management projects

*The deliverables for this task include:*

- *a compilation of background information related to the project*

### Task 1-2 Prepare Evaluation Criteria (Consultant)

Following the compilation, preparation, and review of background information, the Consultant will prepare the draft evaluation criteria including water rights, technical, biological and economic feasibility criteria. The criteria should include a description of "fatal flaws" that would preclude a concept from advancing further. A time period should be defined over which to compare alternatives. This could be related to expected reservoir siltation rates, operational effectiveness of the reservoir (i.e., ability to meet release requirements), or other parameter.

If an analysis of climate change effects on long-term water availability at LPD is available, at least the mean of the ensemble of outlooks should be included as one of the evaluation criteria.[18]

*The deliverables for this task include:*

- *draft feasibility criteria*

### Task 1-3 Identify Critical Data Gaps (Consultant)

The Consultant will identify missing or additional desired information and appropriate steps to acquire the necessary material. This process to address any information gaps will be identified based on the specifics of the necessary information, and a plan to address this information need will be formulated for TRC review.

*The deliverables for this task include:*

- *identification of missing data or information*
- *proposal for acquiring data or information*

### Task 1-4 TRC Meeting #1

The TRC and Consultant will meet to discuss project goals and expected outcomes, background information, evaluation criteria and critical data gaps. An information package containing a summary suitable for use at a workshop will be distributed to the TRC in advance of the meeting.

[18] MPWMD is developing a linked surface-groundwater model (the Carmel River Basin Hydrologic Model) for the Carmel River watershed based on GSFLOW and MODFLOW. The U.S. Bureau of Reclamation will be contracting in late 2016 with the USGS to downscale a Global Climate Change model to the Carmel River watershed. Several future scenarios will be evaluated out to year 2099 and results will be incorporated into the CRBHM to determine long-term water availability in the watershed.

An appropriate review period of three to six weeks is recommended for technical representatives to review and discuss this information prior to the workshop.

*The deliverables for this task include:*

- *technical memo summarizing background information, evaluation criteria, and data gaps.*
- *workshop agenda*

**Meeting Protocols and Preparation**

The session will be conducted with few limitations. A TRC member will be selected as a facilitator prior to the meeting to assure the workshop is conducted in an efficient manner. The Consultant should be prepared to send at least one person to the MPWMD office or other agreed-upon location to assist with conducting the meeting. Clerical staff should be provided to record and distribute draft meeting notes for review. Workshop facilities will be suitable for a team meeting, with access to web broadcast, presentation screen, and teleconference facilities for TRC members unable to attend in person.

- Physical considerations are the physical background and setting into which sediment management alternatives must be built and operated. They describe aspects of the dam, reservoir, stream channel, hydrology, facility operations, and steelhead biology that must be considered in the design of alternatives.
- The Consultant will provide evaluation criteria for review in order to estimate each alternative's expected level of success. Evaluation criteria are similar to physical considerations though are specific and quantified. An initial list of evaluation criteria is in Appendix C.

In addition to the evaluation criteria (see draft criteria in Appendix A), the following considerations should be included in the TRC discussion:

- Additional dam and reservoir considerations include the topography and habitat around it, access to and from the site, and ancillary structures;
- Additional operational considerations include any effects on dam operation both during normal operations and during any construction activity that may take place in the future;
- Biological considerations include potential temporary impacts to steelhead as a result of activities at the dam and reservoir.

**Task 2 Sediment Management Options**

This task involves obtaining and/or analyzing sediment data in the reservoir, a review of previous dredging studies and proposals at LPD, analysis of historical sedimentation rates, description of alternatives to convey incoming future sediment loads around LPD, and methods to distribute existing reservoir deposits downstream. In addition to reviewing options for dredging, the Consultant will determine if there are additional feasible alternatives for removing material from the reservoir and transporting it to a disposal site. These alternatives could include conveyance to an offsite property and periodic dredging and placement of material downstream of LPD within the active channel with the intent of entraining the material into the river at high flow.

This task also includes a description of potential sediment management or bypass alternatives to manage existing and future incoming sediment, including an evaluation of such alternatives as providing a sediment capture area within the reservoir, sluicing fine material during high flows, and construction of a tunnel to bypass incoming sediment. The Consultant will meet with the TRC to discuss the initial list of alternatives.

**Task 2-1 Obtain and Analyze Reservoir Sediment Samples**

Los Padres Reservoir has several zones of deposition that include fines, organics (both vegetative debris and fire-related material), slide material, and sands, gravels, cobbles and boulders. Original reservoir topography and bathymetric studies are available to assist in determining approximate sediment overburden depth. A primary goal of this task is to characterize the depth, type, and size of material in these various zones to a level commensurate with the goals of this study – i.e., at a level that can screen and compare dredging and other sediment management alternatives.

A stratigraphic map should be developed showing types and thicknesses of materials in the deposit. A variety of methods are likely to be required to gather data due to the presence of wet areas and both shallow and potentially deep water within the reservoir (up to 75 feet). The reservoir is normally drawn down to its lowest level in fall; however, the reservoir will not be drawn down to accommodate sediment sampling. It should be noted that the 1947 capacity curve showed reservoir storage beginning at about elevation 930, or about 110 feet below the

spillway. Data obtained near the dam face should characterize sediment down to the original (older) alluvium in the former main stem channel.

The Consultant will propose methods of collecting data and a suitable frequency to adequately characterize the reservoir sediments and the zones of distribution from the interior of the dam to the head of the reservoir.

*The deliverables for this task include:*

- *logs of bores and/or test pits*
- *grain size analysis*
- *particle size distribution*
- *sediment profile along pre-dam main stem alignment*
- *estimate and location of volumes of organics, fines, sands, gravel, and cobble*

*Note: The sediment characterization study should be completed and provided to the TRC prior to meeting #1.*

### Task 2-2 Describe Alternatives

With this task, the consultant will describe alternatives and potential effects, both positive and negative, from each alternative. The discussion of each alternative should provide enough detail to fully understand the location of a proposed alternative, potential extent of effects, complexity of the alternative, whether the alternative is short-term or long-term, and list the potential impacts and benefits. If possible, a characterization of costs should be described (e.g., to help screen alternatives from relatively low-cost to extreme high cost).

**1) No Action Alternative.** This may become the baseline for comparing alternatives to. The Consultant will evaluate the effect of taking no action to manage the existing sediment accumulation in the reservoir or future sediment inputs. Considerations would include:

- effects on the downstream Behavioral Guidance System;
- effects on steelhead migration over LPD and through LP Reservoir;
- effects to downstream channel geometry and habitat for steelhead;
- compliance with SWRCB water rights permit conditions;

- effects to the water supply for the Monterey Peninsula;
- dam safety.

**2) Dam removal -** Considerations include:

- potential improvements to steelhead passage, restoration of river habitat within the reservoir area;
- potential for public ownership of reservoir property;
- expected response of active channel and potential impacts to downstream properties from resumption of the natural sediment load;
- reduction in dry season flow and the effect on steelhead habitat below LPD;
- the effect to water rights and municipal water supply;
- impacts to local residents from construction traffic;
- disposal or stabilization of existing reservoir sediment;
- for phased removal, a PMF of 36,000 cfs

**3a) Dredge and place sediment on the Cal-Am property downstream of LPD**. The Consultant will review the 2013 MWH report and evaluate whether the downstream sediment disposal site can be expanded to accommodate dredging the reservoir to original capacity. Considerations include:

- maintaining dam safety;
- sustainability;
- impacts to local residents from construction traffic;
- effects to downstream channel geometry and habitat for steelhead;
- effects on steelhead passage over LPD and through the reservoir;
- municipal and environmental benefits from an increased water supply.

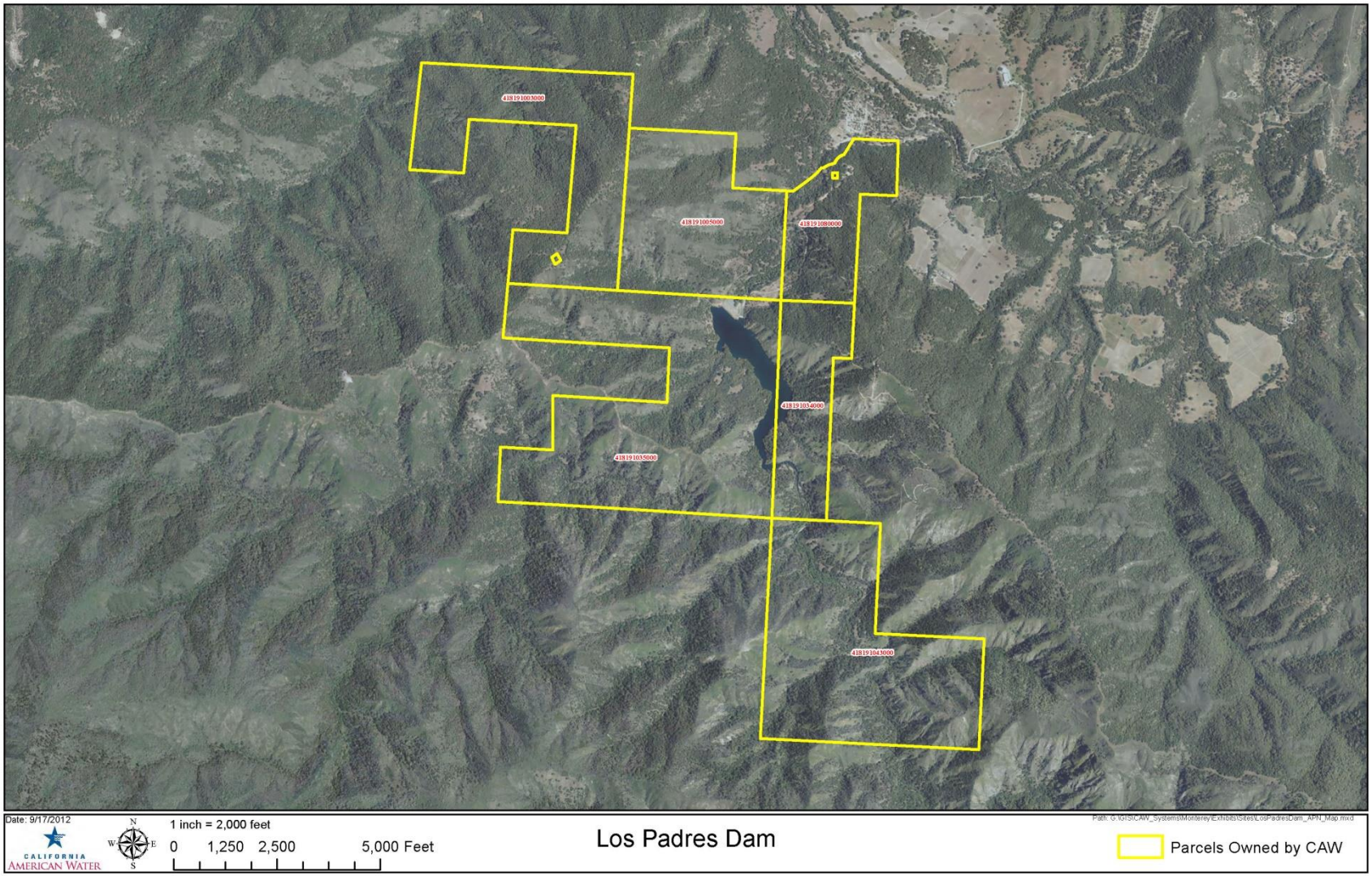
**3b) Dredge and place sediment off the Cal-Am property for storage**. The Consultant will described dredging the reservoir to original capacity and transporting some or all reservoir sediment to an offsite area. With this alternative, existing public roads within Cachagua Valley would not be used (i.e., Nason Road, Cachagua Road and Tassajara Road); however, the concept

of building a new road or conveyor system on private property could be evaluated. This concept could be combined with placement of a portion of material on the Cal-Am property and the remainder off-site. It is expected that many of the same considerations as Alternative 3a would apply. Figure 4 shows the approximate location of Cal-Am owned parcels in the vicinity of LPD.

**4) Reservoir storage expansion** – The Consultant will describe an expansion of surface storage of up to 9,000 AF with a rubber dam, small dam raise at the existing dam, or with construction of a new dam downstream at the elevation of the existing dam (i.e., elev. = 1040 NGVD) that would inundate the existing dam, or expand surface storage with a combination of methods. Considerations include:

- maintaining dam safety; passage of the PMF;
- sustainability, especially of surface storage;
- local impacts from traffic and noise;
- effects to downstream channel geometry and habitat for steelhead;
- effects on steelhead passage over a dam and through the reservoir;
- water availability analysis (i.e., what effects would alternatives have on instream flows);
- municipal and environmental benefits from an increased water supply.

**Figure 4 – Approximate location of California America Water property**



**5) Sediment management program –** For alternatives involving retention or expansion of LPD, a sediment management program needs to be evaluated. The program would describe levels of sediment management that could result in either maintaining the existing surface storage capacity or increasing surface storage over time up to the original reservoir capacity. The program might consider periodic dredging and removal offsite or periodic dredging and placement downstream of LPD with the intent to allow the material to be captured and entrained by the river at high flows. Other combinations could be evaluated

Considerations include:

- maintaining dam safety;
- sustainability – how frequently would sediment management be required?
- effect of fire/landslides in the watershed;
- beneficial effects to downstream aquatic habitat (e.g., from restoring a more natural sediment load);
- harmful effects on steelhead passage (e.g., from increased bedload and suspended load during high flows);
- effects to downstream channel geometry;
- effects on flood elevations;
- municipal and environmental benefits from an increased water supply.

*The deliverables for this task include:*

- *technical memo describing alternatives and considerations, with preliminary drawings as appropriate*

### Task 2-3 Evaluate Geomorphic Effects of Changes in Sediment Load

With this task, the Consultant will evaluate the potential effects from future sediment loading in the river downstream of LPD. Consideration should be given to 1) existing and future effects from the No Action Alternative; 2) existing and future effects from alternatives that do not involve passage of sediment downstream of LPD; and 3) effects on the active channel from increased sediment transport past LPD. The result should be a description of the range of expected effects to the active channel.

The Consultant will estimate the natural (i.e., unimpaired) range of suspended and bedload transport in the Carmel River and the optimum combination (or range) of suspended load, bedload, and flow for entraining sediment.

The optimum solution would allow a significant portion of suspended sediment to pass through the river to Carmel Bay; improve substrate for spawning and rearing downstream; restore a natural rate of delivery of sand to the Carmel River State Beach; and minimize the risk of aggradation of river deposits that could lead to increased flood risk.

One goal with this task is to establish sediment transport rating curves at Los Padres Dam for bedload and suspended load that reflect pre-dam conditions (i.e., prior to 1948) and determine if it is feasible to replicate those rates downstream of LPD. The Consultant will establish a range of flows at which sediment could be entrained, determine the gradation of material to entrain, propose a method to relocate sediment to an area where the river can capture the sediment, and estimate the annual volume of sediment that could be transported.

**Sediment Transport Alternatives to be Considered**

Alternatives range from no sediment moving past LPD in the short-term (i.e., status quo) to an increase in sediment transport past LPD that would result in evacuation of reservoir sediments and incoming sediment load.

**Characterize Potential Active Channel Changes**: The Consultant will propose a method to evaluate potential changes in at least four reaches of the river including 1) interdam reach between LPD and the upstream end of the inundation zone of the former San Clemente Reservoir; 2) SC Reservoir to Camp Stephani at RM 15.5; 3) Camp Stephani to the Narrows at RM 9.8; Narrows to the ocean. A long-term record dating back to 1939 exists of aerial imagery of the river that can be used to assist in describing historical changes.

*The deliverables for this task include:*

- *technical memo describing alternatives and potential geomorphic changes to downstream areas including to downstream properties adjacent to the active channel, changes in sediment transport, methods for moving, sorting, storing, and entraining sediment, and an evaluation of the timing and amount of sediment that could be passed into the river and to the ocean*

**Task 3 Evaluate Effects on Steelhead**

This task is intended to evaluate and summarize potential effects to steelhead and their habitats, in the context of the S-CCC steelhead population, as a result of the alternatives to be studied.

**Task 3-1 Increases in Sediment Transport**

The Consultant will evaluate the effect of increases in suspended load and bedload associated with alternative sediment management actions on all steelhead life stages. This includes effects on juvenile and adult migration; spawning and rearing substrate and habitat; and effects on redds and alevins. The analysis should consider both seasonal timing and amount of sediment movement and long-term effects. It is clear steelhead in the Carmel River adapted to a natural wide variation in sediment load; however, no data exist to understand what thresholds of increased suspended load and bedload this population can tolerate. The Consultant should consider if a correlation can be established between changes in sediment load and changes in steelhead population in at least three reaches: a) at the Carmel River lagoon; b) RM 1 to RM 16; and c) RM 16 to RM 25.

**Task 3-2 No Increase in Sediment Transport**

For alternatives that result in no sediment being transported past LPD in the foreseeable future, the Consultant should describe the expected effect on spawning and rearing substrate downstream of LPD. To the extent feasible, an estimate should be made of the minimum volume and gradation of bedload material necessary to re-establish spawning and rearing in areas considered to be armored or otherwise impacted by existing sediment starvation.

**Task 3-3 Incorporate Data from Alternative Water Supply Options**

MPWMD will provide time series data of water availability and availability of steelhead habitat based on water availability in the main stem for the alternatives to be studied. For alternatives involving reservoir storage expansion, the effect of a larger volume of water in the reservoir

should be described. The Consultant will present the information as part of the evaluation criteria.

*The deliverables for Task 3 include:*

- *technical memo summarizing effects to steelhead of varying levels of water supply and sediment transport in the river and potential changes to steelhead and their habitats;*

**Task 4 Identify Feasible Alternatives**

- The Consultant will present results from previous tasks at meetings with the TRC, develop a list of feasible alternatives, evaluate benefits and impacts, and rank alternatives.

**Task 4-1 TRC Meeting #2**

The TRC and Consultant will meet to discuss feasible alternatives and criteria for evaluation. Using the information developed in Tasks 1 and 2, the Consultant will develop a draft evaluation matrix of alternatives. An information package containing a summary suitable for use at a workshop will be distributed to the TRC in advance of the meeting. An appropriate review period of three to six weeks is recommended for technical representatives to review and discuss this information prior to the workshop.

**Workshop Agenda**

- Briefly review background information, including previous technical memos.
- Review and update evaluation and comparison criteria prior to beginning discussion, so all meeting attendees are familiar with the criteria that must be met or addressed.
- Discuss alternatives matrix; identify risks and uncertainties associated with each concept, and develop a list of study and information needs that will be required to finalize selection of concepts. This will include any information needed to confirm poor viability of any concept with fatal flaws.
- Review concepts with respect to obvious fatal flaws. Any alternatives that are not constructible, or that have less than a good chance of satisfying all crucial criteria (i.e. fatally flawed) will be dropped from consideration. If a concept is to be dropped due to high risk or uncertainty, discuss how this uncertainty could be reduced. Descriptions of those alternatives and their fatal flaws will be summarized with a meeting record for the final report.

- Assign a priority to develop additional information or design drawings for short-listed alternatives.
- Document those that were not selected.
- Adopt a common format for alternative development.

*The deliverables for this task include:*

- *technical memo/meeting report describing alternatives considered and discarded, conclusions and recommendations for further analysis*
- *workshop agenda, meeting notes*

It is intended that this summary document will be distributed within two weeks of the meeting date to the TRC and to the Advisory Group.

### Task 4-2 Alternative Development

This task is to further develop alternatives previously identified and focus on uncertainties concerning impacts, benefits, costs, environmental compliance, permitting, and funding of alternatives. Dam removal will be included in the final set of alternatives throughout the study, regardless of its perceived feasibility.

Alternatives that are not feasible will be dropped from consideration and reasons for them being dropped, will be described. It may be the case that an alternative scores low due to a specific uncertainty; in this case, the alternative will be retained and a plan to address this uncertainty developed.

A meeting will be held with the Consultant and TRC to present the process alternatives and their relative scores after which the TRC will propose a final list of feasible alternatives for additional development.

The primary goals of this task are:

- Define each concept with respect to its operational characteristics.
- Draw and define the concepts so that the design intent is clearly communicated. A common format for drawings will be developed by the Consultant in this task.

For each alternative, the Consultant will provide:

- Plan and sectional drawings to scale, to fully define the concept;
- Function design features, shown on the sketches, or on separate sheets;
- Brief write-up suitable for review to describe the concept's key characteristics and how the alternative operates;
- List of pros and cons for each alternative relative to operations;
- An evaluation matrix containing alternatives and the evaluation criteria. The evaluation matrix should build on the criteria previously developed and should be presented in a grid form or Pugh Matrix, which breaks the alternatives down into discrete elements for comparison, evaluation, and optimization.

With the additional investigation, some concepts or alternatives may prove to be infeasible or may be modified. As noted above, a dam removal option will be retained for the duration of the study.

*The deliverables for this task include:*

- *compilation of alternatives*
- *an evaluation matrix*
- *supporting documentation*

**Task 4-3 Meeting #3**

The TRC and Consultant will meet to review and refine alternatives. Protocols are to be similar to Meeting #1.

The evaluation matrix will be utilized during a meeting to prepare an evaluation of the alternatives and result in consolidated scores. The results of the grid analysis can be used to further refine facility components, identify data gaps, and assess the potential influence of uncertainties. However, the grid analysis is only a decision tool; the results are used to influence but not dictate decisions. The process of developing and using the matrix is explained in Appendix C along with provisional criteria that will be used within it.

Based on the results of this evaluation, the Consultant will work to update descriptions and drawings for the alternatives. The results will be presented to the TRC for review, with the goals of receiving input and the TRC reaching consensus on a final list of alternatives.

The meeting will be organized as follows:

- The Consultant will present an overview of the work completed to date, and will address any questions from the previously distributed meeting notes.
- Discuss and refine evaluation criteria based on the current state of the alternatives.
- Identify any criteria that, if not satisfied to some degree, would constitute a fatal flaw.
- Identify any uncertainties and/or risks associated with each alternative, and a means to address these issues.
- Review the alternative evaluation matrix and update the matrix based on input at the meeting.
- Perform a fatal flaw analysis on each alternative; eliminate alternatives with fatal flaws; and record eliminated alternatives for reporting in the meeting notes.

*The deliverable for this task will be a meeting summary with the following:*

- *Final evaluation spreadsheet.*
- *List of alternatives identified in the session.*
- *List of additional information necessary to reduce uncertainty or risks associated with each alternative.*
- *A discussion of the fatal flaw analysis and documentation of alternatives eliminated from further consideration at this time.*
- *A recommendation of alternatives for further development.*

A draft meeting summary is intended for review by the TRC prior to finalizing the meeting summary.

**Task 5 Final Report**

Once alternatives are defined, an initial opinion of probable construction and operating cost will be provided in this task for each alternative. Estimates should be to a Class 5 level as defined by the American Association of Cost Engineers International (AACE)[19]. The cost estimates will be

[19] "AACE International Class 5 estimates are generally prepared based on very limited information, and subsequently have wide accuracy ranges. Typically, engineering is 0% to 10% complete. They are typically used for any number of business planning purposes, such as but not limited to market studies, assessment of initial viability, evaluation of alternate schemes, project screening, project location studies, evaluation of resource needs and budgeting, or long-range capital planning. Virtually all Class 5 estimates use stochastic estimating methods such as cost curves, capacity factors, and other parametric and modeling techniques. Expected accuracy ranges are from -20% to -50% on the low side and +30% to +100% on the high side, depending on the technological complexity of

suitable for comparison of the alternatives, but may not reflect an accurate number for capital budgeting as they will be developed based on very limited information. The level of accuracy of the estimate should be commensurate with a concept-level screening process and – depending on the complexity of an alternative – may have a large expected accuracy range. The estimated performance of the alternatives over the long-term will be compared.[20]

The Consultant will prepare describe operational protocols and issues, address comments and/or issues brought up at previous meetings, and address constructability issues and any remaining data needs or significant risks. A dam removal option and reservoir expansion option will be included in the final list of alternatives. A draft outline for the final report will be developed for review by the TRC.

The TRC will review the technical feasibility of the alternative(s), the expected performance, and the cost to construct and operate each alternative. Evaluation of alternatives will include strong consideration of the risk and uncertainties associated with the implementation and performance of the alternatives and whether alternatives would include continuation of the existing trap and transport facilities. If necessary, the Consultant and TRC will meet to review the final set of alternatives before the Final Report is accepted.

If there is a consensus on evaluation of alternatives by the TRC, the Study terminates, and Cal-Am and others may formulate an implementation plan to carry the recommendation(s) forward. If there is no consensus, it is presumed that the status quo would not change (i.e., the dam remains as is and no feasible sediment management alternative is recommended); however, if there is no consensus, Cal-Am, MPWMD and the TRC should consider what, if any, steps should be taken to address the long-term fate of the dam. This is not included as a Task in this Project.

### Task 5-1 Prepare Draft and Final Report

The Consultant and TRC will review the final set of alternatives and recommendations made by the Advisory Group and the TRC will make a final recommendation. A Draft Fish Passage

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the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances. As little as 1 hour or less to perhaps more than 200 hours

may have been spent preparing the estimate depending on the project and estimating methodology."

[20] How to define "short-term" and "long-term" should be discussed at TRC meeting #1.

Feasibility Report will be developed in this task to document the scope of the study, background information used, design criteria, the process utilized to conduct the feasibility analyses, the results of the analyses and the TRC recommendation. A draft table of contents for the report is listed below as a guide.

The draft (and final) report will contain at least the following:

- Introduction
    - Problem statement
    - Purpose, objective
        - Fish passage goal statement
    - Overview of Process
        - Summary of meetings, coordination, and progress reports
- Descriptions of alternatives
    - Short descriptions of all initial brainstorm concepts
        - Documentation of concepts that were dropped for fatal flaws or low Ranking
    - Preferred Concepts
        - Detailed physical, functional, and operational descriptions
        - Pros and cons
        - Constructability considerations
        - Opinions of probable construction and operating costs
        - Two to five scale drawings will be provided for each alternative, with applicable site overviews, site plans, sections, elevations, and hydraulic design parameters clearly defined.
- Evaluation of Alternatives
    - Description of evaluation process
        - Description of evaluation matrix and criteria
            - Weighting and scoring
        - Criteria that could lead to fatal flaws
    - Graphics and summaries of evaluation
        - Ranking of alternatives based on evaluation matrix
        - Ranking of alternatives based fish passage criteria
        - Relative ranking compared to cost and operations criteria
- Conclusions and Recommendations
- References cited

The Consultant will provide a draft report to the TRC for review. At least thirty (30) calendar days should be provided to prepare written comments. If no substantive issues are raised during the review, the Consultant will move on to production of the Final Report; however, if substantive issues are raised, the Consultant, Cal-Am, and MPWMD may elect to work directly with the commenter(s) to address any issues, or hold a meeting to address issues.

**Task 6 Project Management**

This task consists of standard project management tasks, including scheduling, budget tracking, invoicing, and general project communications. Also included in this task are regular communications with agency staff, conference calls as required, and progress reports no less frequently than quarterly and no more frequently than monthly. Progress reports shall include at a minimum: description of tasks performed and accomplishments; a comparison of budgeted vs. actual expenses; and a discussion of the progress of the schedule. Note that MPWMD will pay Consultant invoices monthly, if necessary. Progress reports and reimbursement requests for expenses will be provided to Cal-Am on a quarterly basis, at a minimum.

In addition to the TRC meetings, the Consultant shall facilitate meetings with MPWMD, Cal-Am, and other interested parties including, but not limited to: 1) kick-off meeting with MPWMD and Cal-Am; 2) review of existing and proposed operations in the field w/MPWMD and Cal-Am; 3) meetings with regulatory agencies as required to determine constraints. Meetings will generally be held at the MPWMD Ryan Ranch office or at the Cal-Am Pacific Grove office, unless other arrangements are made.

- *Deliverables: Invoices; progress reports; copies of communications among agencies and consultants (if appropriate); meeting minutes.*

## Schedule

| | Schedule | Jan-17 | Feb-17 | Mar-17 | Apr-17 | May-17 | Jun-17 | Jul-17 | Aug-17 | Sep-17 | Oct-17 | Nov-17 | Dec-17 | Jan-18 | Feb-18 | Mar-18 | Apr-18 | May-18 | Jun-18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Request for Proposal | | | | | | | | | | | | | | | | | | |
| Task | Notice to Proceed | | | | | | | | | | | | | | | | | | |
| 1 | Feasibility Study Preparation | | | | | | | | | | | | | | | | | | |
| 1-1 | Compile Background Information | | | | | | | | | | | | | | | | | | |
| 1-2 | Prepare Evaluation Criteria | | | | | | | | | | | | | | | | | | |
| 1-3 | Identify Critical Data Gaps | | | | | | | | | | | | | | | | | | |
| 1-4 | TRC Meeting #1 | | | | | | | | | | | | | | | | | | |
| 2 | Sediment Management Options | | | | | | | | | | | | | | | | | | |
| 2-1 | Obtain Reservoir Sediment Samples | | | | | | | | | | | | | | | | | | |
| 2-2 | Describe Alternatives | | | | | | | | | | | | | | | | | | |
| 2-3 | Evaluate Geomorphic Effects of Changes in Sediment Load | | | | | | | | | | | | | | | | | | |
| 3 | Evaluate Effects on Steelhead | | | | | | | | | | | | | | | | | | |
| 3-1 | Increased Sediment Transport | | | | | | | | | | | | | | | | | | |
| 3-2 | Incorporate Data from Alternative Water Supply Options | | | | | | | | | | | | | | | | | | |
| 4 | Identify Feasible Alternatives | | | | | | | | | | | | | | | | | | |
| 4-1 | TRC Meeting #2 | | | | | | | | | | | | | | | | | | |
| 4-2 | Alternative Development | | | | | | | | | | | | | | | | | | |
| 4-3 | Meeting #3 | | | | | | | | | | | | | | | | | | |
| 5 | Final Report | | | | | | | | | | | | | | | | | | |
| 5-1 | Prepare Draft and Final Report | | | | | | | | | | | | | | | | | | |
| 6 | Project Management | | | | | | | | | | | | | | | | | | |

## 6.0 CONTRACT TERM

6.1 The term of the AGREEMENT will be for a period of 18 months. Any modifications to the term can only be by written authorization from MPWMD based on potential future extenuating circumstances that may require an extension.

6.2 The AGREEMENT shall contain a clause that provides that the District reserves the right to cancel this AGREEMENT, or any extension of this AGREEMENT, without cause, with a thirty day (30) written notice, or immediately with cause. See Sample Agreement, Section IX for additional details on typical final payment terms, which includes payment for services up to the issuance of a written Notice of Cancellation.

## 7.0 PROPOSAL/QUALIFICATIONS PACKAGE REQUIREMENTS

7.1 CONTENT AND LAYOUT:

7.1.1 Consultant should provide the information as requested and as applicable to the proposed goods and services. The proposal or qualifications package shall be organized as per the table below; headings and section numbering utilized in the proposal or qualification package shall be the same as those identified in the table. Proposals or qualifications packages shall include at a minimum, but not limited to, the following information in the format indicated:

| | **Proposal or Qualifications Package Layout; Organize and Number Sections as Follows:** |
|---|---|
| Section 1 | COVER LETTER (INCLUDING CONTACT INFO)<br>SIGNATURE PAGE<br>RECEIPT OF SIGNED ADDENDA (IF ANY)<br>TABLE OF CONTENTS |
| Section 2 | PRE-QUALIFICATIONS |
| Section 3 | PROJECT EXPERIENCE AND REFERENCES |
| Section 4 | KEY STAFF PERSONS |
| Section 5 | LITIGATION HISTORY (if any) |
| Section 6 | TECHNICAL ASPECTS OF PROPOSAL |
| Section 7 | PRICING |
| Section 8 | EXCEPTIONS |
| Section 9 | APPENDIX |

**Section 1 Requirements:**

**Cover Letter:** All proposals must be accompanied by a cover letter not exceeding two pages and should provide organization information and Contact information as follows:

> **Contact Info:** The name, address, telephone number, e-mail and fax number of Consultant's primary contact person during the solicitation process through to potential contract award.
>
> **Organization Info:** Description of the type of organization (e.g. corporation, partnership, including joint venture teams and subconsultants) and how many years it's been in existence.

**Signed Signature Page and Signed Addenda** (if any addenda were released for this solicitation) Proposal packages submitted without this page will be deemed non-responsive. Original wet signatures are encouraged; however, copies of original signed documents or proposals signed with electronic signatures will be deemed the same as a wet signed original.

**Table of Contents – include a table of contents in the Proposal.**

**Section 2, Pre-Qualifications/Licensing Requirements:**

Consultant must acknowledge in writing that it meets all of the prequalifications and licensing requirements to perform the Scope of Work as outlined within this RFP. Consultant shall possess and maintain all permits, licenses, and professional credentials necessary to provide services as specified under this RFP which may include but is not limited to:

- The Project team shall have at least one member with experience in coordinating with the California Division of Safety of Dams (DSOD). The Proposal shall list the team member, project(s), and DSOD reference. Failure to meet this requirement will result in the Proposal not being considered.
- Licensed Professional Civil Engineer with expertise in reservoir operations, hydrology, flood control, and mapping (preferred)

- Certified fisheries biologist with steelhead experience
- Qualified geomorphologist with experience in fluvial processes, mass wasting, sediment transport analysis, and floodplain development

**Section 3, Project Experience & References:**

**Experience & References:** The Consultant shall provide concise, 1-3 page descriptions of comparable project experience, either in progress now or completed within the last five (5) years, for which your organization provided similar services. Include the following information for each project listed:

- Project name, location, size and date completed
- Project owner's name and contact information (name, phone number and email address if possible) as the District may conduct reference checks using this information.
- Description of services performed by your organization
- List members of the proposed project who worked on the projects described and their roles.

The descriptions should describe and demonstrate your organization's experience in the following areas:

**History & Data Compilation:** Collecting and summarizing technical reports.

**Civil Engineering Design and Cost Estimating: Assessing existing conditions and implementing engineering solutions.** Describe experience with developing construction cost estimates, planning, design, and implementation of previous projects. Consultant should provide examples of similar projects involving reservoir operations, dredging, dam modifications, and screening and selection of alternatives. Experience with steelhead-related projects is preferred. A valid California State Civil Engineering license is required.

**Fisheries Biology.** The Consultant team should demonstrate experience with life cycle analysis of salmonids, and in particular, steelhead. It should be noted that behavior of South-Central California Coast steelhead may be different from steelhead in other parts of the west coast and the world.

**Geomorphology.** The Consultant team should demonstrate experience with analyzing and predicting sediment transport and fluvial processes in a natural stream; effects of disturbances to dynamic equilibrium; reservoir effects; collection and analysis of substrate data; aerial photography analysis; flood inundation studies; and sediment budgets.

**Section 4, Key Staff Persons:**

Consultant shall identify key staff, their role in the project, and their qualifications and experience for the proposed role in the project. Please reference applicable licenses/registrations or certifications for proposed staff.

Consultant Organization and Subconsultants: A factor in selecting a Consultant will be the level of experience demonstrated by the Consultant's team in key areas such as sediment transport, dam removal, flood risk evaluation, water supply, steelhead biology and lifecycle dynamics, estimating, and meeting facilitation.

If the Consultant should need to replace a key staff person once the project begins, the District will reserve the right to review the qualifications of proposed replacement staff to the Consultant team and determine whether the proposed replacement is acceptable (see Section VIIIB in the Sample Agreement).

**Section 5, Litigation History (if any):**

Provide specific information on your organization's (and that of all organizations included in the project team) litigation history in the last five (5) years, termination for default, litigation by or against your organization, and judgments entered for or against your organization. If there is no litigation history in the past five (5) years, please so state.

**Section 6, Technical Aspects:**

Consultant shall provide a written and signed statement in this section which confirms that their proposal is inclusive of all elements necessary to complete the described work within 12 months of the execution of the Agreement.

RFP Scope: The information contained within this RFP is a general outline of the scope of work to be provided by the selected Consultant. It is intended as a guide only, and the specific scope of work to be provided by the Consultant must be included within their proposals. All potential respondents to this RFP are advised to include any information and/or procedures, which they deem pertinent and critical for the success of this project. Items that are added to the Tasks described above should be clearly identified within the proposal and should be supported with appropriate reasoning for addition. The cost of such items to be added should be separately noted as "Optional Tasks" within the proposal. Similarly, any additional costs that in the opinion of the proposer must be expended to make the project operational shall be identified as such within the cost estimate section of their proposal.

**Section 7, Pricing:**

The proposal shall include a budget, work schedule, and timeline to complete the tasks and project deliverables to meet the District's needs as indicated in this RFP. Consultant shall price the cost of work based on the project deliverables outlined in this RFP. Consultant shall provide a written and signed statement confirming their proposal is inclusive of all elements necessary to complete all goals, tasks, and project deliverables within 12 months of the execution of the Agreement.

**Section 8, Exceptions:**

Submit any and all exceptions to this solicitation on separate pages, and clearly identify the top of each page with "EXCEPTION TO MONTEREY PENINSULA WATER MANAGEMENT DISTRICT SOLICITATION FOR Los Padres Dam Sediment Management Study." Each Exception shall reference the page number and section number, as appropriate. Consultant

should note that the submittal of an Exception does not obligate the District to revise the terms of the RFP or AGREEMENT.

**Section 9, Appendix (optional)**

This section may include any supporting documentation.

## 8.0 SUBMITTAL INSTRUCTIONS

8.1 REQUIREMENTS**:**

To be considered "responsive," submitted proposals or qualifications packages shall adhere to the following:

8.1.1 Four (4) sets of the proposal package (one original proposal marked "Original" plus three (3) copies) shall be submitted in response to this solicitation. Each copy shall include a cover indicating the company name submitting, and reference to "RFP for Los Padres Dam Sediment Management Study". In addition, submit one (1) electronic version of the entire proposal package by e-mail. For file sizes larger than 50 Mb, contact MPWMD to arrange delivery. USB memory sticks are **NOT acceptable**. PDF file format is preferred; however, Word, and Excel may also be acceptable. Additional copies may be requested by the District at its discretion. Submit the proposal to:

Larry Hampson, District Engineer
Monterey Peninsula Water Management District
Mail: P.O. Box 85, Monterey CA 93942
Office: 5 Harris Court, Bldg. G, Monterey CA 93940
Tel: (831) 658-5620
FAX: (831) 644-9560 or MOBILE: (831) 238-2543
larry@mpwmd.net

8.1.2 Proposals packages shall be prepared on 8-1/2" x 11" paper, preferably duplex printed. The minimum font size in the main text shall be 12 point or larger with a minimum of 10 point for figures and tables. Fold out charts, tables, spreadsheets, brochures, pamphlets, and other pertinent information or work product examples may be included as Appendices.

8.1.3 Reproductions of the seals for the Monterey Peninsula Water Management District, or California American Water shall not be used in any documents submitted in response to this solicitation.

8.1.4 Consultant shall not use white-out or a similar correction product to make late changes to their proposal or qualifications package but may instead line out and initial in BLUE ink any item which no longer is applicable or accurate.

8.1.5 To validate your proposal package, **submit the SIGNATURE PAGE** (contained herein) **with your proposal**. Proposal packages submitted without that page will be deemed non-responsive. Errors may be crossed out and corrections printed in BLUE ink or typed adjacent, and must be initialed in BLUE ink by the person signing the proposal.

8.2 CONFIDENTIAL OR PROPRIETARY CONTENT**:** Any page of the proposal package that is deemed by Consultant to be a trade secret by the Consultant shall be clearly marked "CONFIDENTIAL INFORMATION" or "PROPRIETARY INFORMATION" at the top of the page.

8.3 ADDITIONAL REQUIREMENTS

8.3.1 Submittal Identification Requirements: ALL SUBMITTALS MAILED OR DELIVERED CONTAINING PROPOSAL PACKAGES MUST BE SEALED AND BEAR ON THE OUTSIDE, PROMINENTLY DISPLAYED IN THE LOWER LEFT CORNER: **THE SOLICITATION TITLE and CONSULTANT'S COMPANY NAME.**

8.3.2 Mailing Address: Proposal packages shall be mailed or delivered to the District at the mailing address indicated on the **Signature Page** of this solicitation.

8.3.3 Due Date: Proposal packages must be received by the District ON OR BEFORE the time and date specified, at the location and to the person specified on the **Signature Page** of this solicitation. It is the sole responsibility of the Consultant to ensure that the proposal package is received at or before the specified time. Postmarks and facsimiles are not acceptable. Proposals received after the deadline shall be rejected and returned unopened.

8.3.4 Shipping Costs: Unless stated otherwise, the F.O.B. for receivables shall be destination. Charges for transportation, containers, packaging and other related shipping costs shall be borne by the shipper.

8.3.5 Acceptance: Proposals are subject to acceptance at any time within 90 days after opening. The District reserves the right to reject any and all proposal packages, or part of any proposal package, to postpone the scheduled deadline date(s), to make an award in its own best interest, and to waive any informalities or technicalities that do not significantly affect or alter the substance of an otherwise responsible proposal package and that would not affect a Consultant's ability to perform the work adequately as specified.

8.3.6 Ownership: All submittals in response to this solicitation become the property of the District. If a Consultant does not wish to submit a Proposal package but wishes to acknowledge the receipt of the request, the reply envelope shall be marked "No Bid".

8.3.7 Compliance: Proposal packages that do not follow the format, content and submittal requirements as described herein, or fail to provide the required documentation, may receive lower evaluation scores or be deemed non-responsive.

8.3.8 CAL-OSHA: The items proposed shall conform to all applicable requirements of the California Occupational Safety and Health Administration Act of 1973 (CAL-OSHA).

## 9.0 SELECTION CRITERIA

9.1 The selection of Consultant and subsequent contract award will be based on the criteria contained in this Solicitation, as demonstrated in the submitted proposal. Consultant should submit information sufficient for the District to easily evaluate proposals with respect to the selection criteria. The absence of required information may cause the Proposal to be deemed non-responsive and may be cause for rejection.

9.2 The selection criteria include, but are not limited to, the following:

- Qualifications and experience;
- Understanding of project goals;
- Proposed methodology to fulfill the intent of this RFP;
- Ability and capacity to fulfill the intent of this RFP;
- Reasonable budget, work schedule, and timeline.

9.3 AGREEMENT award may not be based on cost alone.

## 10.0 CONTRACT AWARDS

10.1 Multiple Award(s): It is the intent of the District to award a single contract for this work.

10.2 Board of Directors: The award made from this solicitation is subject to approval by the Monterey Peninsula Water Management District Board of Directors and concurrence by California America Water.

10.3 Interview: The District reserves the right to interview selected Consultant before a contract is awarded. The costs of attending any interview are the Consultant's responsibility.

10.4 Incurred Costs: District is not liable for any cost incurred by Consultant in response to this solicitation.

10.5 Notification: Unsuccessful Consultants who have submitted a Proposal or Qualifications Package will be notified of the final decision as soon as it has been determined.

10.6 In District's Best Interest: The award resulting from this solicitation will be made to the Consultant that submits a response that, in the opinion of the District and the State Coastal Conservancy, best serves to complete the intake upgrade design work.

10.7 No Guaranteed Value: District does not guarantee a minimum or maximum dollar value for any AGREEMENT or AGREEMENTS resulting from this solicitation.

10.8 Contract retentions: 5% of the contract price will be retained until completion of all work associated with this RFP. See Section II. B in the Sample Agreement.

## 11.0 SEQUENTIAL CONTRACT NEGOTIATION

The District will pursue contract negotiations with the Consultant who submits the best Proposal or is deemed the most qualified in the opinion of the District and Cal-Am, and which is in accordance with the criteria as described within this solicitation. If the contract negotiations are unsuccessful, in the opinion of either District or Consultant, District may pursue contract negotiations with the entity that submitted a Proposal which District and Cal-Am deems to be the next best qualified to provide the services, or District may issue a new solicitation or take any other action which it deems to be in its best interest.

## 12.0 AGREEMENT TO TERMS AND CONDITIONS

Consultant selected through the solicitation process will be expected to execute a formal AGREEMENT with District for the provision of the requested service. The AGREEMENT shall be written by District in a standard format approved by District Counsel, similar to the "**SAMPLE AGREEMENT SECTION**" herein. Submission of a signed bid/proposal and the **SIGNATURE PAGE** will be interpreted to mean Consultant HAS AGREED TO ALL THE TERMS AND CONDITIONS set forth in the pages of this solicitation and **SAMPLE AGREEMENT** herein, except as noted in the EXCEPTIONS section of Consultant's proposal. District may, but is not required to, consider including language proposed by the Consultant as revisions to the AGREEMENT, and any such proposed revisions to the AGREEMENT shall be included in the EXCEPTIONS section of Consultant's proposal.

## 13.0 RIGHTS TO PERTINENT MATERIALS

All responses, inquiries, and correspondence related to this solicitation and all reports, charts, displays, schedules, exhibits, and other documentation produced by the Consultant that are submitted as part of the submittal will become the property of the District when received by the District and may be considered public information under applicable law. Any proprietary information in the submittal must be identified as such and marked "CONFIDENTIAL INFORMATION" or "PROPRIETARY INFORMATION". The District will not disclose proprietary information to the public, unless required by law; however, the District cannot guarantee that such information will be held confidential.

**SIGNATURE PAGE**

ISSUE DATE: November 2016

RFP EXTENSION DATE:_____

RFP: Los Padres Dam Sediment Management Study

**PROPOSALS ARE DUE IN**
**THE DISTRICT OFFICE BY**
**3:00 P.M., LOCAL TIME, ON: December 28, 2016**

**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: _____ Date _____

Signature: _____ Printed Name:_____

Street Address:_____

City: _____ State: _____ Zip: _____

Phone: (  ) _____ Fax: (  ) _____ Email: _____

Registered California Civil Engineer Name and License No.

_____

**References**

California American Water and Entrix Environmental Consultants (2007), Preliminary Final Environmental Impact Report /Environmental Impact Statement, San Clemente Dam Seismic Safety Project, Prepared for California Department of Water Resources and U.S. Army Corps of Engineers, Appendix H Sediment Transport & Disposal Environmental Constraints Analysis, Appendix M Sediment Transport Modeling, December 2007.

California American Water (2013), project GRC Workpapers, Monterey County District, Project Code: 115-400101, Los Padres Dam Long-Term Plan, Engineering Department, April 2013.

CALFIRE (2016), Soberanes Fire Watershed Emergency Response Team Report, CA-BEU -003422, September 29, 2016

CSUMB Class ENVS 660: Chow K, Fields J, Flores S, Hart K, Kleven A, Luna L, MacCarter L, and Smith D. 2016. San Clemente Dam Removal Sediment Impacts: Year One Report. Watershed Institute, California State University Monterey Bay, Publication No. WI-2016-10.

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George B. Cleveland (1977), Marble Cone Fire …..Effect on Erosion, California Geology, December 1977, p. 266-271.

Frank W. Davis and Mark I Borchert (2006), *Fire in California's Ecosystems*, Central Coast Bioregion, Chapter 14, November 2006.

Darby W. Fuerst (2008), Increases in Los Padres Reservoir Storage Capacity, Memorandum to MPWMD Board of Directors, August, 4, 2008.

Larry Hampson (1995), Hydrologic Evaluation of the Carmel River at the Los Padres Reservoir Reference Site and at the San Clemente Reservoir Mitigation Site, Technical Memorandum 95-01, Monterey Peninsula Water Management District.

Earl W. Hart (1966), Mines and Mineral Resources of Monterey County, California, County Report 5, California Division of Mines and Geology, 98-104 and 136-138.

Barry Hecht (1981), Sequential Changes in Bed Habitat Conditions in the Upper Carmel River Following the Marble-Cone Fire of August, 1977, California Riparian Systems Conference, University of California, Davis, September 17-19, 1981

Graham Mathews (1989), Evaluation of Reservoir Sedimentation Rates in the Upper Carmel River Watershed, Technical Memorandum 88-03, Monterey Peninsula Water Management District, February 1989.

Graham Mathews (1989), Evaluation of Sediment Transport Rates at the Proposed Fish Screening Facility on the Carmel River at Pine Creek, Monterey Peninsula Water Management

District Technical Memorandum 89-01, March 1989.

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Jones and Stokes (2002), Ralston Afterbay Sediment Management Project Indian Bar Pilot Project, Prepared for: Placer County Water Agency, August 2002.

G. Mathias Kondolf (1982), Recent Channel Instability and Historic Channel Changes of the Carmel River, Monterey Co., CA. (MS Thesis, U.C. Santa Cruz)

G. Mathias Kondolf and Robert R. Curry (1986), Channel Erosion Along the Carmel River, Monterey County, California, Earth Surface Processes and Landforms, Vol. 11, 307-319

Minear, J. T., and G. M. Kondolf (2009), Estimating reservoir sedimentation rates at large spatial and temporal scales: A case study of California, Water Resour. Res., 45, W12502, doi:10.1029/2007WR006703.

MWH (2013), Los Padres Dam Sediment Removal Feasibility Study, Prepared for California America Water, April 2013.

National Marine Fisheries Service. 2013 (Draft of 19 November 2012). Conceptual Model of the Carmel River System, NOAA Fisheries Staff and Collaborators, SW Fisheries Science Center, Santa Cruz, California.

National Marine Fisheries Service. 2013. South-Central California Coast Steelhead Recovery Plan. West Coast Region, California Coastal Area Office, Long Beach, California.

National Marine Fisheries Service. 2016. 5-Year Review: Summary and Evaluation of South-Central California Coast Steelhead Distinct Population Segment. National Marine Fisheries Service. West Coast Region. California Coastal Office. Santa Rosa, California.

Shibatani and Associates (2014), Final Los Padres Dam and Reservoir Long-Term Strategic and Short-Term Tactical Plan, prepared for the Monterey Peninsula Water Management District, June 2014.

Smith, D.P. (2008), Kvitek, R., Aiello, I., Iampietro, P., Quan, C., Paddock, E., Endris, C, and Gomez, K., 2009, Fall 2008 Stage-Volume Relationship for Los Padres Reservoir, Carmel Valley, California: Prepared for the Monterey Peninsula Water Management District. The Watershed Institute, California State University Monterey Bay, Publication no. WI-2009-2, 30 pp.

United States Geological Survey, Kapple et al., Analysis of the Carmel Valley Alluvial Groundwater Basin, Monterey County, California, Water Resources Investigations Report 83-4280

- MPWMD Carmel River flows are available at:
  http://www.mpwmd.net/wrd/riverflows/riverflows.htm
- USGS flows are at:
  http://waterdata.usgs.gov/ca/nwis/uv/?1143200
  and
  http://waterdata.usgs.gov/ca/nwis/uv?11143250

## APPENDIX A – Evaluation Process and Draft Evaluation Criteria

This is a description of the process the TRC may use to evaluate alternatives developed in this Project for potential feasibility and effectiveness. A grid analysis technique (Pugh Matrix) will be used, which breaks the alternatives down into discrete elements for comparison, evaluation, and optimization.

## A-1. EVALUATION PROCESS

A weighted grid analysis can be used to help develop consensus of design solutions that could be pursued. It is essential to developing a mutual understanding of each alternative, understanding each other's values and points of view, and optimizing alternatives. This basic process is commonly used to assist engineering decisions. The following chart is a schematic example of the grid analysis. This is greatly simplified for the sake of explanation. The LPD evaluation will likely consist of several categories of factors – engineering, biological, economic, geomorphic, water supply, and water rights.

**Schematic Example of Weighted Grid Analysis**

| | **Weight** | **Default Choice** | **Alternate #1** | **Alternate #2** | **Alternate #3** |
|---|---|---|---|---|---|
| **Criteria #1** | 1 | 0 | | | |
| **Criteria #2** | 1 | 0 | | | |
| **Criteria #3** | 1 | 0 | | | |
| **Totals** | | | | | |

Benefits of using this method are:

- Quantitative technique to rank multi-dimensional options
- Increases objectivity of evaluation
- Develops a clear common understanding of options being considered
- Helps diverse stakeholders understand each other's values and issues
- Can test sensitivity of objectives and project features
- Rational and consistent
- Can be a framework for consensus-building.

The process of the analysis is as follows. Each component of the grid is explained further below.

- Define evaluation criteria
- Weight criteria
- Describe alternatives

- Score alternatives for each criterion
- Multiply each score by the criteria weight
- Sum the score-weight products for each alternative

### A-1.1 DEFINE EVALUATION CRITERIA

Each criterion is a positive attribute and can be considered an objective of the project by which the alternatives will be evaluated. Some of the criteria may be pass/fail (e.g., meet a threshold score), while most are likely to be satisfied to different degrees by various alternatives. Criteria may have different levels of importance and will be weighed appropriately as part of the alternatives comparison. Initial provisional criteria are described below and will be refined through the Project process. The evaluation criteria will be entered as a column in spreadsheets with the alternatives listed in a row across the top of the spreadsheet.

### A-1.2 WEIGHT CRITERIA

The weighting uses a scale of zero to ten. To challenge users to differentiate among the criteria by not allowing all criteria to be weighed "ten," it should be stipulated that the average weight has to be five.

### A-1.3 SCORE ALTERNATIVES

The next step is to score how well each alternative satisfies each criterion. A ten-point (zero to ten) scoring system is recommended to allow an alternative to be incrementally improved by modifying it. The TRC should come to a consensus about specific criteria that are considered essential and must be satisfied to a high degree, or the alternative might be fatally flawed. For example, alternatives that do not score a value of ten for dam safety would likely be fatally flawed. Large differences among the products of individual scores and weights highlight differences that most affect the final results and that therefore merit discussion. Large differences may be due to various factors, each of which should be addressed. Each alternative and criterion should be thoroughly understood by each person ranking the alternative. The point is to achieve a true common understanding of each score, not just to agree on a number.

### A-1.4 OPTIMIZATION OF ALTERNATIVES

Using simple math to score alternatives offers an opportunity to focus on strengths and weaknesses of alternatives and can be a starting point for a discussion of how to improve an alternative or how to exclude an alternative. The matrices showing the ranking of the alternatives will be included in the text of the report. Relative ranking of alternatives can be considered using all categories or can also be considered using specific categories.

## A-2. DRAFT EVALUATION CRITERIA FOR PREFERRED SEDIMENT MANAGEMENT ALTERNATIVES

The following criteria are proposed for consideration in evaluating the alternatives for sediment management. As the process proceeds there may be other evaluation criteria that maybe included. These criteria are to be refined and changed as information on alternatives and conditions specific to the Project is gathered. There are several project factors to consider including difficult access into and out of the LPD reservoir, fish passage over the dam and through the reservoir, limited sites for placement of dredging material, potentially significant effects on downstream steelhead habitat and infrastructure from continued sediment starvation or from an increase in sediment load, and potential effects to water rights from increases or decreases in surface storage. Increases in water supply from dredging or reservoir expansion can be important in both the short-term and for such long-term effects as predicted climate change.

Some consideration should be given to specific quantitative threshold criteria (e.g.; quantity of water stored, quantity and quality of water released, length and time of stream benefited or impacted, risk to downstream owners, economics, frequency of maintenance, etc.). These may not apply at the concept review, but should be considered during alternative development.

### A-2.1 CRITERIA FOR SEDIMENT MANAGEMENT ALTERNATIVES

- ***Effects on passage of juvenile and adult fish into and out of the upper watershed***
  Downstream passage facilities have been constructed at LPD. Upstream volitional passage is being considered for LPD under another effort associated with the long-term plan for the dam and reservoir. After the rainy season ends and the reservoir is drawn down below spillway level, storage is metered out to augment downstream flow – often at levels below 10 cfs. Flow availability during periods of migration should be evaluated. The effect of sediment management alternatives on migration over the dam and through the reservoir, including dam removal, should be compared with alternatives proposed in the Los Padres Dam Fish Passage Study. Scoring for passage will reflect the degree of passage; long-term pure volitional alternatives for both juveniles and adults would likely

  be scored the highest possible score. Both short-term and long-term effects should be considered. A No Action Alternative that results in the reservoir silting in and sediment periodically blocking passage facilities would likely result in the lowest possible rating for fish passage.

- ***Attraction, passage, and flows for Non-target Species***
  The target species for fish passage is adult and juvenile steelhead. There might be added ecological value or risk in providing for or blocking passage of other species and life stages. Risks could include the passage of non-native species, including resident brown trout. Enhanced flows from reservoir dredging or reservoir expansion could improve habitat for such non-native species as bullfrogs and striped sea bass. Reduced dry season flows could reduce habitat for the same species.

- ***Potential for sediment transport monitoring***
  This characteristic is the ability to add facilities for monitoring changes in sediment transport to assess performance of the alternative.

- ***Certainty of sediment transport alternatives on steelhead and channel morphology***
  This is a measure of how certain the TRC is regarding benefits and impacts to steelhead, their habitats, downstream channel morphology, and the effects to properties and infrastructure located downstream the alternatives to be studied. It is based on the combined knowledge of characteristics of the site, hydrology, the Carmel River steelhead population, sediment transport, channel morphology, risks to property and infrastructure, and precedents of other similar projects.

- ***Adaptability of sediment management alternatives***
  Certainty may be increased with adaptability in design and/or operation. For example, an incremental approach to either dredging or bypassing sediment in the reservoir may allow for more adaptability in locating disposal sites and/or evaluating changes to downstream channel morphology.

- ***Sustainability of water supply***
  LPD and the reservoir associated with it are an important source of supply for the Monterey Peninsula. The risk of losing this supply either due to inaction or from a dam removal project must be balanced with the risk that a replacement supply may not be feasible or may not be available in a timely fashion.

**APPENDIX B – Sample Agreement**

**AGREEMENT BETWEEN THE**

**MONTEREY PENINSULA WATER MANAGEMENT DISTRICT AND**

**FOR PROFESSIONAL SERVICES TO PROVIDE ASSISTANCE WITH THE**

**LOS PADRES DAM SEDIMANT MANAGEMENT STUDY**

THIS AGREEMENT is entered into this _____ day of _____ 2016, by and between _____, hereinafter called "Consultant," and the Monterey Peninsula Water Management District, hereinafter called "MPWMD".

SECTION I – SCOPE OF SERVICES

MPWMD hereby engages Consultant for services as set forth in **Exhibit A**, Scope of Work.

SECTION II – COMPENSATION

A. FEE SCHEDULE

Fees payable to Consultant for services specified herein shall be in accordance with the Fee Schedule in **Exhibit B**.

B. METHOD OF PAYMENT

Payment of fees shall be based on work completed, as documented in monthly billings submitted by Consultant. Work reports shall be rendered in accordance with the schedule shown in **Exhibit C**, Work Schedule. Payments are due and payable within thirty (30) days after receipt of each invoice subject to a finding by MPWMD that work performed has been satisfactory and that payment is for the work specified in **Exhibit A**, Scope of Work. Where MPWMD finds the work to be unsatisfactory, MPWMD shall describe deficiencies in writing to Consultant within ten (10) days.

Five percent (5%) of the maximum payment shall be retained until all work described in **Exhibit A, Scope of Work** is completed to the satisfaction of MPWMD. The final invoice for work performed shall be submitted not later than sixty (60) days following notification by MPWMD of completion of such work. The final invoice shall be paid not later than 30 days

after receipt of the final invoice.

C. MAXIMUM PAYMENT

Payments to Consultant for services rendered and expenses incurred under this Agreement **shall not exceed $ _____.**

SECTION III – INSPECTION OF WORK

The books, papers, records and accounts of Consultant or any subconsultants retained by Consultant insofar as they relate to charges for services, or are in any way connected with the work herein contemplated, shall be open at all reasonable times to inspection and audit by the agents and authorized representatives of MPWMD. Said records shall be retained for a minimum of five (5) years after completion of services.

SECTION IV – OWNERSHIP OF PROJECT REPORT AND EQUIPMENT PURCHASED

All original documents, explanations of methods, maps, tables, computer programs, reports and other documents prepared under this Agreement and equipment purchased specifically for the project shall become the exclusive property of MPWMD. Digital data used to generate tables, figures, diagrams, images, Geographical Information System (GIS) or Computer Aided Design (CAD) layers shall be considered separate deliverables and shall be provided to MPWMD after acceptance by MPWMD of the final work product(s).

Global Positioning System (GPS) data deliverables shall include the following:

- Original rover files, unless otherwise specified by MPWMD
- Base station correction files, unless otherwise specified by MPWMD
- Differentially corrected GPS files, if requested by MPWMD
- Copies of field data collection notes
- Completed documentation sheet for each collection event
- Almanac files are optional

GIS deliverables shall include the following:

- Geospatial dataset [generated from GPS data] in Environmental Systems Research

Institute, Inc.'s (ESRI) shapefile format, including a projection file. In this regard, point features shall be generated as point shapefiles, linear features shall be generated as line shapefiles, and area features shall be generated as polygon shapefiles.

- Each geospatial dataset shall be accompanied by documentation sufficient to meet the Content Standard for Digital Geospatial Metadata (CSDGM), Vers. 2 (FGDC-STD-001-1998), dated June 1998.
- Any geospatial dataset derived from new or existing geospatial data in shapefile format, along with an explanation of the methodology used to generate the derived geospatial data.

Consultant may retain copies for his/her own use.

## SECTION V – TIME OF PERFORMANCE

Consultant shall begin work upon the effective date of this Agreement and shall complete all tasks described herein according to the schedule shown in **Exhibit C**, Work Schedule. Time is of the essence to this Agreement, and with respect to the work within its sphere of influence, in the event Consultant is unable to perform satisfactory work consistent with the professional skill and care ordinarily provided by engineering professionals practicing in the State of California under the same or similar circumstances within thirty (30) calendar days of the date such work is due pursuant to **Exhibit C**, Work Schedule, such work shall be considered late and may result in a waiver or delay in payment of a part of the fees payable pursuant to the terms of this Agreement.

## SECTION VI – RESPONSIBILITIES

A. Consultant represents that he/she has or will secure at his/her own expense all personnel, materials, and related services required to perform the services under this Agreement. Consultant shall act as an independent consultant and not as an agent or employee of MPWMD. Consultant shall have exclusive and complete control over his/her employees and subconsultants, and shall determine the method of performing the services hereunder.

B. MPWMD shall provide Consultant with all relevant data and studies in its possession without charge.

C. MPWMD shall coordinate and arrange for all meetings required to be held with other agencies or persons hereunder, unless otherwise specified in **Exhibit A**, Scope of Services.

D. Consultant shall be responsible for the reproduction of work produced by Consultant hereunder.

E. The officers, agents, and employees of MPWMD shall cooperate with Consultant in the performance of services under this agreement without charge to Consultant. Consultant agrees to use such services insofar as feasible in order to effectively discharge his/her obligations hereunder and further agrees to cooperate with MPWMD's officers, agents and employees.

F. The Consultant agrees to indemnify, defend and save harmless MPWMD, its officers, agents and employees from any and all claims and losses accruing or resulting to any and all consultants, subconsultants, material men, laborers and any other person, firm or corporation who may be injured or damaged by the negligent acts, errors, and/or omissions of the Consultant, Consultant's employees, or Consultant's subconsultants or subconsultants in the performance of this Agreement.

G. The Consultant acknowledges and is aware of the provisions of the Conflict of Interest Code as shown in **Exhibit E**, Conflict of Interest Code of the Monterey Peninsula Water Management District.

## SECTION VII – INSURANCE

A. Consultant shall obtain and keep insurance policies in full force and effect for the following forms of coverage as shown in **Exhibit D**, Insurance Requirements.

## SECTION VIII – CHANGES AND CHANGED CONDITIONS

A. If, during the course of the work herein contemplated, the need to change the Scope of

Work or the Work Schedule should arise, for whatever reasons, whichever party first identifies such need to change shall notify the other party in writing. The representatives of the parties shall meet within seven (7) working days of the date of such notice to discuss the need for change so identified and to set the proposed action to be taken by the parties. A change in the Scope of Work may also result in a change in the compensation amount. Compensation changes shall be based upon the Consultant Fee Schedule (**Exhibit B**) attached hereto. Any changes agreed to shall be documented by duly executed amendments to this Agreement.

B. MPWMD reserves the right to specify individual employees, subconsultants or agents of Consultant who shall be assigned to perform the tasks specified in **Exhibit A**, Scope of Services. If, during the course of the work herein contemplated, there is a change such that the specified individual employees, subconsultants or agents are no longer assigned to the work described in this contract and/or are no longer affiliated with Consultant, Consultant shall immediately notify MPWMD in writing. Consultant shall assign the rights to this contract to another entity, if requested by MPWMD, as part of termination proceedings pursuant to Section IX, Termination.

## SECTION IX – TERMINATION

A. MPWMD may terminate Consultant's services at any time by written notice to Consultant at least thirty (30) days prior to such termination. Upon receipt of written notice from MPWMD that this Agreement is terminated, Consultant shall submit an invoice for an amount that represents the value of services actually performed to the date of said notice for which he/she has not previously been compensated. Upon approval of this invoice by MPWMD, MPWMD shall have no further obligation to Consultant, monetarily or otherwise.

B. Upon receipt of written notice of termination, the Consultant shall (1) promptly discontinue all services affected (unless the notice directs otherwise), and (2) deliver or otherwise make available to MPWMD, copies, including magnetic media, of data, design calculations, drawings, specifications, reports, estimates, summaries and other such

information and materials as may have been accumulated by the Consultant in performing the services under this Agreement.

## SECTION X – SUB-CONTRACTING AND ASSIGNABILITY

Consultant shall not sub-contract any portion of the work required by this Agreement nor otherwise assign or transfer any interest in it without prior written approval of MPWMD. Any work or services subcontracted hereunder shall be specified by written contract or agreement and shall be subject to each provision of this Agreement.

## SECTION XI – DISCRIMINATION AND FAIR EMPLOYMENT

Attention is directed to Section 1735 of the California Labor Code, which reads as follows:

> "No discrimination shall be made in the employment of persons upon public works because of race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, marital status, or sex of such persons, except as provided in Section 12940 of the government code and every Consultant for public works violating this section is subject to all penalties imposed by a violation of this chapter."

During the performance of this Agreement, Consultant and its Consultants shall not unlawfully discriminate, harass, or allow harassment against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, national origin, physical disability (including HIV and AIDS), mental disability, medical condition (cancer), age (over 40), marital status, and denial of family care leave. Consultant and its Consultants shall insure that the evaluation and treatment of their employees and applicants for employment are free from such discrimination and harassment. Consultant and its Consultants shall comply with the provisions of the Fair Employment and Housing Act (Government Code Section 12990 (a-f) et seq.) and the applicable regulations promulgated thereunder (California Code of Regulations, Title 2, Section 7285 et seq.). The applicable regulations of the Fair Employment and Housing Commission implementing Government Code Section 12990 (a-f), set forth in Chapter 5 of Division 4 of Title 2 of the California Code of Regulations, are incorporated into this Agreement by reference and made a part hereof as if set forth in full.

## SECTION XII – INTEREST OF CONSULTANT

Consultant covenants that he/she presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of services required to be performed under this Agreement.

## SECTION XIII – CONTINGENT FEES

Consultant warrants that he/she has not employed or retained any company or person, other than a bona fide employee working solely for the Consultant to solicit or secure this Agreement, and that he/she has not paid or agreed to pay any company, or person, other than a bona fide employee working solely for Consultant, any fee, commission, percentage, brokerage fee, gifts, or other consideration, contingent upon or resulting from the award or making of this Agreement. For breach of violation of this warranty, MPWMD shall have the right to annul this Agreement without liability or at its discretion to deduct from the contract price or consideration, or otherwise recover, the full amount of such fee, commission, percentage, brokerage, gift or contingent fee.

## SECTION XIV – DISPUTES

In the event of a dispute arising out of the performance of this Agreement either party shall, as soon as a conflict is identified, submit a written statement of the conflict to the other party. Within five (5) working days of receipt of such a statement of conflict, the second party will respond and a meeting will be arranged not more than five (5) working days thereafter to arrive at a negotiated settlement or procedure for settlement. If, within twenty (20) working days from the initial filing of a statement of conflict an agreement cannot be reached, it is agreed that the dispute may be resolved in a court of law competent to hear this matter. This Agreement shall be construed in accord with California law and it is agreed that venue shall be in the County of Monterey. The prevailing party shall be awarded costs of suit, and attorneys' fees.

## SECTION XV – NOTICES

All communications to either party by the other shall be deemed given when made in writing and

delivered or mailed to such party at its respective address, as follows:

MPWMD: Larry Hampson, District Engineer
Monterey Peninsula Water Management District
5 Harris Court, Building G
Monterey CA 93940
or
P. O. Box 85
Monterey, CA 93942-0085

CONSULTANT:

## SECTION XVI – AMENDMENTS

This Agreement together with **Exhibits A, B, C, D, and E** sets forth the entire understanding of the parties with respect to the subject matter herein. There are no other agreements expressed or implied, oral or written, except as set forth herein. This Agreement may not be amended except upon written amendment, executed by both parties hereto.

## SECTION XVII - ATTACHMENTS

The following exhibits are attached hereto and referred to in the preceding sections and are, by reference, incorporated herein and made an integral part of this Agreement:

**Exhibit A.** Scope of Work

**Exhibit B.** Fee Schedule

**Exhibit C.** Work Schedule

**Exhibit D.** Insurance Requirements

**Exhibit E.** Conflict of Interest Code of the Monterey Peninsula Water Management District

**IN WITNESS WHEREOF, the parties hereto have entered into this Agreement effective as of the day and year first above written.**

**MONTEREY PENINSULA WATER MANAGEMENT DISTRICT**

**_____**

**BY: David J. Stoldt, General Manager**

**CONSULTANT**

**_____**

**BY:**

**FEDERAL TAX IDENTIFICATION NUMBER: _____**

**EXHIBIT D**

**INSURANCE REQUIREMENTS**

I. Consultant shall provide evidence of valid and collectible insurance carried for those exposures indicated by an "X".

A. _X_ Professional Liability Errors & Omissions

B. _X_ Workers Compensation and Employers Liability

C. _X_ Automobile Liability - "Any Auto - Symbol 1"

D. _X_ Comprehensive General Liability, including Bodily Injury, Property Damage and Personal Injury

E. _X_ Owners & Consultants Protective

F. ____ Protection & Indemnity (Marine/Aviation)

II. The minimum limit of protection provided by insurance policies for each of the coverages listed above shall be not less than $1,000,000, except for coverage “D”, which shall not be less than $2,000,000. The procurement and maintenance by the Consultant of the policies required to be obtained and maintained by Consultant under this Agreement shall not relieve or satisfy Consultant’s obligation to indemnify, defend and save harmless the District.

III. Evidence of insurance carried shall be Certificates of Insurance for the current policies. The District shall be listed as a certificate holder on the Consultant’s Comprehensive General Liability insurance policy and the policy must be endorsed to provide a 60-day prior written notice of cancellation.

IV. The District requires that the Consultant carry a commercial liability policy written on a broad comprehensive general liability form.

A. Such protection is to include coverage for the following hazards, indicated by an "X":

1. _X_ Premises and Operations
2. _X_ Products and Completed Operations
3. ____ Explosion Collapse and Underground
4. _X_ Broad Form Blanket Contractual
5. _X_ Broad Form Property Damage
6. _X_ Personal Injury, A, B & C
7. _X_ Employees named as Persons Insured
8. _X_ Protective and/or Contingent Liability (O&CP)

B. The "Persons Insured" provision on each comprehensive general liability policy shall include as an insured the "Monterey Peninsula Water Management District, its officers, directors, agents and employees."

C. This policy shall contain a severability of interest clause or similar language to the following:

"The insurance afforded applies separately to each insured against whom claim is made or suit is brought including claims made or suits brought by any persons included within the persons insured provision of the insurance against any other such person or organization."

D. All policies shall contain a provision that the insurance company shall give the District at least thirty (30) days prior written notice mailed to the address shown below prior to any cancellation, lapse or non-renewal. The 30-day written notice must be shown on all certificates of insurance.

E. Certificates of Insurance for the current policies shall be delivered by the Consultant to the Risk Manager for the District as verification that terms A, B, C and D have been met.

V. All insurance correspondence, certificates, binders, etc., shall be mailed to:

Monterey Peninsula Water Management District
Attn: Administrative Services Manager
5 Harris Court, Building G
P.O. Box 85
Monterey, CA 93942-0085

VI. All policies carried by the Consultant shall be primary coverage to any and all other policies that may be in force. The District shall not be responsible for payment of premiums due as a result of compliance with the terms and conditions of the insurance requirements.

VII. All such policies of insurance shall be issued by domestic United States insurance companies with general policy holders' rating of not less than "B" and admitted to do business in the State of California. The policies of insurance so carried shall be carried and maintained throughout the term of this Agreement.

**EXHIBIT E**

# CONFLICT OF INTEREST CODE
# OF THE
# MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

The Political Reform Act of 1974 (Government Code sections 81000, et seq.) requires state and local government agencies to adopt and promulgate conflict of interest codes. The Fair Political Practices Commission has adopted a regulation, section 18730 of Title 2 of the California Code of Regulations, which contains the terms of a standard conflict of interest code that can be incorporated by reference in an agency's code. After public notice and hearing, the Fair Political Practices Commission may amend the standard code to conform to amendments of the Political Reform Act. Therefore, the terms of section 18730 of title 2 of the California Code of Regulations and any amendments to it duly adopted by the Fair Political Practices Commission together with the attached Appendices designating positions and establishing disclosure categories are hereby incorporated by reference and together constitute the Conflict of Interest Code of the Monterey Peninsula Water Management District (hereafter "District").

Individuals holding designated positions shall file their statement of economic interests with the District Secretary which will make the statements available for public inspection and reproduction pursuant to Government Code section 81008. Upon receipt of the statements for positions listed in Appendix A, the District shall make and retain copies and forward the original of the statements to the code reviewing body, the Monterey County Board of Supervisors, by providing the documents to the office of the Monterey County Clerk to the Board. Statements for all other designated positions shall be retained by the District.

Attachments: Appendix A: Designated Positions
Appendix B: Disclosure Categories

Amended: 1979, 1983, 1986, 1979, 2006, 2013 and 2016

## APPENDIX A: DESIGNATED POSITIONS

| Designated Positions[21] | Assigned Disclosure Category |
|---|---|
| Board of Directors | 1 |
| General Manager | 1 |
| District Counsel | 1 |
| Administrative Services Manager | 1 |
| Water Demand Division Manager | 1 |
| Water Resources and Engineering Division Manager | 1 |

Consultants

For purposes of this Code, "consultant" has the same meaning as set forth in 2 Cal. Code Regs., tit. 2, section 18701(a)(2), as follows:

"Consultant" means an individual who, pursuant to a contract with a state or local government agency:

(A) Makes a governmental decision whether to:
   1. Approve a rate, rule, or regulation;
   2. Adopt or enforce a law,
   3. Issue, deny, suspend, or revoke any permit, license, application, certificate, approval, order, or similar authorization or entitlement;
   4. Authorize the agency to enter into, modify, or renew a contract provided it is the type of contract which requires agency approval;
   5. Grant agency approval to a contract which requires agency approval and in which the agency is a party or to the specifications for such a contract;
   6. Grant agency approval to a plan, design, report, study, or similar item;
   7. Adopt, or grant agency approval of policies, standards, or guidelines for the agency, or for any subdivision thereof, or

(B) Serves in a staff capacity with the agency and in that capacity participates in making a governmental decision or performs the same or substantially all the same duties for the agency that would otherwise by performed by an individual holding a position specified in the agency's Conflict of Interest Code.

Consultants to the District shall be subject to disclosure under Category 1, subject to the following limitation: The General Manager of the District may determine in writing that a particular consultant, although a "designated position," is hired to perform a range of duties that is limited in scope and thus is not required to comply with the disclosure

[21] Public officials who manage public investments are not covered by the Conflict of Interest Code because they must file a statement of economic interests pursuant to Government Code section 87200. Therefore, those positions are listed below for information purposes only.

requirements of Category 1. In such cases, the General Manager of the District may designate a different disclosure requirement. Such determination must be made in writing and shall include a description of the consultant's duties and, based upon that description, a statement of the extent of the consultant's disclosure requirements. Such determination by the General Manager of the District is a public record and shall be retained for public inspection in the same manner and location as the District's Conflict of Interest Code.

## APPENDIX B: DISCLOSURE CATEGORIES

General Provisions Applicable to All Categories

When an individual who holds a designated position is required to disclose investments and sources of income, he or she shall disclose investments in business entities and sources of income which do business in the jurisdiction, plan to do business in the jurisdiction, or have done business in the jurisdiction within the past two years. In addition to other activities, a business entity is doing business within the jurisdiction if it owns real property within the jurisdiction.

When an individual who holds a designated position is required to disclose sources of income, he or she shall include gifts received from donors located inside as well as outside the jurisdiction.

When an individual who holds a designated position is required to disclose interests in real property, he or she shall disclose the type of real property described below if it is located within the jurisdiction, or not more than two miles outside the boundaries of the jurisdiction, or within two miles of any land owned or used by District.

When an individual who holds a designated position is required to disclose business position, he or she shall disclose positions in business entities that do business in the jurisdiction, plan to do business in the jurisdiction, or have done business in the jurisdiction within the past two years.

For purposes of this Conflict of Interest Code, the jurisdiction of the Monterey Peninsula Water Management District is the area of the County of Monterey within the District boundaries as described in West's Annotated California Codes, Water Code, Appendix Section 118.

Category 1
A designated position in this category must report all investments, business positions, interests in real property, and sources of income, including gifts, loans, and travel payments.

Category 2
A designated position in this category must report all investments, business positions, and sources of income, including gifts, loans, and travel payments.

Category 3
A designated position in this category must report all interests in real property.

Category 4

A designated position in this category must report all investments, business positions and income, including gifts, loans, and travel payments, from sources that are subject to the regulatory, permit or licensing authority of, or have an application for a license or permit pending before, the District.

Category 5

A designated position in this category must report all investments, business positions and income, including gifts, loans, and travel payments, from sources which are of the type to supply materials, products, supplies, commodities, services, machinery, vehicles, or equipment utilized by the District.

Category 6

A designated position in this category must report all investments, business positions and income, including gifts, loans, and travel payments, from sources which are of the type to receive grants or other monies from or through the District.

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